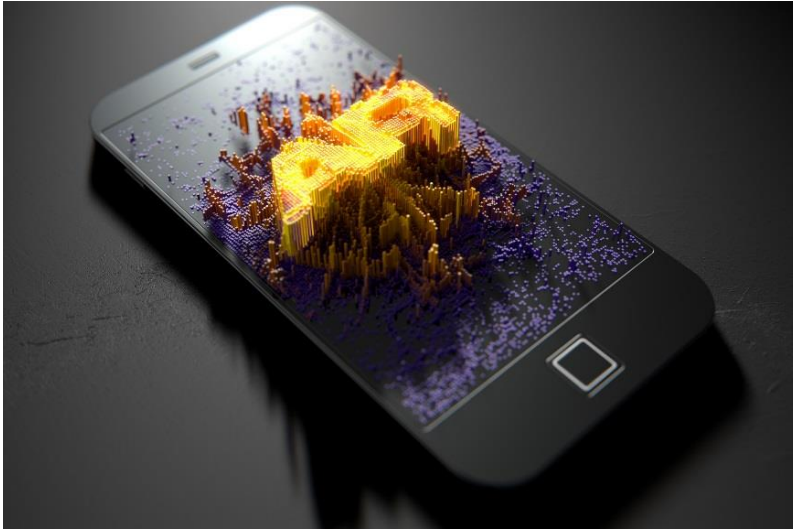# Is This Real Life?
Augmented & Virtual Reality in Your Library

Eric Schwab, Manager
Toronto Public Library, Digitization & Preservation

Ted Belke, Services Specialist
Toronto Public Library, Service Innovation

Friday, February 2, 2018

Augmented Reality (AR)
- A Brief History of AR
- AR Apps
- Implementation at TPL
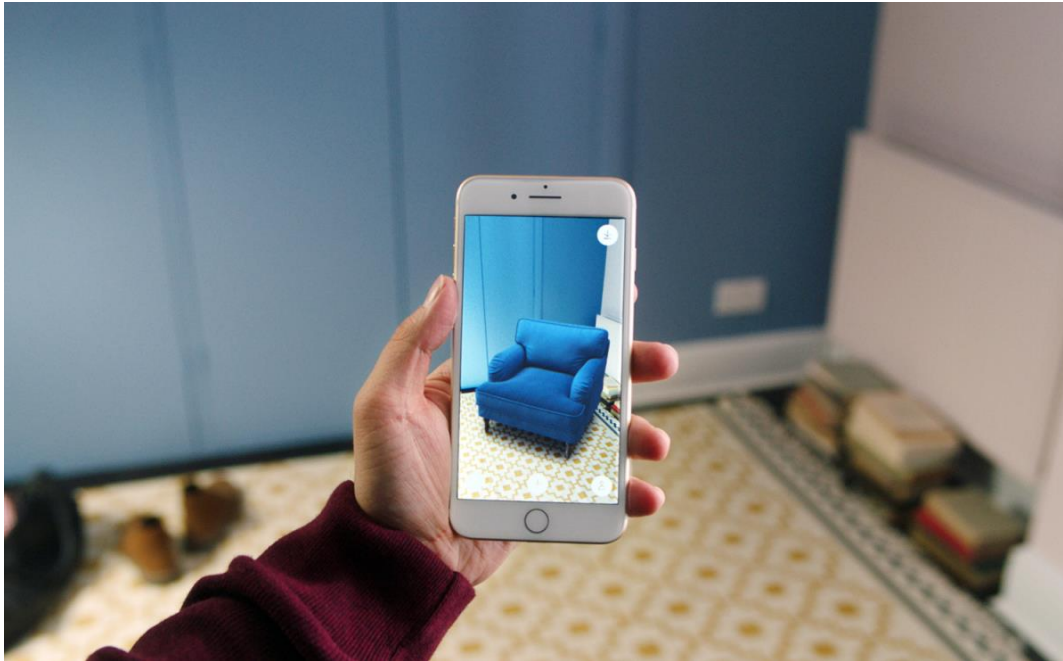- Challenges & Issues

Virtual Reality (VR)
- A Brief History of VR
- VR Equipment
- Implementation at TPL
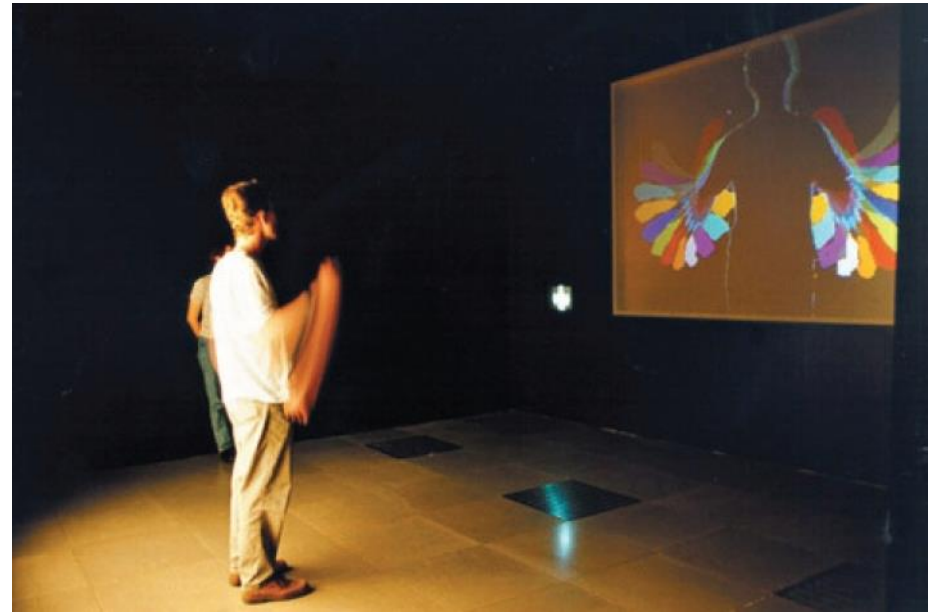- Challenges & Issues

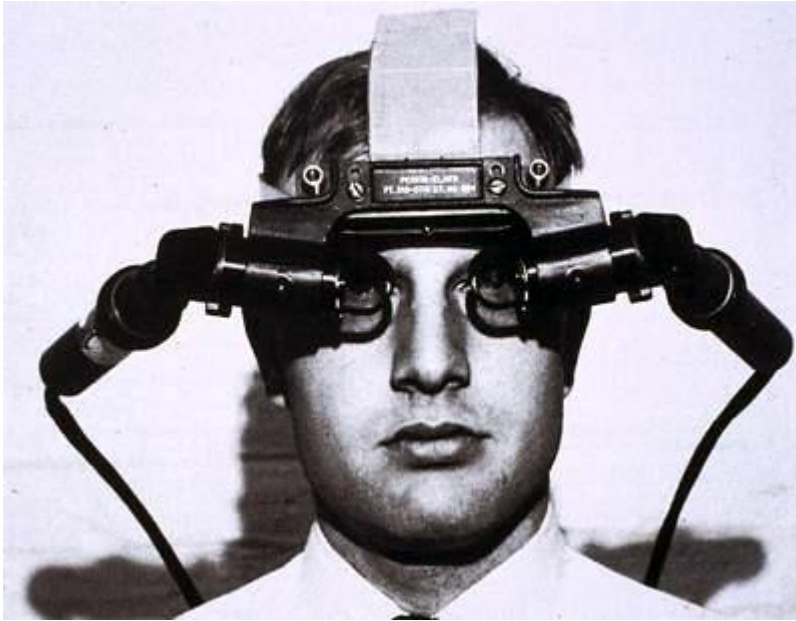- Questions & Discussion

Augmented Reality

Eric Schwab

- What is Augmented Reality?

Augmented Reality

Eric Schwab

- 1968: Ivan Sutherland
- 1974: Myron Krueger's Videoplace

Eric Schwab

Louis Rosenberg, 1992
(developing early AR)
USAF

- 1990: Tom Caudell at Boeing
- 1992: Virtual fixtures

- 1998: Sportsvision
- 2000: ARToolKit

Augmented Reality

Eric Schwab

- 2009: Esquire Magazine
- 2013: Volkswagen's MARTA app

Augmented Reality

Eric Schwab

- 2013: Google Glass
- 2016: AR and VR investment reaches $1.1 billion

Eric Schwab

- AR Apps

Eric Schwab

- TD Gallery at Toronto Reference Library

Augmented Reality

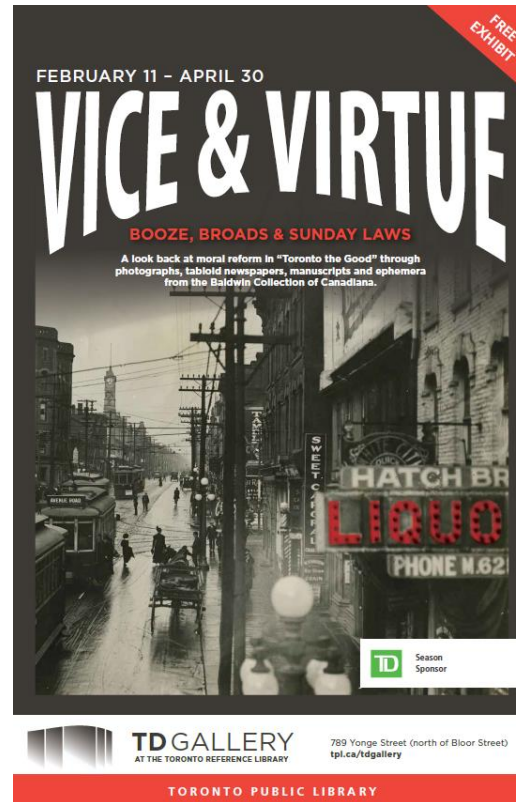## Eric Schwab

TD Gallery
at the Toronto Reference Library

AURASMA

- TD Gallery at Toronto Reference Library
- Aurasma AR app

Eric Schwab

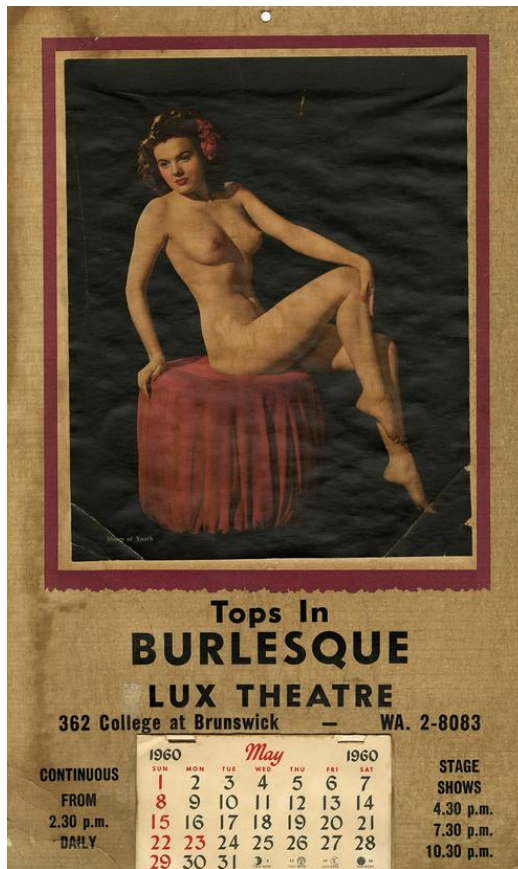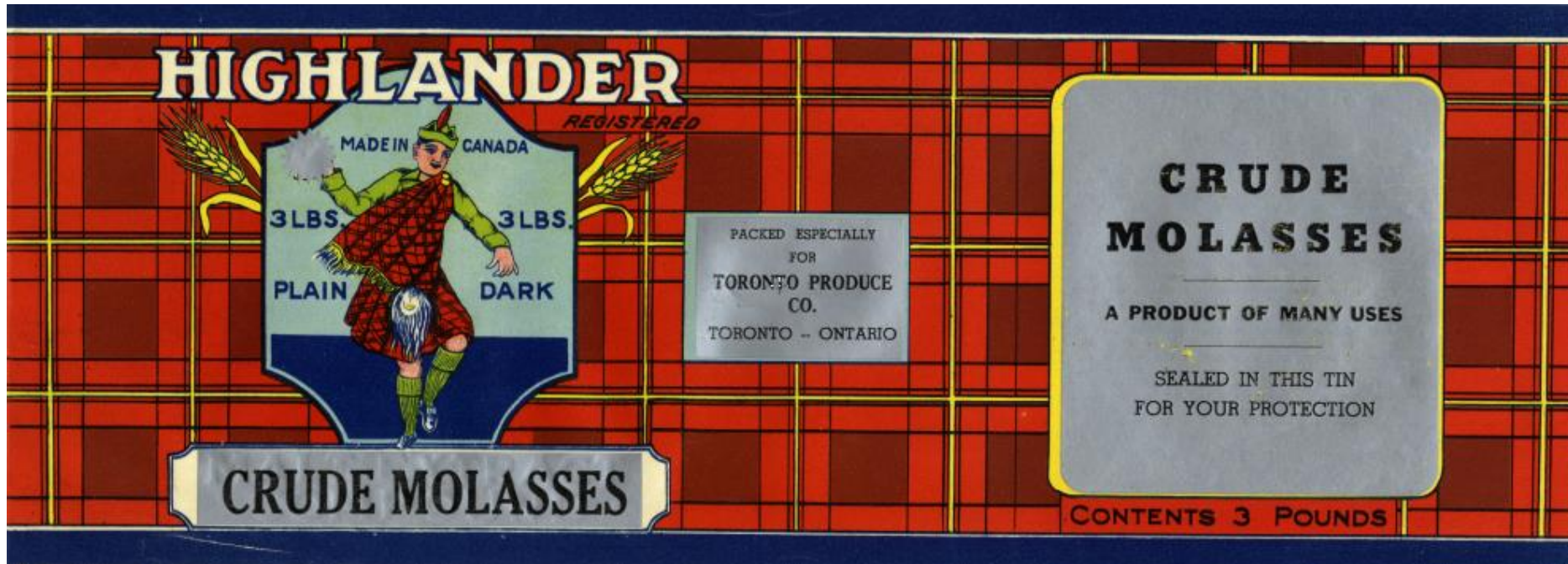- Vice & Virtue: Booze, Broads & Sunday Laws

Eric Schwab

- Vice & Virtue: Booze, Broads & Sunday Laws

Augmented Reality

Eric Schwab

- Vice & Virtue: Booze, Broads & Sunday Laws

Augmented Reality

Eric Schwab

- Destination Canada

Eric Schwab

- Other possible library uses for AR

Augmented Reality

Eric Schwab

- Other possible library uses for AR

Eric Schwab

- Other possible library uses for AR
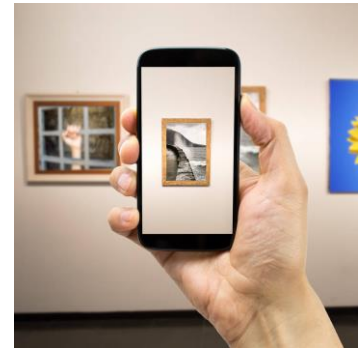
Augmented Reality

Eric Schwab

- Broad Challenges & Issues
  - There must be expertise and resources to produce AR content; developers, programmers
  - Currently no interoperability between different AR apps
  - For most of the free AR apps, customers must follow your channel in order to access your content. This is after they have already committed to downloading the app to their device
  - Customers must be educated about AR's capabilities, which involves staff, time and resources
  - Using AR apps in the long term is not guaranteed. Content is hosted on platforms that may change or disappear
  - AR companies are currently providing a lot of space for your content because the technology is so new on smart phones but this may disappear once AR apps become more commonly used

Augmented Reality

Eric Schwab

- Specific Challenges & Issues in TD Gallery
  - Convincing patrons to download an AR app within the gallery space proved challenging
  - Clear instructions must be provided. If the patron is unsuccessful in downloading and operating the app, they will lose interest immediately
  - Promotion of the app and the downloading of the app needs to be part of the overall layout and design of the exhibition which requires months of planning
  - A reliable wireless network within the space is critical
  - In late 2017, Aurasma was replaced with a new AR app called HP Reveal. Think of the design implications of this with regards to promoting an app that has changed its name and graphic identity
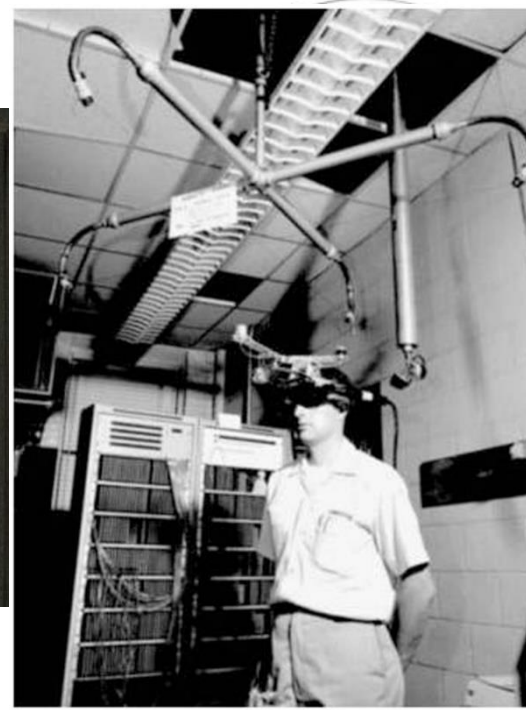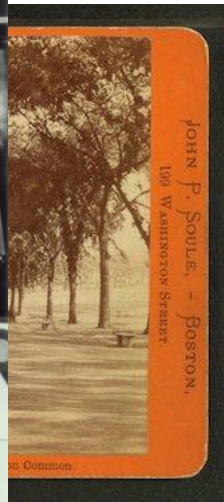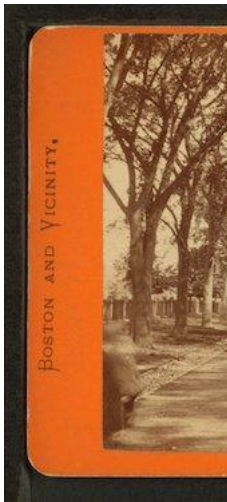
Virtual Reality

Ted Belke

- What is Virtual Reality?

1950's & 60's

1830's

- Morton Heilig – Sensorama and Telesphere Mask
- Charles Wheatstone – Stereoscope Photos
- Ivan Sutherland – The Ultimate Display and Sword of Damocles
- View-Master

A Brief History of Virtual Reality

- 1980's & 90's – Jaron Lanier – coined "Virtual Reality" term, Pop culture and video games
- 2010's – Cardboard, Phone driven, Computer driven

Types of VR Hardware

Phone Driven

- Google Cardboard
- Samsung Gear VR
- Google Daydream

Types of VR Hardware

Computer Driven

- Oculus Rift
- HTC Vive
- Playstation VR
- Windows MR

Standalone Headset

Coming soon
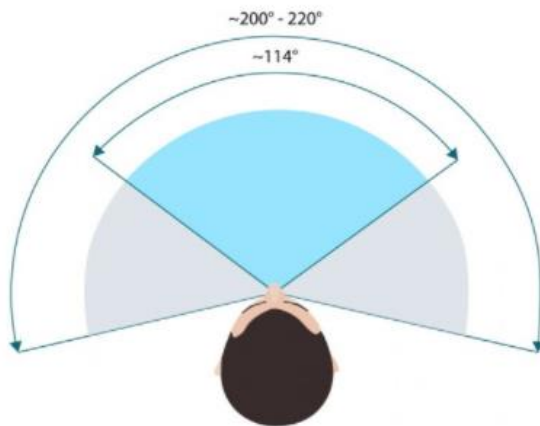- Oculus Go
- Lenovo Mirage (Daydream)

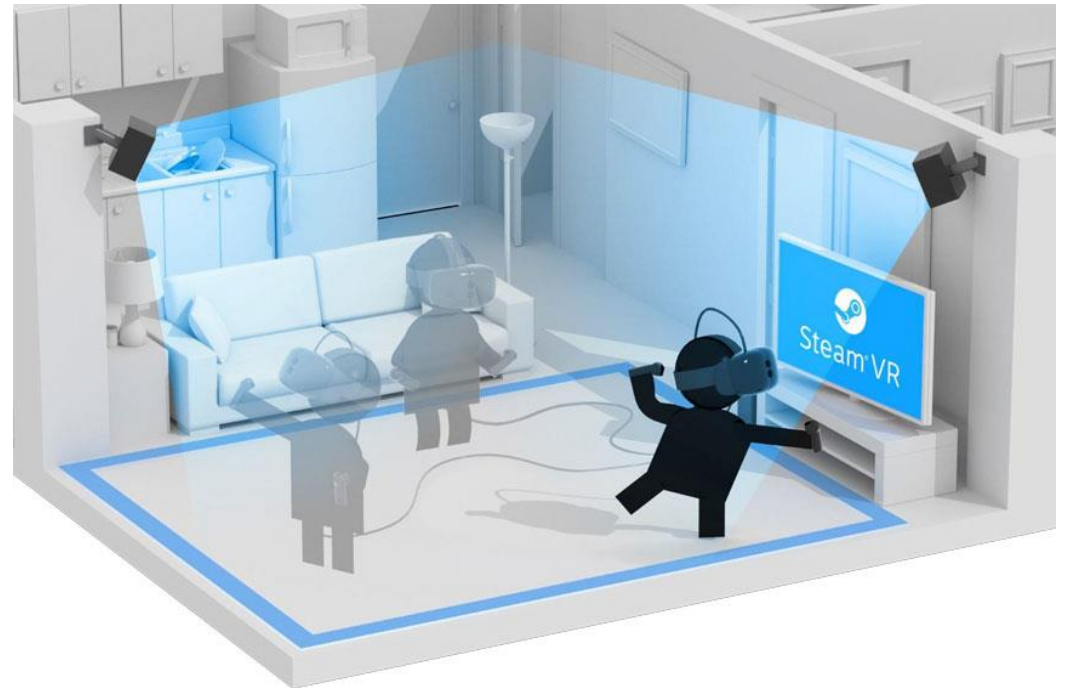## Head Mounted Display & Room Scale

~200° - 220°

~114°

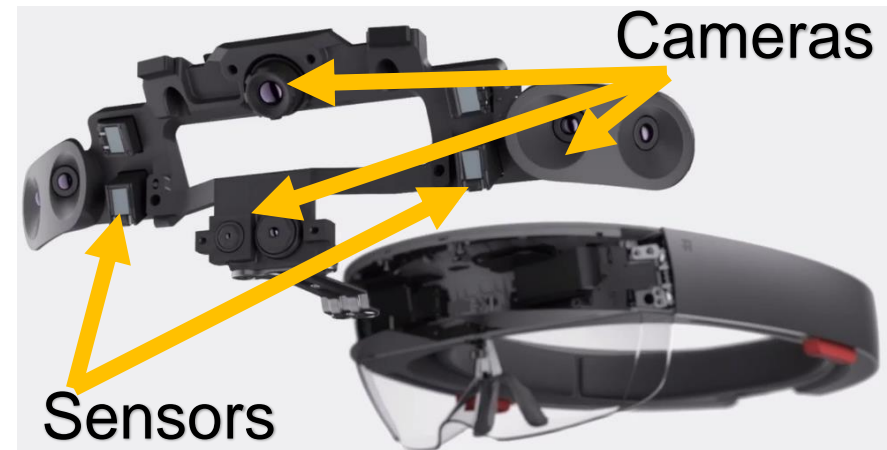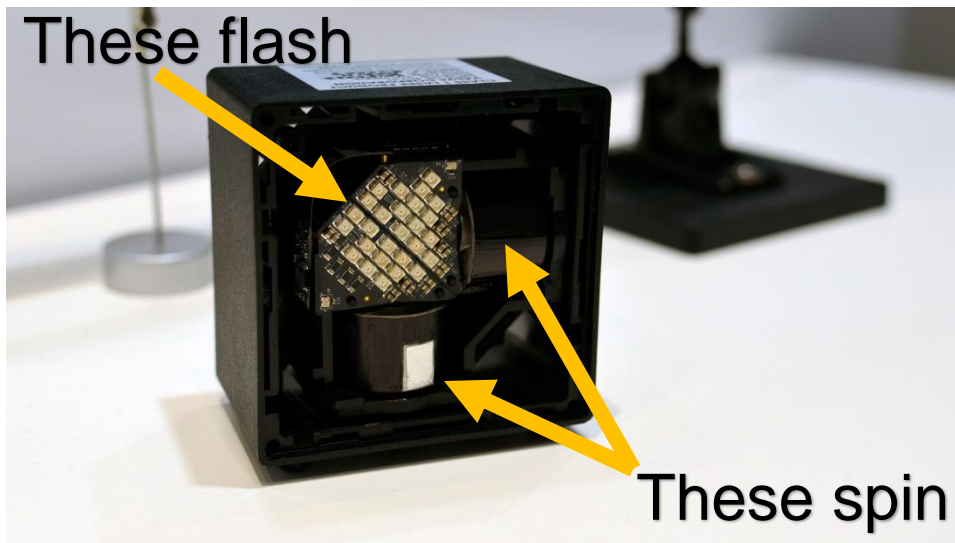Monocular Field of View

Binocular Field of View

Movement Tracking

Types of tracking
- Outside-in (HTC Vive beacons)
- Inside-out (Hololens cameras & sensors)

These flash

These spin

Cameras

Sensors

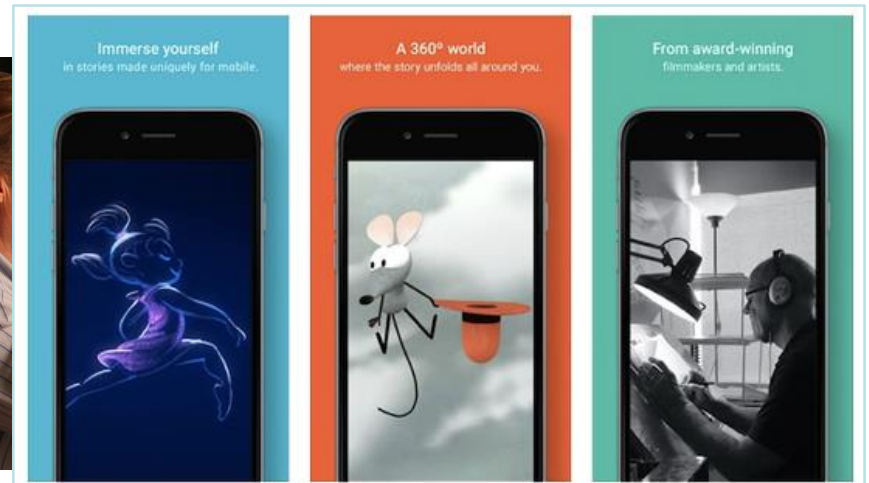# Virtual Reality in the Real World

Training
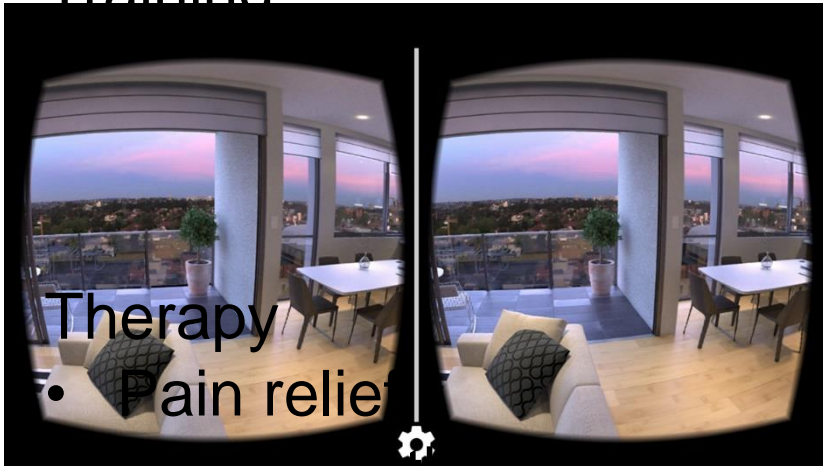
Therapy
- Pain relief
- Exposure therapy

Demonstration
- Real estate & architecture

Storytelling
- Journalism
- Film-making – documentaries
- Gaming and entertainment

Immerse yourself in stories made uniquely for mobile.

A 360° world where the story unfolds all around you.

From award-winning filmmakers and artists.

Virtual Reality in the Real World

And of course, porn.

Augmented, Virtual, & Mixed Reality

A convergence

- VR: Computer generated environment
- AR: Computer generated elements superimposed over the real world
- MR: Mixing VR with the real world
- Magic Leap
- What's next?

Tips: what we've learned

- Plan ahead
- VR Working Group
  - Staff reps from various positions
  - Staff training
- Partnerships
  - Reeworld Film Festival
  - VRARA Meetups
- Take advantage of funding opportunities
  - OLCF

VR at Toronto Public Library

- Innovator in Residence – Elli Raynai
- Demonstrations
- VR Experience – booked sessions during set time
- Youth Hubs – gaming
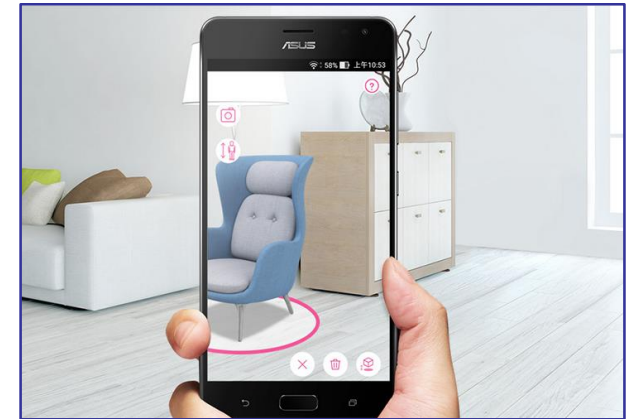- Events, Outreach, and Library Fundraisers

Mixed Reality exhibit created by TPL staff for the Maker Festival, July 2017
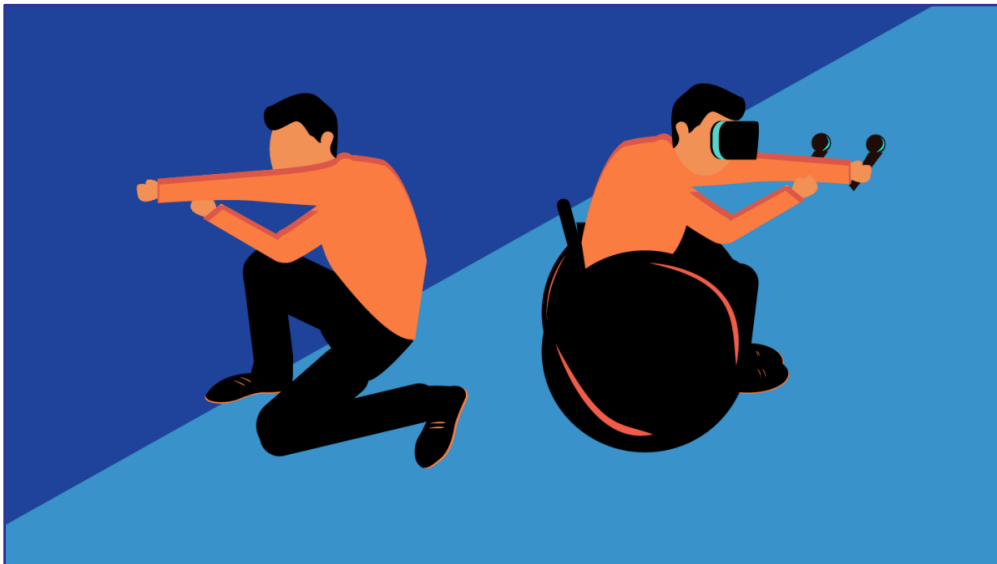
VR at Toronto Public Library

Our focus for 2018

- Content creation workshops
  - Intro to VR Game design
  - Web VR & 360 Photo/Video
- Bookable VR equipment in DIHs
- Augmented Reality

- Age limits and long term effects
- Motion sickness
- Accessibility

Challenges with VR in Libraries

I think I'm alone now.

- VR is a solitary experience
- Space requirements
- Staff expertise
- Cost
- Why VR in the library?

Questions & Discussion

Contact Information:

Eric Schwab, Manager – Digitization & Preservation
eschwab@torontopubliclibrary.ca
416-393-7128

Ted Belke, Services Specialist – Service Innovation
tbelke@torontopubliclibrary.ca
416-393-7244