



# Embedded Ethics: CSC207

## Prelecture video 2

One set of users whose needs may differ from the average user are those with disabilities.

The WHO estimates that 15% of users have disabilities





## Examples of **disabilities**:

Paraplegia (paralysis of lower limbs)  
Deafness  
Blindness  
Mental illness  
Speech impairment

# What do disabilities have in **common** with each other?

Wasserman et al 2006: a disability is a physical or mental impairment that is associated with a personal or social limitation on the activities one can perform.

Physical or  
mental  
impairment

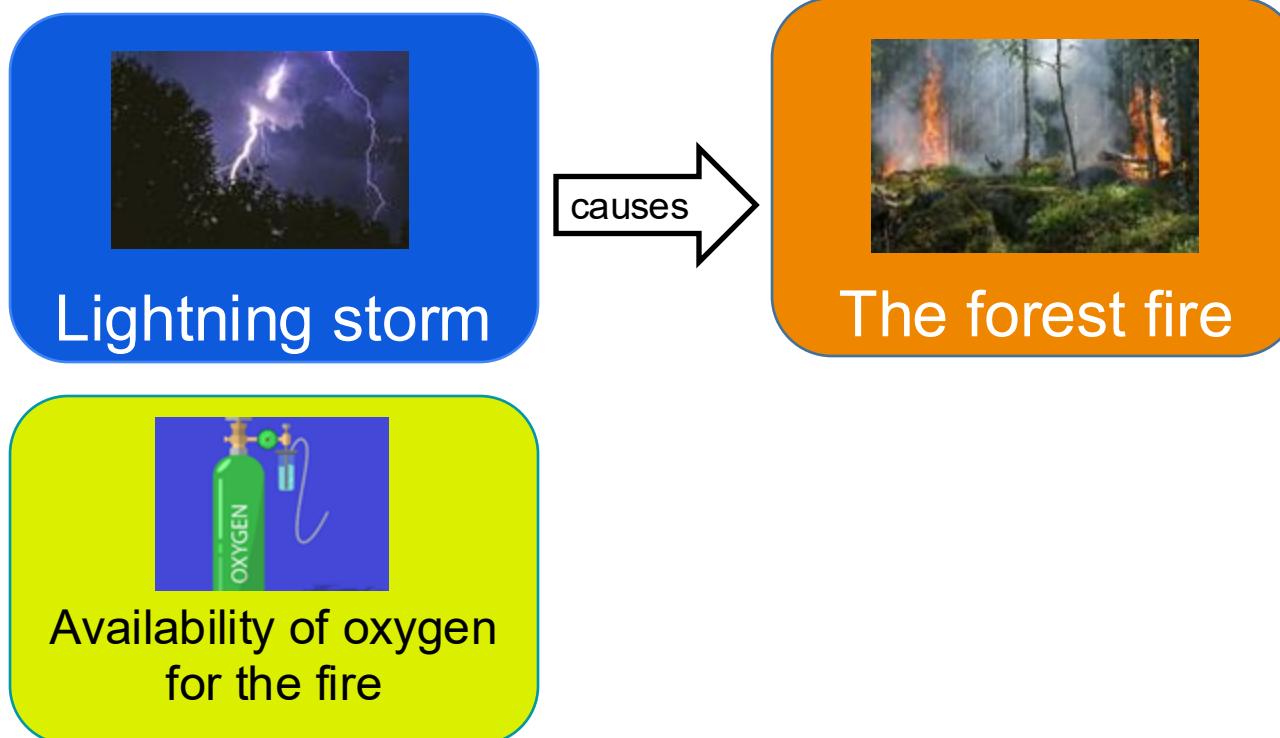
e.g. paraplegia

Personal / social  
limitation

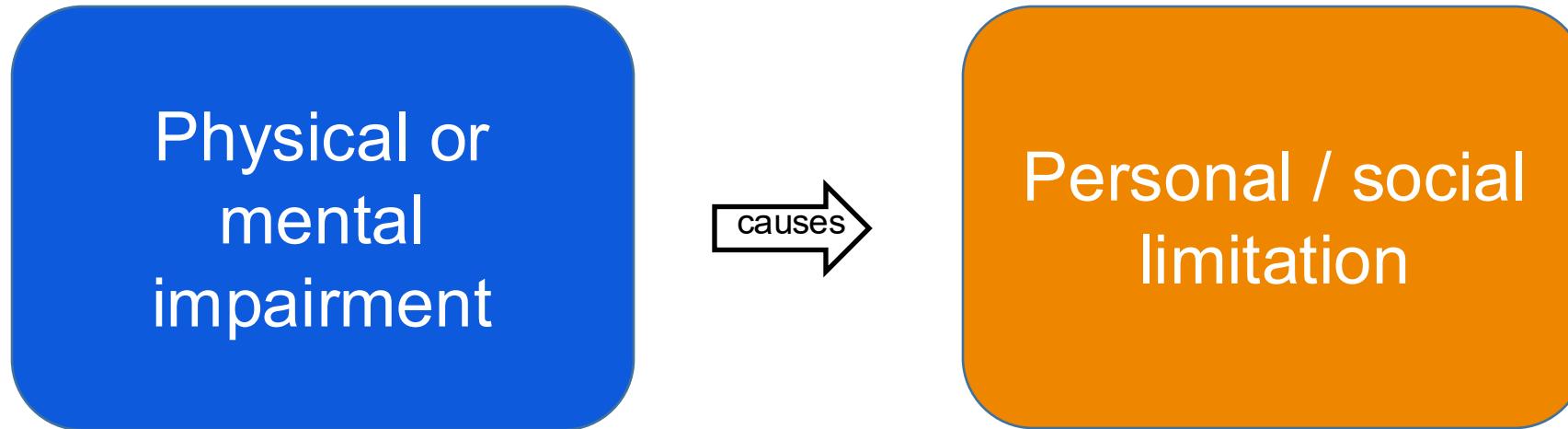
e.g. not being able to  
access public spaces

Normally we think of the “**cause**” of an event as another specific event that occurred before it.

Other factors are simply “**background conditions**” - required for the event to happen, but not part of the “cause”

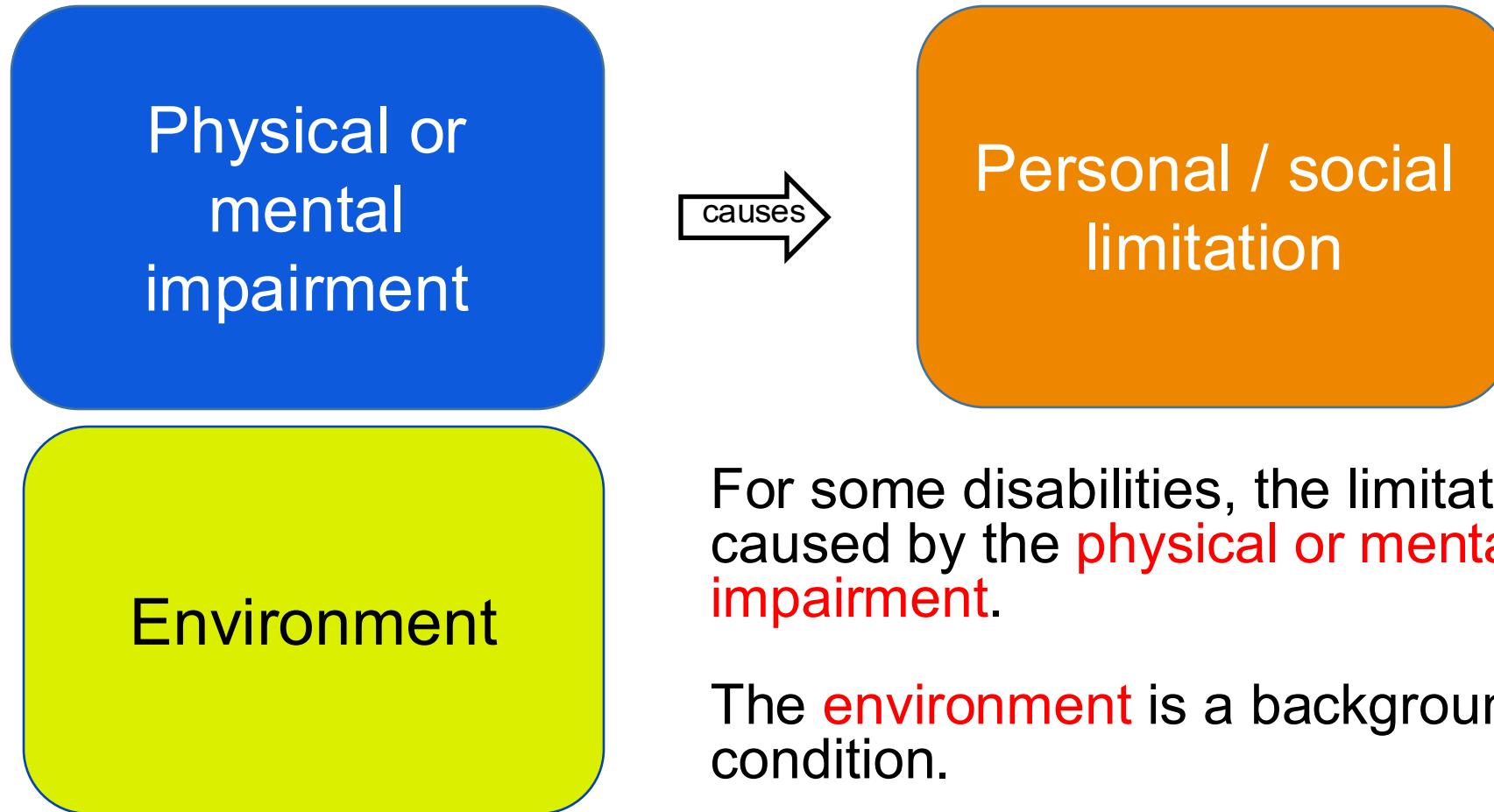


# The **Medical Model** of Disability

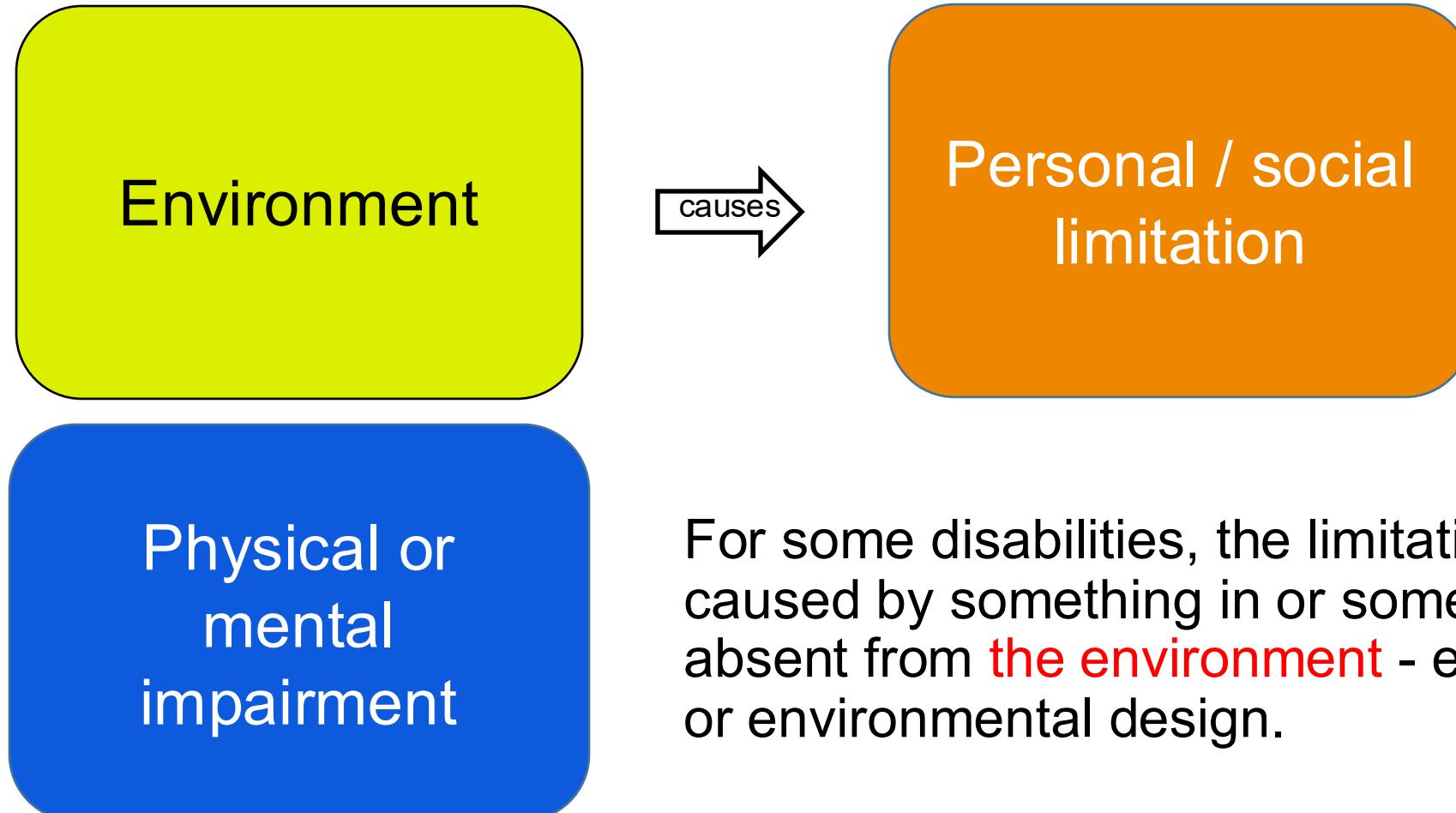


For some disabilities, the limitations are caused by the **physical or mental impairment**.

# The Medical Model of Disability



# The Social Model of Disability



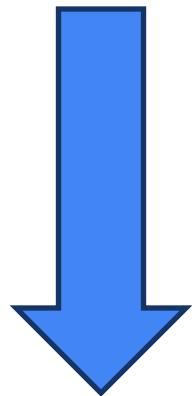
“Hearing people assume that the Deaf live in a perpetual state of wanting to hear, because they can't imagine any other way. But I've never once wished to be hearing. I just wanted to be part of a community like me.”

Rebecca Krill, “How Technology has Changed What it's Like to be Deaf” ([TED Talk](#))



It would be easier/better to reduce the impairment (if we could).

The impairment causes the limitation in a wide variety of environments.

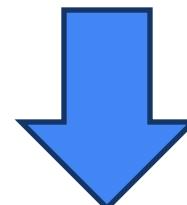


Medical Model

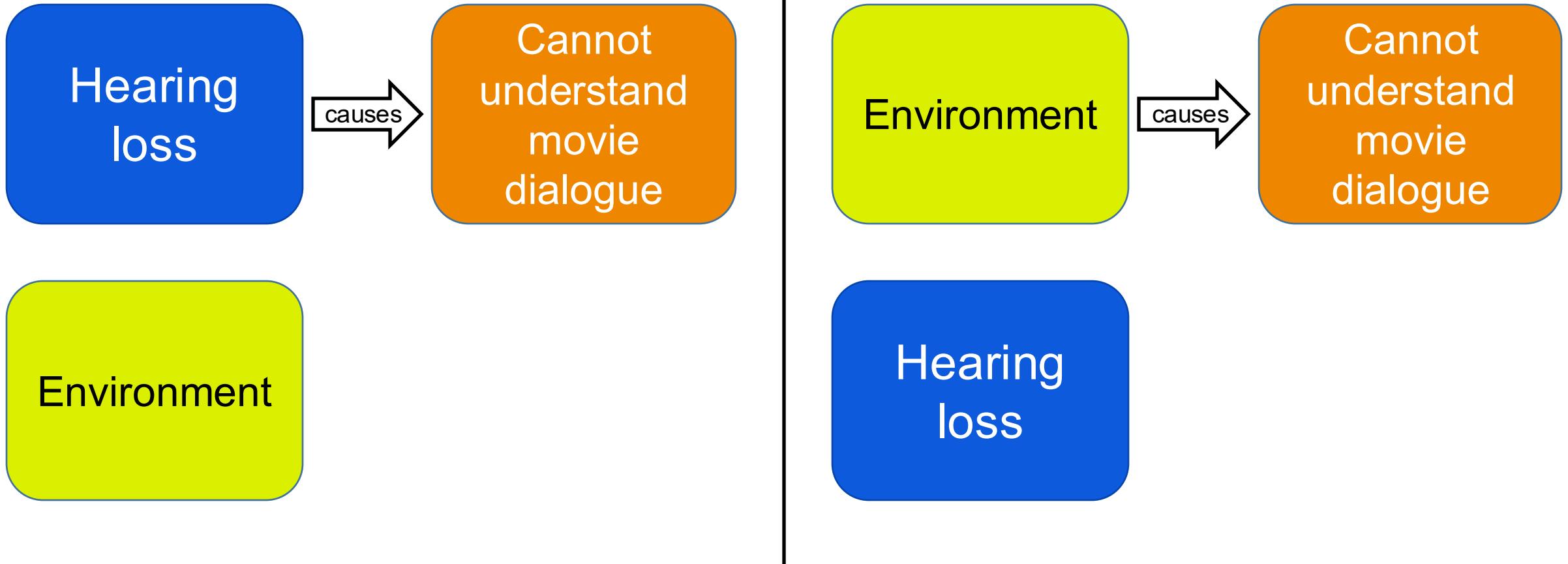
It would be easier/better to change the environment (if we could).

The impairment causes the limitation in a smaller variety of environments.

The limitation only arises because of assumptions about what is "normal".

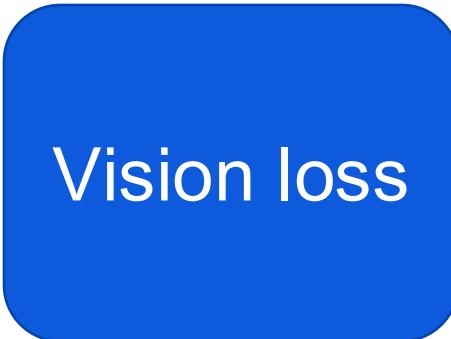
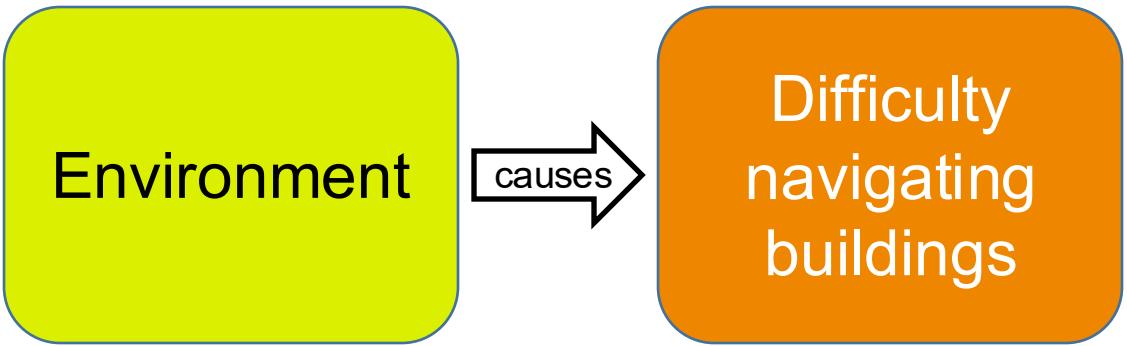
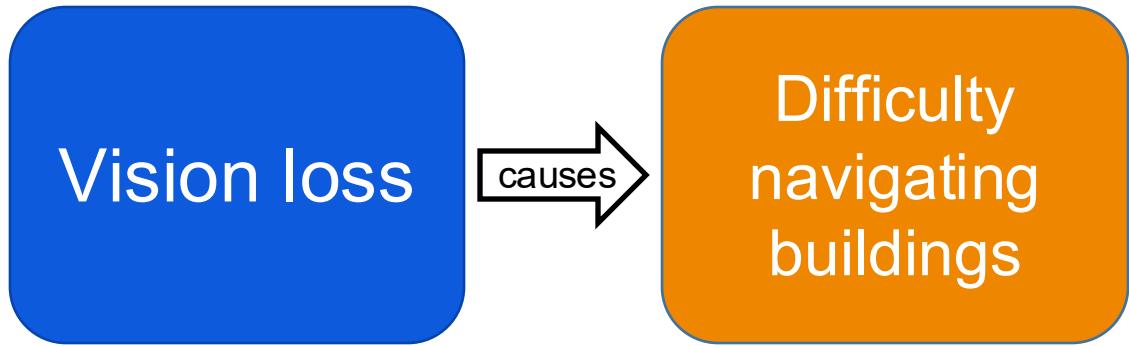


Social Model



Impairment: Hearing loss

Limitation: A person cannot understand movie dialogue



Impairment: Vision loss

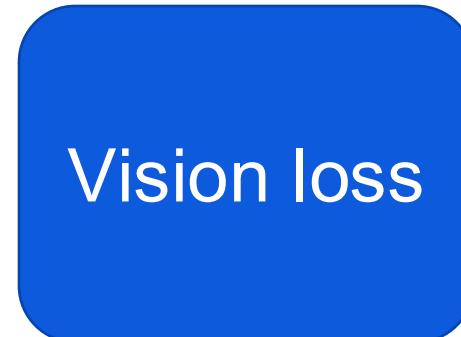
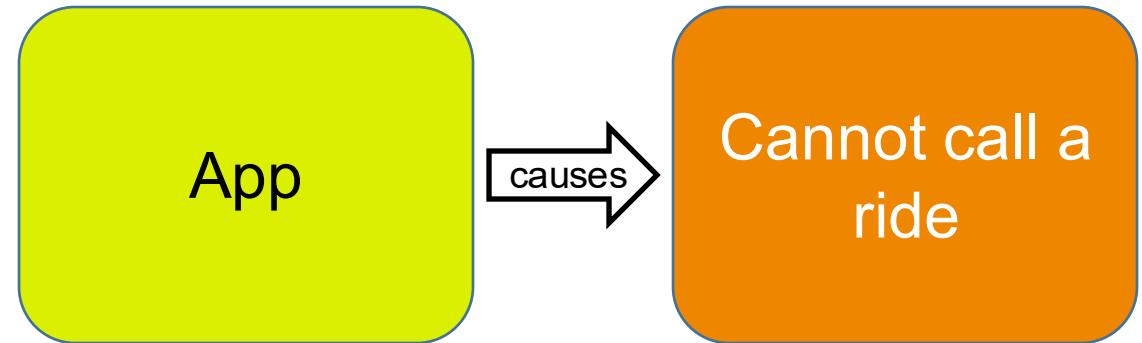
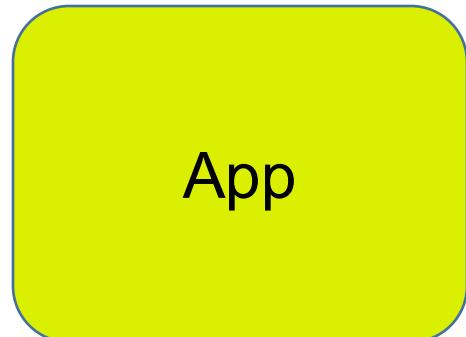
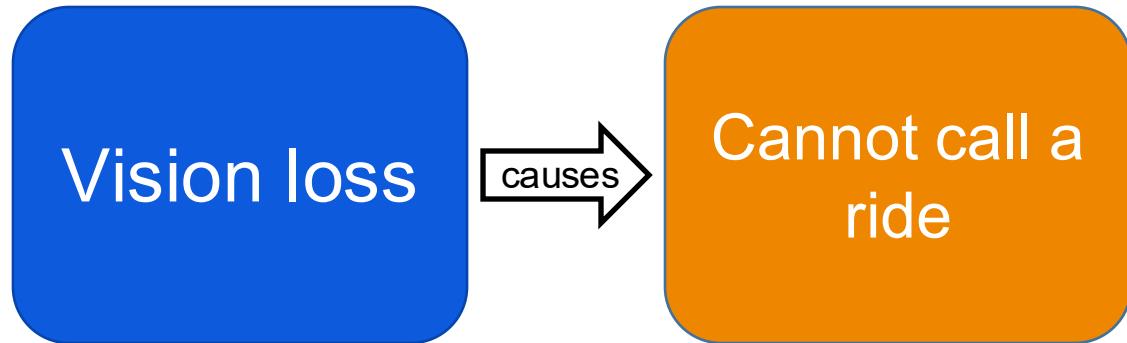
Limitation: A person cannot easily navigate buildings



Software is part of the environment.

When someone experiences limitation and software is part of their environment, we can ask:

Is it the impairment or the software that causes the limitation?



Impairment: Vision loss

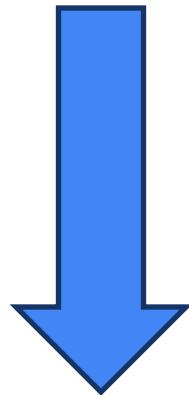
Limitation: A person cannot call a ride using a phone app

Software can also be one of the ways of reducing an impairment or making changes to the environment.



It would be easier/better to reduce the impairment (if we could).

The impairment causes the limitation in a wide variety of environments.

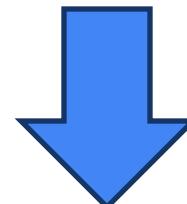


Medical Model

It would be easier/better to change the environment (if we could).

The impairment causes the limitation in a smaller variety of environments.

The limitation only arises because of assumptions about what is "normal".



Social Model



## Medical model: intervention reduces the impairment

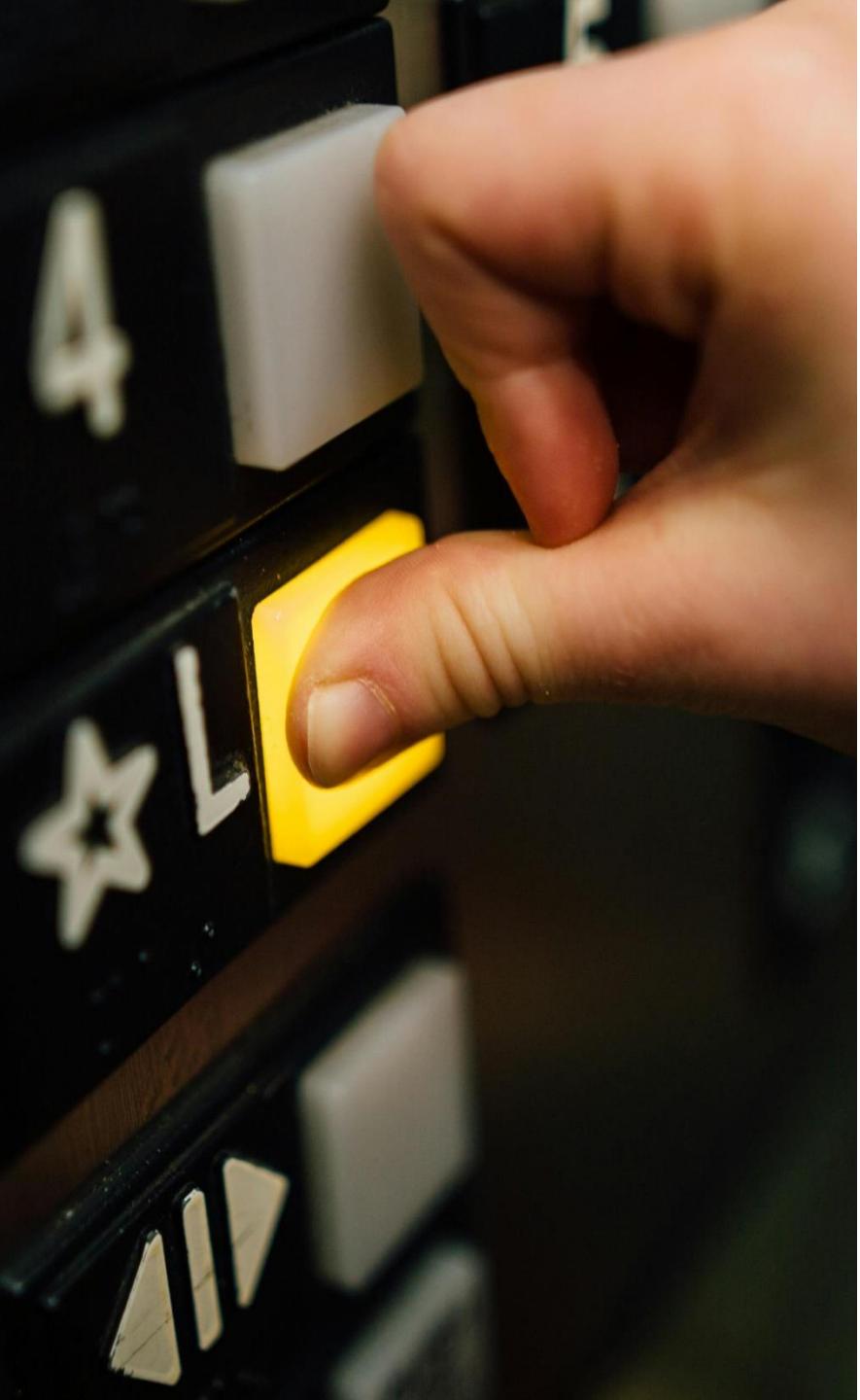
- “closer” to the impairment
- Can work for one person without working for everyone
- Person with impairment must do something to “install” or “trigger”
- Designed with a particular impairment in mind



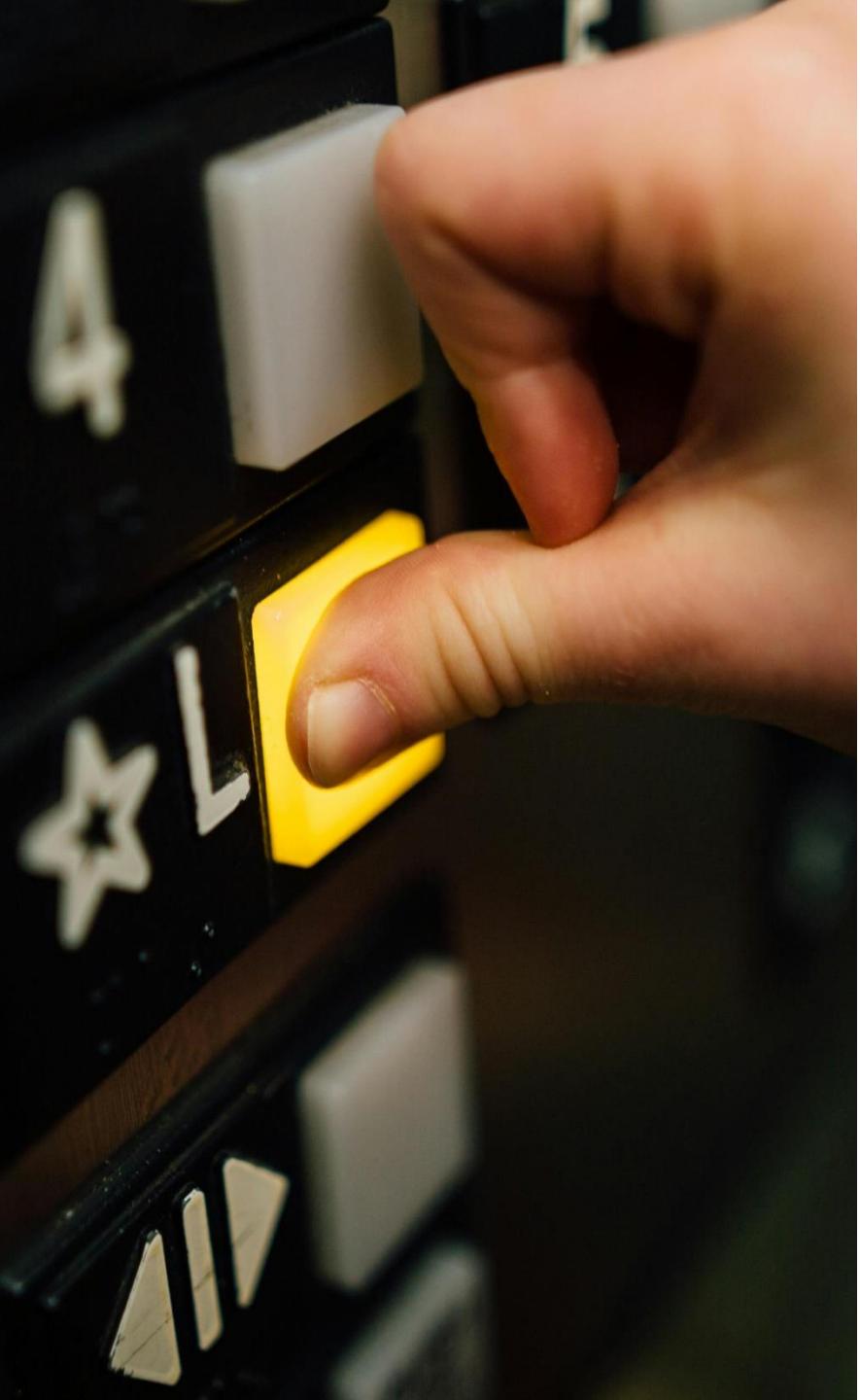
“Well, I was born with a rare visual condition called achromatopsia, which is total color blindness, so I've never seen color, and I don't know what color looks like, because I come from a grayscale world...

...But, since the age of 21, instead of seeing color, I can hear color... it's a color sensor that detects the color frequency in front of me — (Frequency sounds) — and sends this frequency to a chip installed at the back of my head, and I hear the color in front of me through the bone, through bone conduction.”

Neil Harbisson, “I Listen to Color”  
(TED Talk)



Social model:  
intervention prevents impairment  
from causing limitations



## Social model: intervention prevents impairment from causing limitations

- “further” from the impairment
- Applies to everyone; cannot apply to just one person
- Requires little work for the person with impairment to “install” or “trigger”
- May be designed with a particular impairment in mind or none in particular in mind



For example – making apps accessible to the visually impaired by building screen reading options into them.