Design XR Tools with Disability Inclusion in Mind

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Introductions

Ashley Coffey (she/her)

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(Wheelhouse Group)
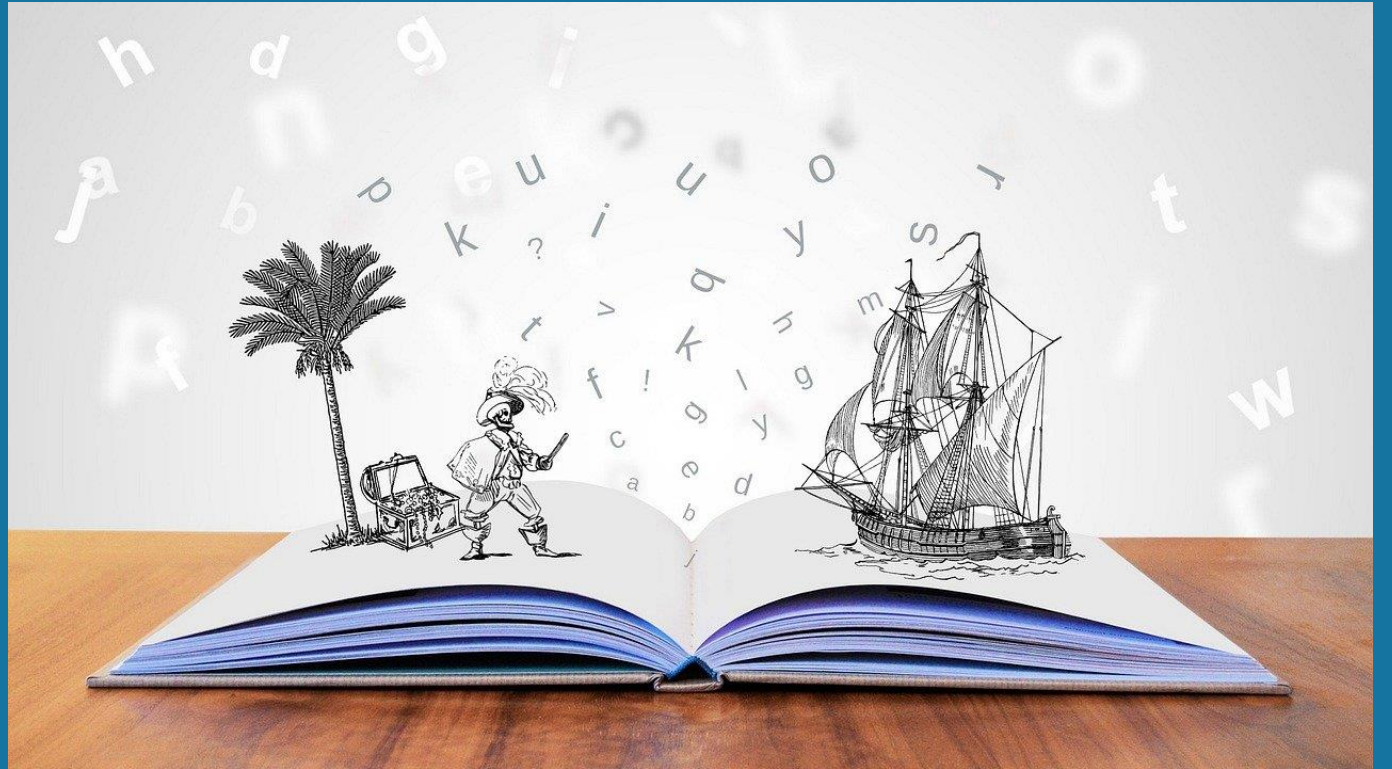PEATworks.org

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Meryl Evans (she/her)

Director of Marketing
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EqualEntry.com

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Storytime!

Image Credit: Pixabay

Topics We Will Explore

- How immersive technologies reshape work

- Examples of accessible XR

- Strategies to design XR tools for all

- Benefits of inclusively designed XR

- Q&A discussion

# Immersive Technologies Are Reshaping How We Work

2020: A Year of Rapid Change

- Digitization accelerated rapidly

- EEOC published legal guidance

- C-Suite level recognition

- Telework has normalized

New Collaboration Challenges

- Microsoft study: shift to remote work created new challenges:
  - Siloed collaboration
  - Decreased synchronous communication
  - Harder to acquire and share information
- Immersive tech can solve these challenges
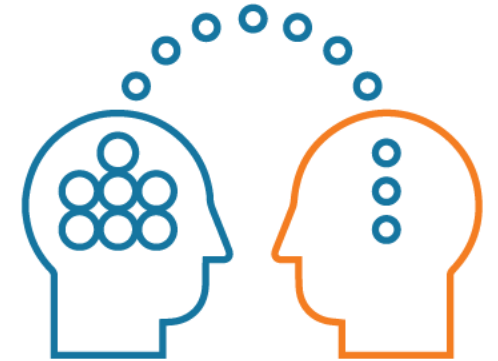
Reference: Yang, L., Holtz, D., Jaffe, S. *et al.* The effects of remote work on collaboration among information workers. *Nat Hum Behav* (2021). https://doi.org/10.1038/s41562-021-01196-4

What is Immersive Technology?

- eXtended reality (XR)

- Integrates virtual with physical world

- User accepts virtual elements of their environment as part of the whole
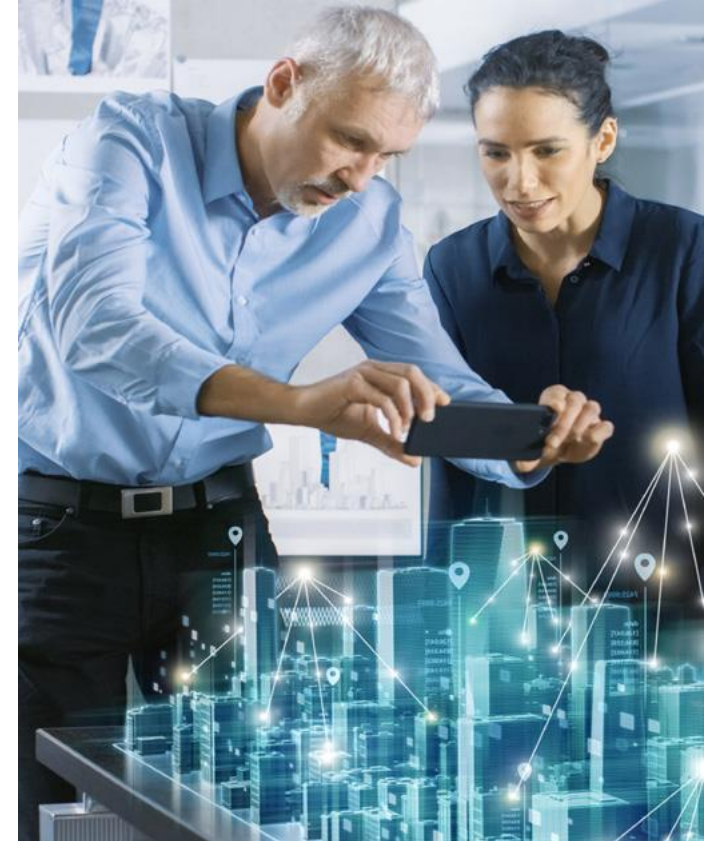
Defining XR (eXtended Reality)

Virtual Reality (VR)

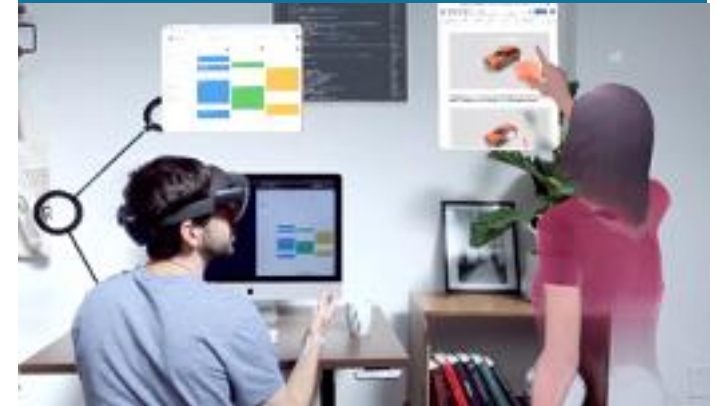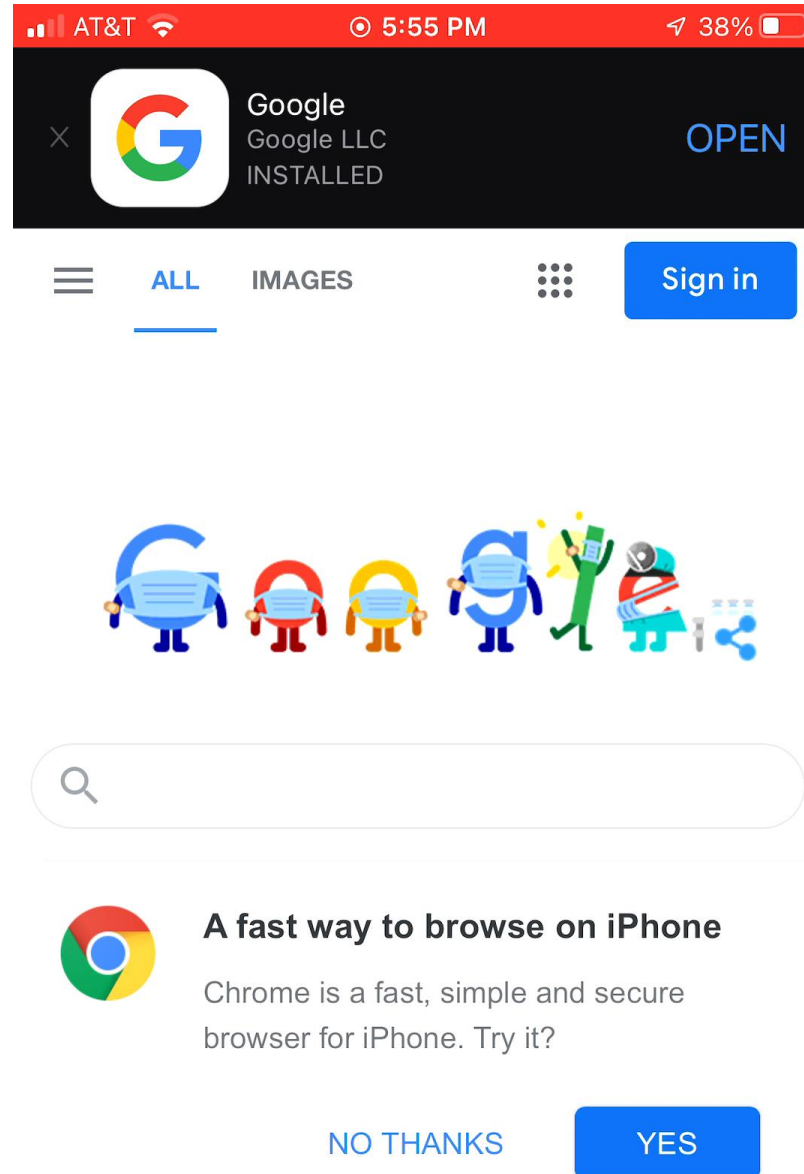Augmented Reality (AR)

Mixed Reality (MR)

Photo credits: Glue (Virtual Reality), Global Foundries / PTC (Augmented Reality), Spatial.io (Mixed Reality)

Example 1: Virtual Reality

Example 2: Augmented Reality

Example 3: Mixed Reality

Image Credits: Spatial.io, Microsoft Hololens 2 & Dynamics 365

Inclusive Design

Curb-Cut Effect of Inclusive Tech

Dimensions of Inclusive Design

- **Recognize diversity and uniqueness**
  - Offer choice/flexibility

- **Inclusive process and tools**
  - Include diverse perspectives / people with lived experiences, collaborate in an inclusive way

- **Broader beneficial impact**
  - Leverage "curb-cut effects," broader value for the technology

Inclusive Design for All Employees

- Remove or reduce background details and audio.

- Provide an undo or redo function and/or a confirmation of action.

- Let users reduce the speed

Inclusive Design for Employees Who Are Blind or Low Vision

- Use text-to-speech (TTS)
- Contains audio-based interfaces
- Magnify or reduce objects and text
- Change text colors
- Change brightness levels
- Use shapes or symbols with color

Inclusive Design for Employees Who are Deaf or Hard of Hearing

- Provide captions / subtitles

- Use indicators to identify audio direction

- Provide sign language interpretation

- Allow switch from stereo to mono audio

- Provide two communication options
  - Example: Chat Box
  - Example: Sticky notes

Inclusive Design for Employees with Mobility Disabilities

- Allow use of alternate controllers or sensors
- Allow seating, reclining, and stationary options
- Allow control remapping

Inclusive Design for Neurodivergent Employees

- Allow changing of content displays
- Allow experimenting with interface and controls
  - Example: Limit noise
  - Example: Reduce motion
  - Example: Shorter text
- Use plain language in all content

Bringing it All Together

7 Areas That Benefit from Inclusive XR

1. Job training

2. Knowledge capture

3. Information retention

4. Job site familiarity

5. Enhanced accessibility and inclusion

6. Customized interaction

7. Remote assist and collaboration

Practice Intentional Inclusion

- Hire people with disabilities (PwD)
- Regular feedback from PwD customers
- Procurement
- Software / hardware
- Deployment / implementation

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Q&A Discussion

Designing XR Tools with Disability Inclusion in Mind

Resources

Designing XR Tools with Disability Inclusion in Mind

List of Resources

- The XR Access Initiative Website

- Chapter 3 of the XR Association Developers Guide

- PEAT's Podcast Episode, "Value of VR for Training and Employee Development"

- Equal Entry AR / XR / XR articles

- A11yVR Meetup

The content for this session is based on a white paper, *Inclusive XR in the Workplace* co-authored by PEAT and the XR Association. Learn more at **PEATworks.org/** and **XRA.org/**

Thank You!

Designing XR Tools with Disability Inclusion in Mind