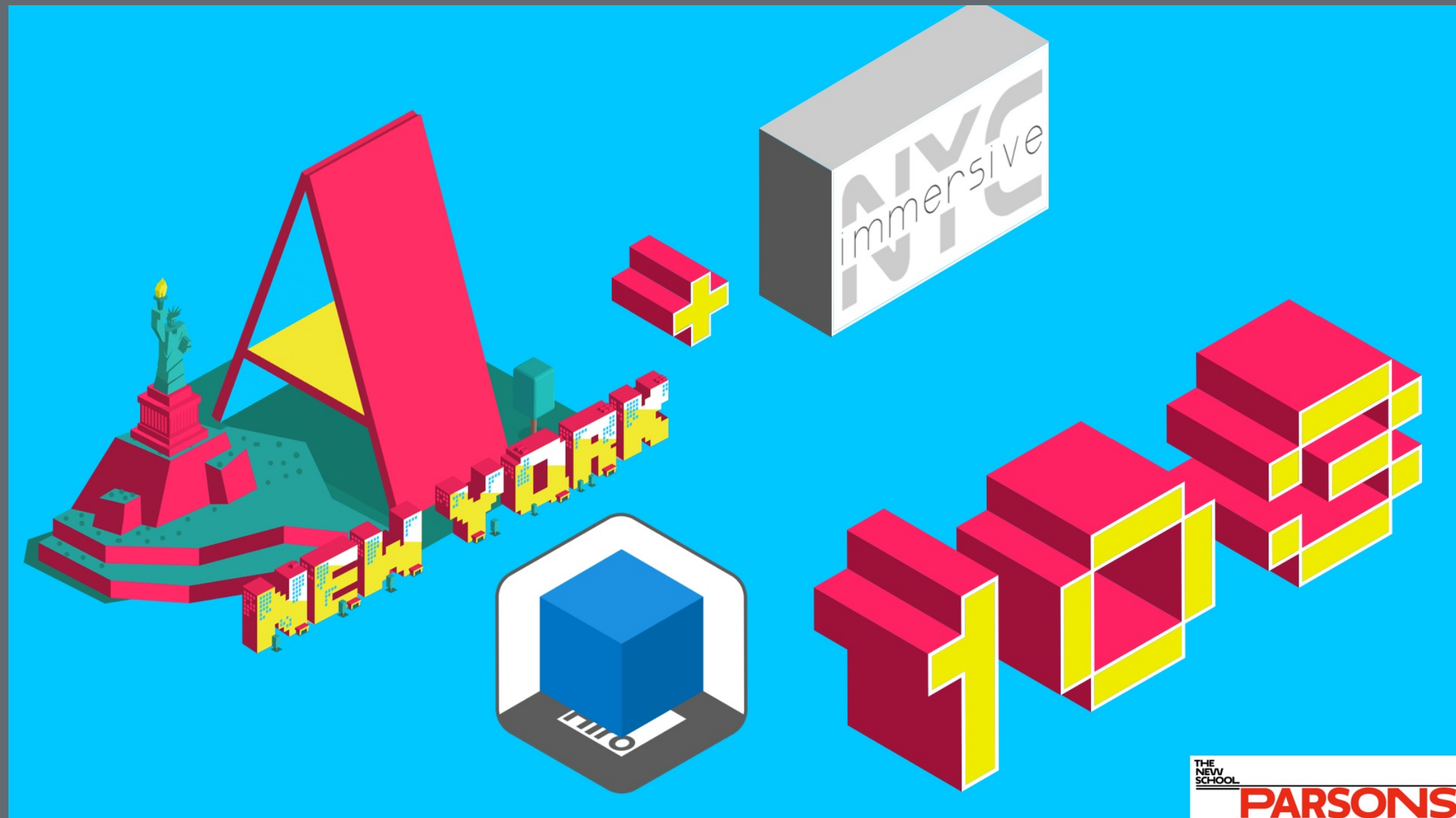# Welcome to A-Frame NYC

Todays Workshop Project: Demo 10 A-Frame Propelify AR (AR.js)
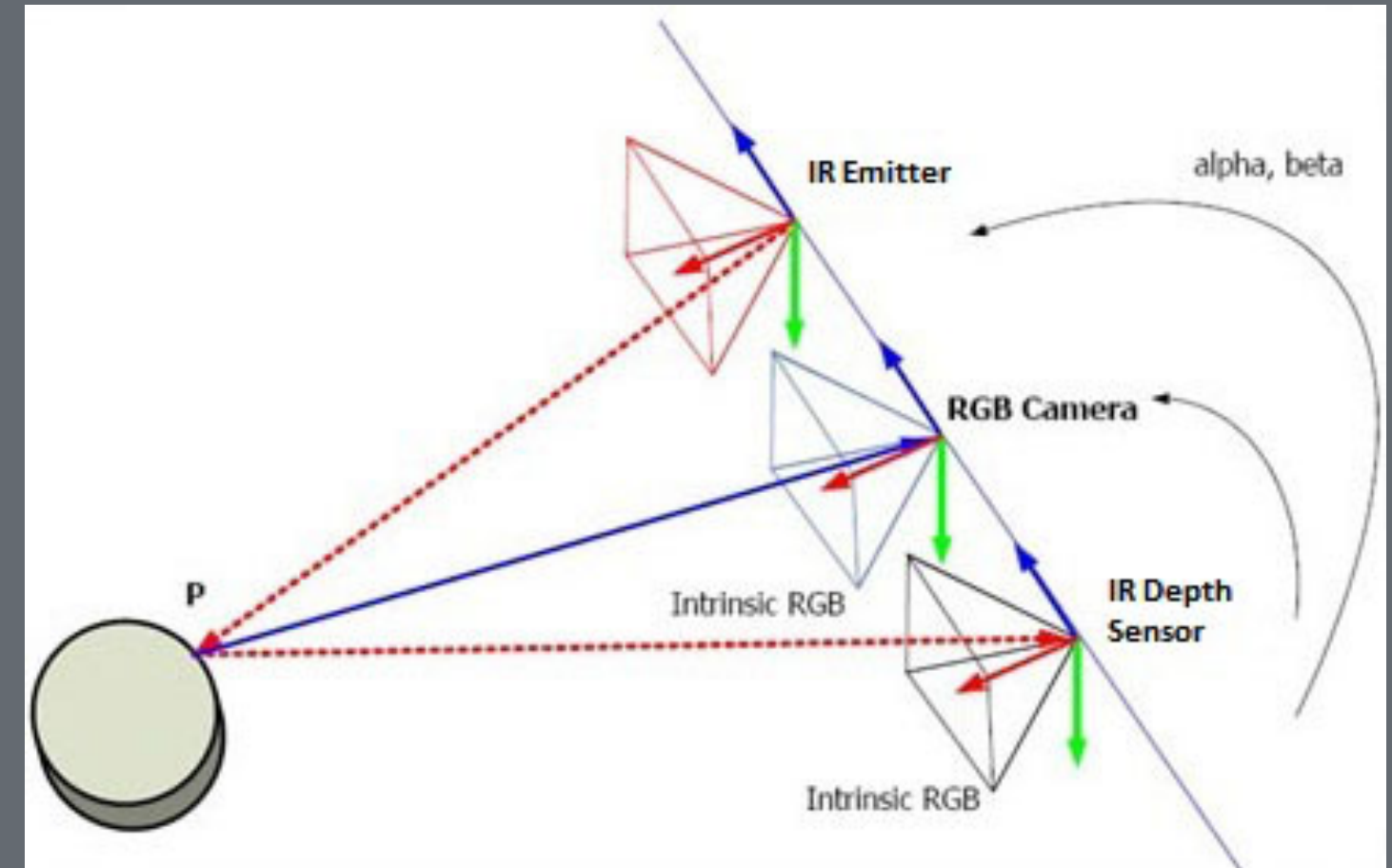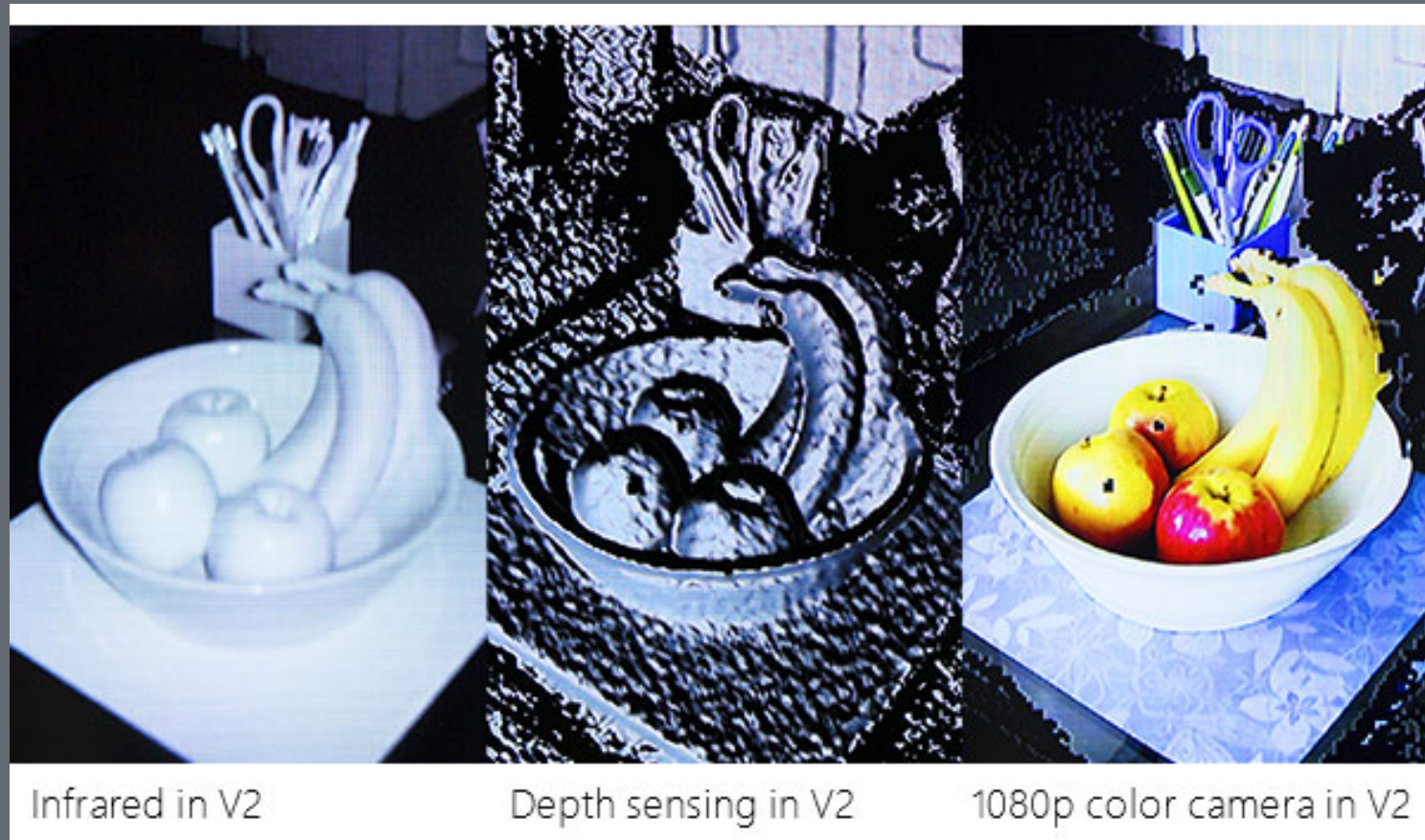
We will be covering:

- Overview of the current web-based AR landscape

- A-Frame AR (marker-based AR with AR.js)

- Setup: Dev Environment & Git or Glitch

- AR "Hello World"

- QRCode and custom marker

- Building the Propelify Demo

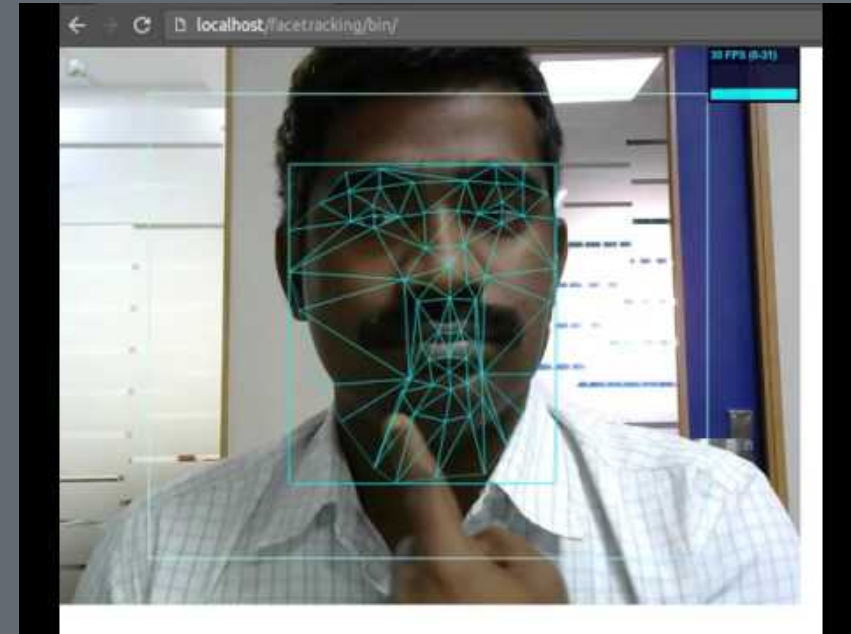# Overview of the current web-based AR landscape

Depth Sensors vs Computer Vision (+ DL)

Depth sensors

Infrared in V2 | Depth sensing in V2 | 1080p color camera in V2

Tango, Kinect, Leap Motion, or Asus Xtion
IR (Infrared) or Laser point cloud

Computer Vision & Deep Learning
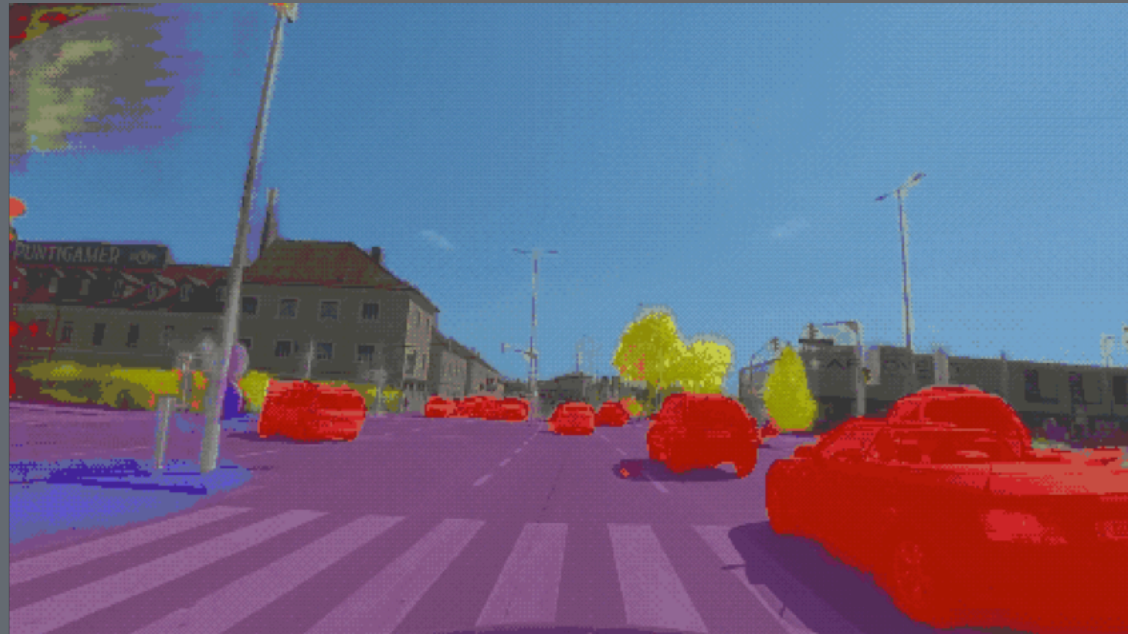
OpenCV (open-source C++ Library from Intel)

- tracking.js

- three.ar.js / jsartoolkit

WebARonTango shut down to focus on ARCore

Tango (launched in 2014) and Chromium (extending the WebVR 1.1 API)
Needed a Tango enabled device

- Wide FOV Camera & Infrared Camera

- Features: Marker detection, ADF support (Tango saves these area scans in an Area Description File), motion tracking, rendering of the camera's video feed, and basic understanding of the real world
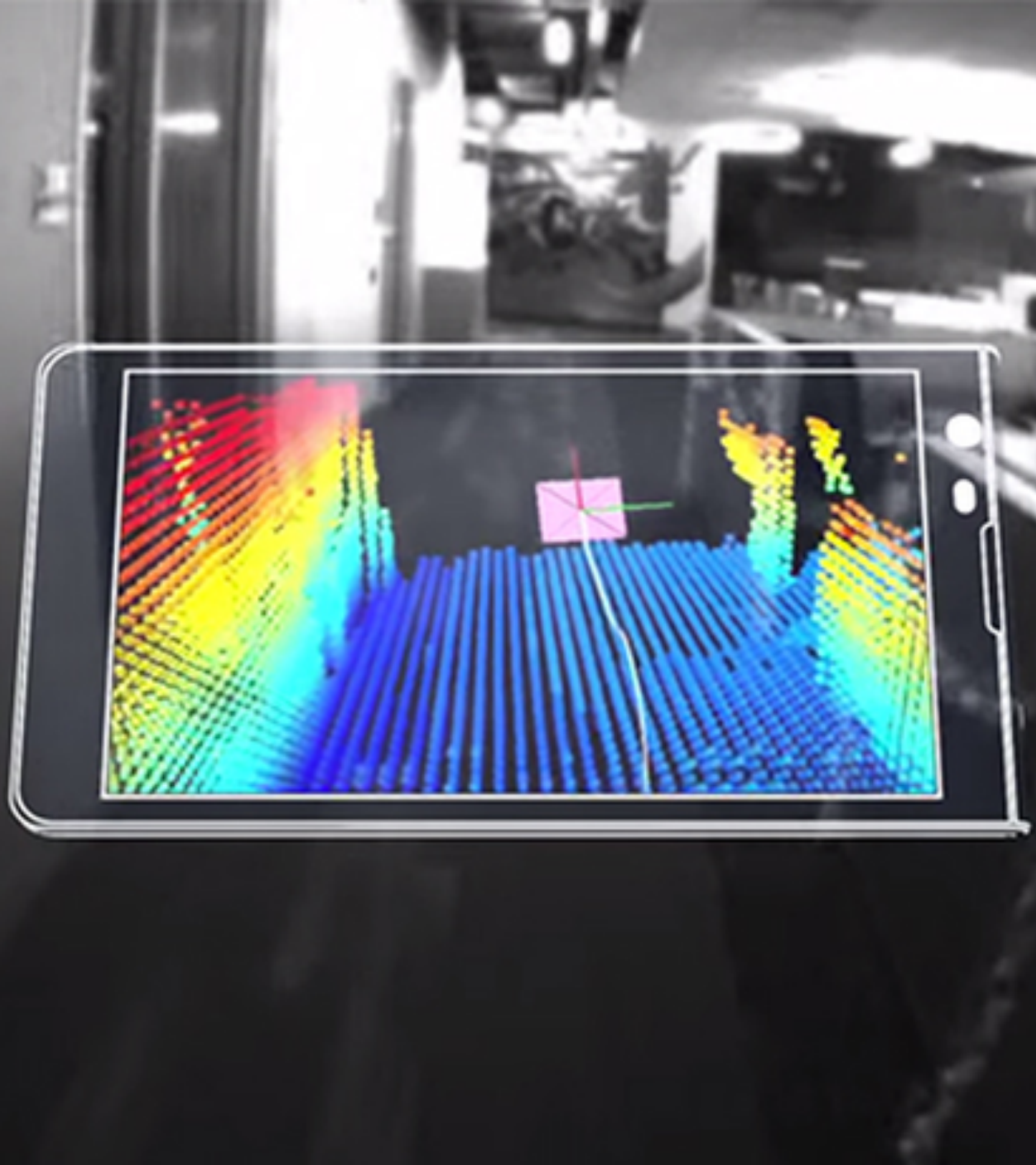
WebARonARCore/WebARonARKit
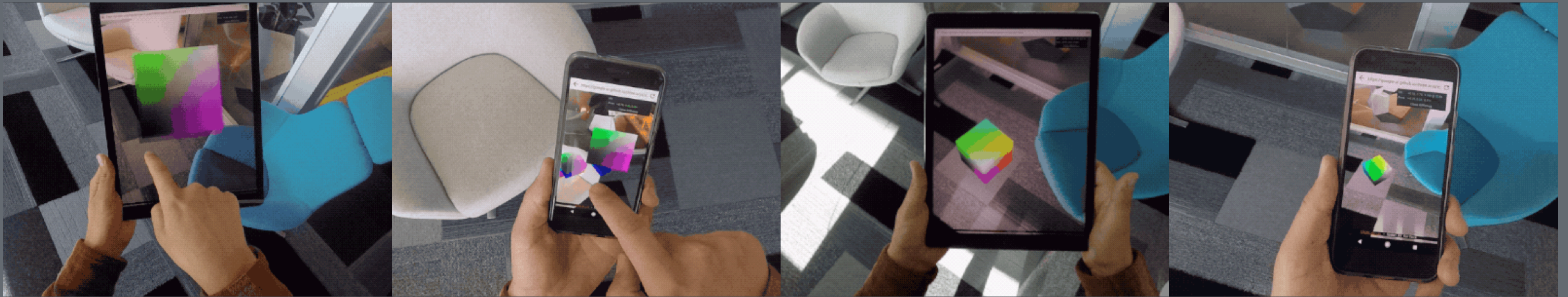
- Install custom app/browser to access device hardware for exposure to browser

- Limited to devices that support ARCore/ARKit (provide marker detection capabilities, plane detection and hit testing)

THREE.AR - WebVR API extension for smartphone AR

- Motion tracking - exact location and orientation in 3D space (6DOF)

- Rendering the pass through camera (rendering on top of camera feed)

- Basic understanding of the real world - identify planes in the real world (or meshes, objects/markers, point clouds)

AR.js (& A-Frame)

- **Fast** - up to 60 fps on two year-old devices

- **Web-based** - no installation, javascript based on three.js + jsartoolkit5

- **Open Source** - large community

- **Using Web Standards** - WebGL and WebRTC (no additional hardware needed)

Anchors

- Estimation of the pose of the device in the real world with the highest accuracy possible.

- Evolves over time as the system "learns" more about the real world - value is updating.

- Notifying the application about changes in the tracking estimation so the virtual element can correct its pose.

Markers

- Printed tags that the AR system can recognize when they are in the line of sight of the camera so their world scale pose can be calculated.

- Useful to trigger an experience or to share the same coordinate system between different devices, among others.

- Two types of markers: QRCodes and ARMarkers. Both allow to obtain their world pose but in the case of QRCodes, they can contain a string that is encoded in the marker itself. ARMakers have a unique identifier, a number between 0 and 255.

https://artoolkit.github.io/jsartoolkit5/examples/pattern_and_barcode_threejs.html
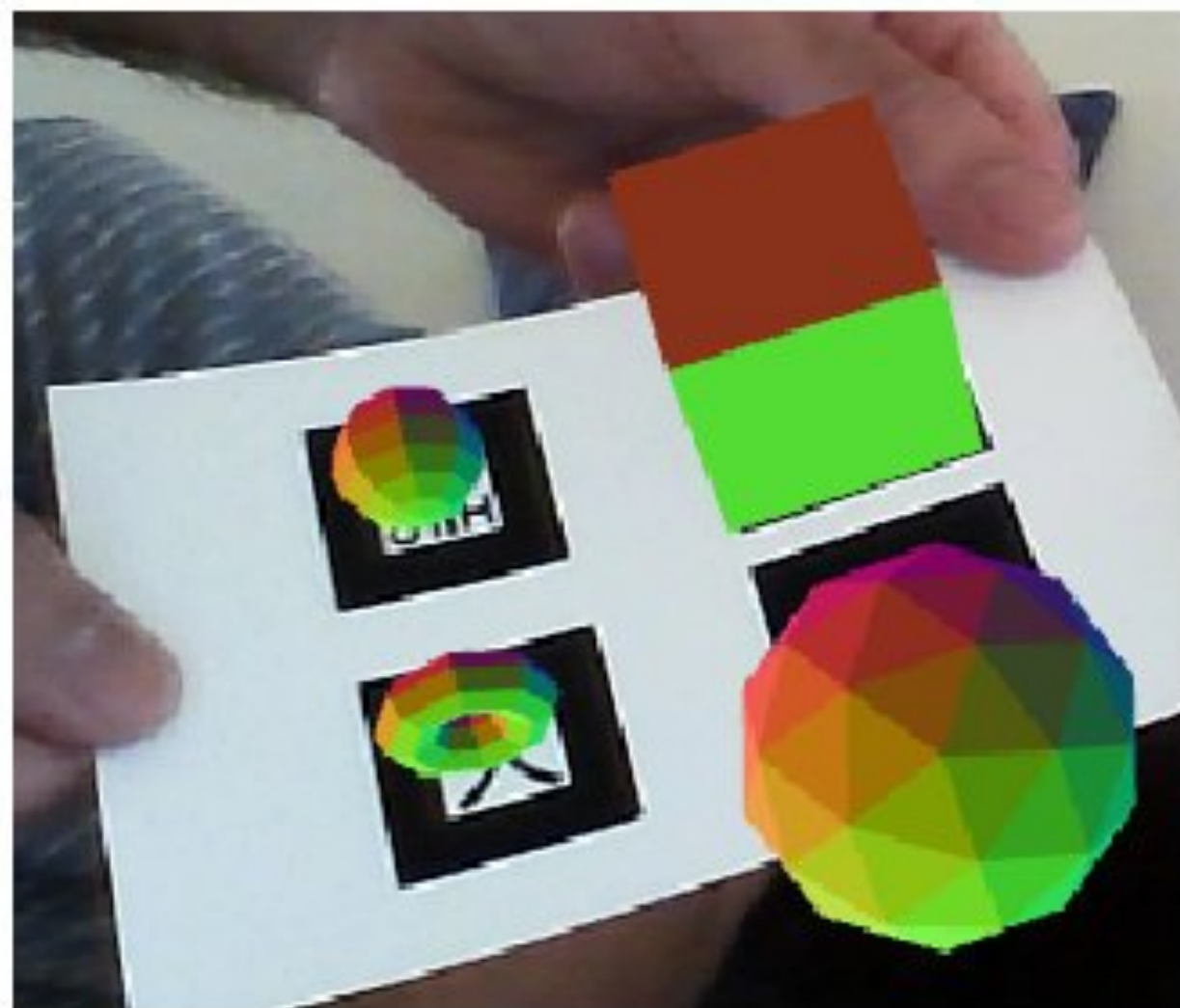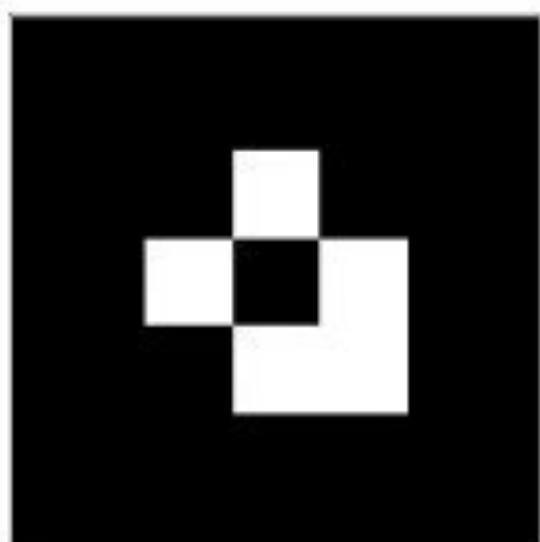
World's biggest WebXR Hackathon - starting May 25 to June 24

Games from the past: Reinvent a classic game.

Education: Explore a new teaching methodology, presentation of the curriculum, and training environments - teach people in a fun and immersive way.

Submit your WebAR Project!
Read more here at Virtuleap

Sneak Peak!

Our WebAR Demo for the 2018 ImageNation Outdoors Film & Music Festival

Eight Nights of Soul Cinema and Music Under the Stars

June 1st to September 7th in Harlem!

Visit us! More Info Here

WAKANDA FOREVER
WEBAR BOOTH

It's code time!

QRCode generator
Custom Marker

Project
A-Frame AR "Hello World"
Building the UFO & Alien character with primitives
Custom cursor and interaction component
AR portal with 360 image & Shadow component

A-Frame AR "Hello World"

```html
<!DOCTYPE html>
<html>
  <head>
    <title>Hello World</title>
    <script src="https://aframe.io/releases/0.8.2/aframe.min.js"></script>
    <script src="https://jeromeetienne.github.io/AR.js/aframe/build/aframe-ar.js"> </script>
  </head>
  <body style="margin: 0px; overflow: hidden;">

    <a-scene embedded arjs>
      <a-marker preset="hiro">
        <a-box position="0 0.5 0" material="color: blue;">
        </a-box>
      </a-marker>
      <a-entity camera></a-entity>
    </a-scene>

  </body>
</html>
```

- github.com/roland-dubois/aframe-meetup-nyc

- Setup: Gulp Tutorial & Git Repo

- Build: Propelify AR

Didn't finish? Take the challenge home! Got stuck? Reach out!

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rolanddubois.com