

# iPad LiDAR at VDOT

## Exploration of use cases in The Department

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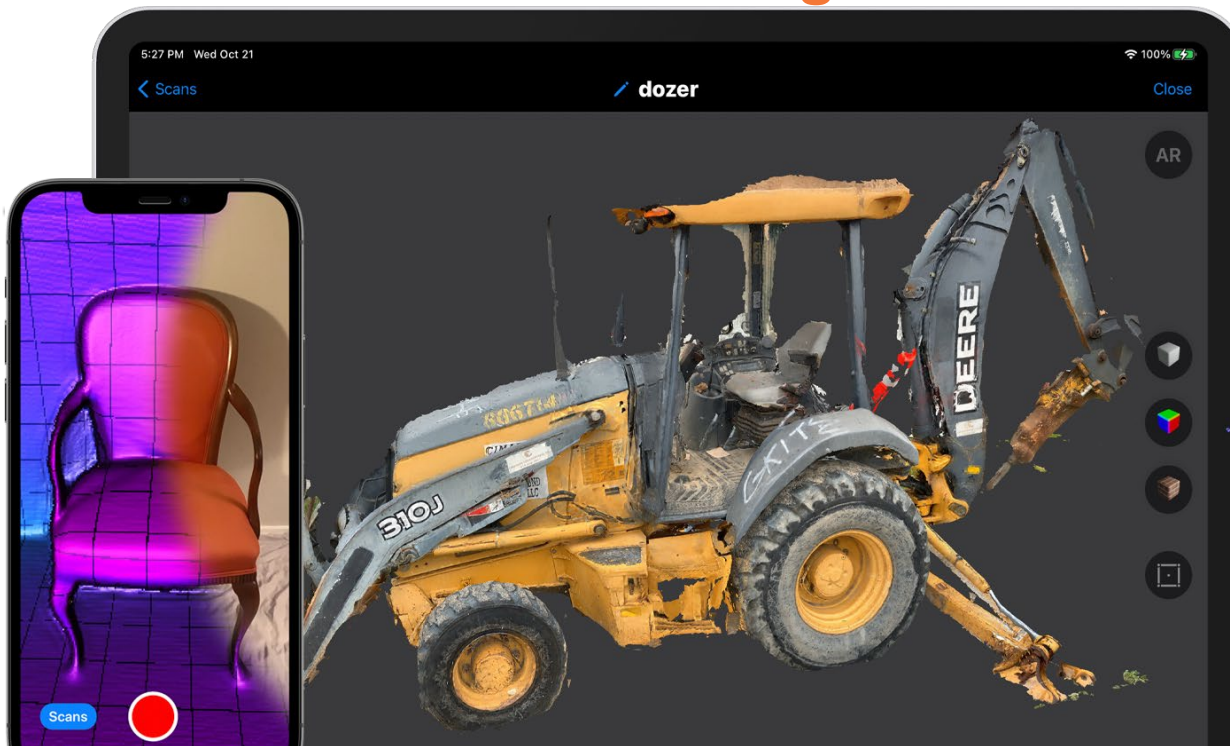
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# iPad 11 / 12.9 Pro and iPhone 12 / 13 Pro

## VDOT has 3 LiDAR iPads for testing

From \$999



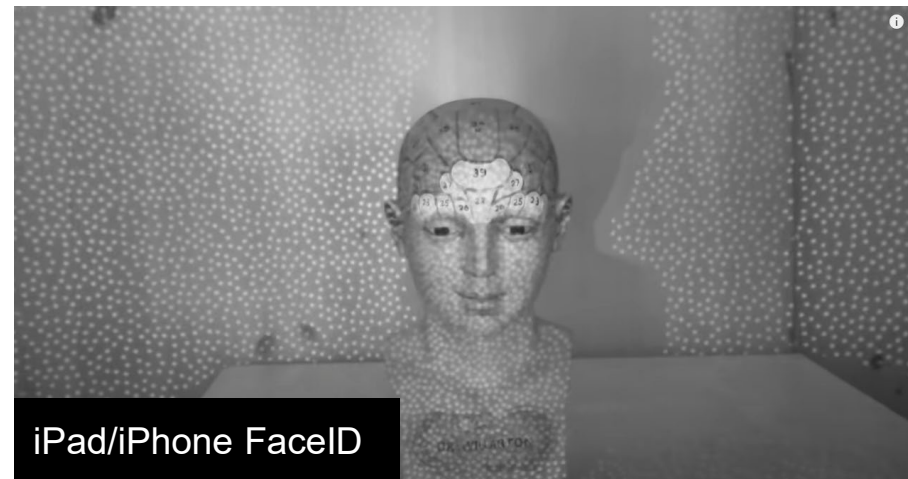
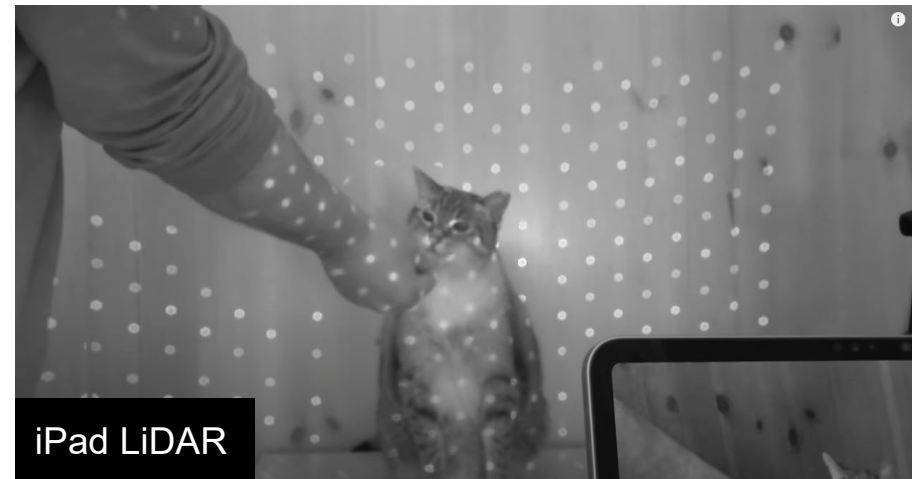
From \$799

# Questions

- **How does LiDAR work?**
- **What apps are available?**
- **Can we trust iPad LiDAR accuracy?**
- **How does this contribute to the planning and design workflow?**
- **What new capabilities does it offer?**
- **What are the limitations?**

# Light Detection and Ranging (LiDAR)?

- LiDAR was developed in the 1930s for meteorology using a spotlight
- Current iPad LiDAR bounces ultraviolet light off objects and calculates the how far away an object is based on the time it takes for the light to get back.
- Same technology for using faceID on the iphone but less dense.



# Point Cloud to Mesh



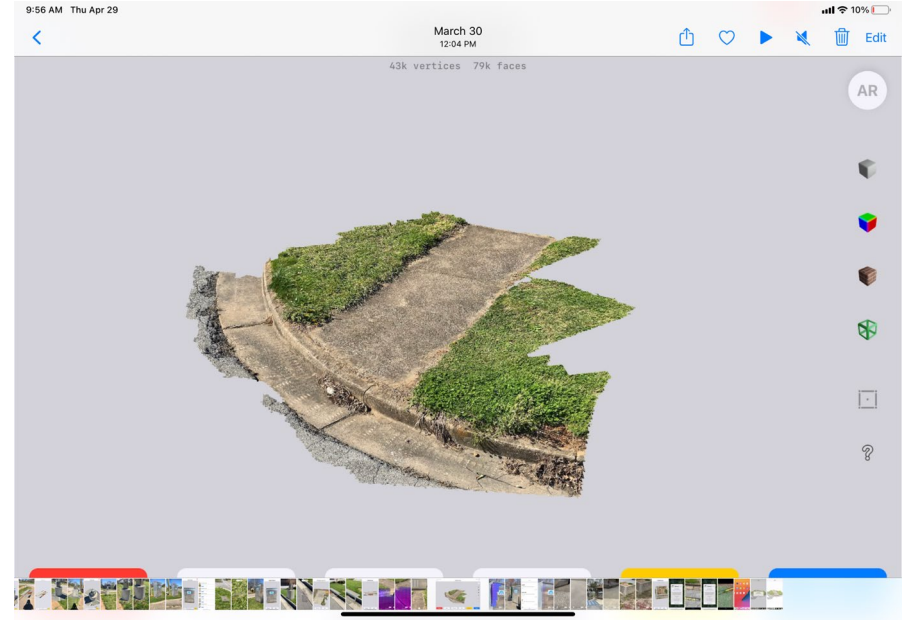
# VDOT Testing Various Apps

## Apps

- Everypoint
- 3D Scanner App
- Polycam
- Qlone
- StockAce
- JigSpace
- SiteScape

## Output

- PLY
- XYZ
- LAS
- GLTF
- GLB
- USDZ
- ZIP



# From Everypoint Scan to Microstation Curb Ramp







# Challenges

- **Max LiDAR Range of 3 meters (15 feet)**
- **Where to store LiDAR files - most scans are around 50MB**
- **PC software limitations for everyday user**
- **Bringing scans to MicroStation is not trivial**
- **Lack of other 3D assets for speeding plan development**
- **Policy on whether LiDAR could be used for plan development**

# Wrapping Up

- **LiDAR works by calculating distance based on a sparse UV grid.**
- **3D Scanner App and Everypoint are the free front runners.**
- **Accuracy using the app is within the 1in range, but on PC can be more resolved.**
- **Using augmented reality can help communicate designs.**
- **After-the-fact measurements, volumetric measurements, and augmented reality provide new opportunities.**
- **15 ft range, small objects do not pick up well, direct sunlight interferes with UV grid.**

# Questions



# Contact Information

