Accessibility: The quality of being able to use something and that something doing what it is intended to do.

**Situational Impairment**: This is whereby the environment or situation one is in effects the effective use of something and acts as a barrier. Leads to non-effectual use.

Adaptability, flexibility and Transformable UIs make increases accessibility and supports situational impairments.

Think about extensibility and accessibility when building a solution to improve accessibility. Thinking about extensibility and accessibility means the solution can be modified to **extended** if new information comes to light or requirement.

Accessibility aims to help people with dis-abilities to perceive, understand, navigate, and interact with the computer system or interface.

ISO 9241-171:2008: Covers the problems with designing accessible solutions for people with wide range or physical, sensory and cognitive abilities.

Disabilities causing accessibility issues

Technology is really important for individuals with disabilities. It helps make their lives more productive and can even make them ‘able’ through the use of technology. And it is thus important for them to be able to access different types of technologies.

Assistive technologies are used for disabled users of technologies, so that they can access the technology effectively. Assistive technologies act as an interface between the user and the technology, a keyboard and mouse is an example of input assistive technologies and a monitor is an example of a output assistive technology. If assistive technologies like keyboards and mouse do not help with accessibility for a user with disabilities than these can be substituted or altered. For users with input problems, the accessibility is improved by looking at the computer and software. Output accessibility is improved by taking in consideration the interface and the assistive technology on the user’s computer.

Barriers to effectual use

**Visual Impairments:**

* This can be a visual disability, visual impairment, low vision or blindness.
* User should be able to zoom into the interface and the corresponding action, if any, is close to the zoomed in part of the screen.
* Each visual object should have a corresponding textual description which should be accessible.

**Cognitive Impairments:**

* Associated with learning difficulties.
* Usually people with cognitive impairments have difficulties with executive function, memory, attention, visual and spatial perception, language and emotions.
* There are many types of cognitive disabilities so there is no ‘one fits all’ design criteria for user interfaces.
* UX’er should try to improve **learnability** for these users.

**Hearing Impairments:**

* Two types of impairments are Conductive and Sensorineural.

1. Conductive: This is caused when there is a problem conductive sound waves anywhere along the route through the outer ear, tympanic membrane (eardrum), or middle ear.
2. Sensorineural: This is usually permanent and is caused by excessive noise and aging.

* Should not use audio only to convey information. Should use text where possible.
* The number of people with hearing impairments is on the rise.

**Physical Impairment:**

* Affects a person’s ability to move.
* Two types of impairments that effect interactivity: musculoskeletal disorders and movement disorders.

1. Musculoskeletal disorder: Arises from loss, injury, or disease in the muscle or skeletal system such as losing all or part of a hand or arm.
2. Movement disorder: Arises from the damage of the nervous system or neuromuscular system such as Parkinson’s disease which causes slowness of movement.

* Physical impairments are widespread.

**Situational Impairment:**

* This is not impairment of the directly user, but impairment caused due to the surrounding environment and situation. For example an individual’s typing performance can be affected if they are in a cold environment.

**Combinatorial Impairment:**

* Combinatorial impairments comprises of any of the combinations of impairments aforementioned.
* Combinatorial impairments effect older users more than younger ones.
* Ageing is not a proxy term for combinatorial disability.
* A barrier could be lack of experience and knowledge for older people rather than combinatorial disabilities.

**Illiteracy:**

* 20% of the world’s population is illiterate.
* Add images and sound and make the interface as flexible as possible.

**Computer use in developing regions:**