UNIVERSITY OF CALGARY

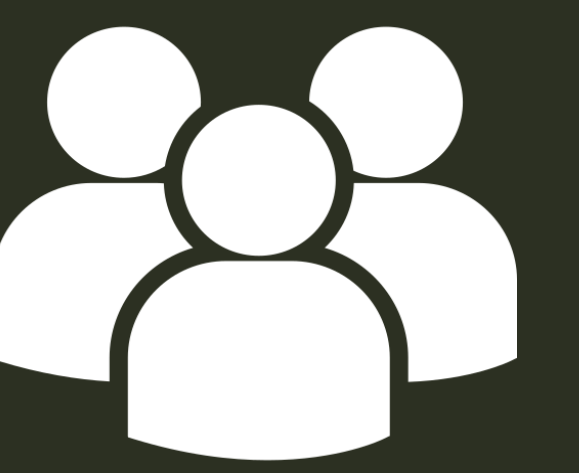# So you have a 3D model... how do you SHARE the data?
Platforms for Interactive and Intuitive Visualization and Sharing of Large 3D Models

Paul.Nesbit@ucalgary.ca
Sketchfab.com/paulnesbit
@tilt3Dperspectv
Paul Nesbit

Paul R. Nesbit[1], Christopher H. Hugenholtz[1], Adam D. Boulding[1], Paul R. Durkin[2], and Stephen M. Hubbard[3]

[1]Department of Geography, University of Calgary, [2]Department of Geological Sciences, University of Manitoba, [3]Department of Geoscience, University of Calgary
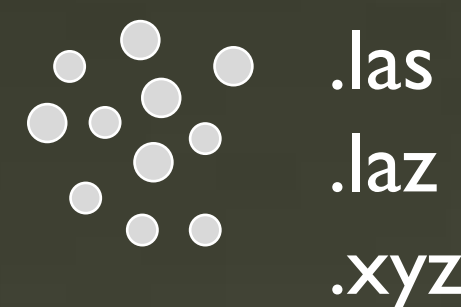
BONUS MODEL
SCAN ME

CHALLENGES
Bottlenecks

Conventional 2D Formats

Introduction

3D models are becoming **common data sources** within the geosciences.

Despite the ease of acquisition and processing (e.g., UAV-SfM), the ability to **share** and **visualize** 3D datasets remains challenging, i.e., large files and need for high-end hardware and software.

We examine **three** modern platforms that overcome these bottlenecks and offer accessible, interactive, and intuitive control of large datasets without specialist software or hardware.

3D files LARGE
GBs   100s MB

.las
.laz
.xyz
point cloud

.obj
.ply
.mtx
mesh
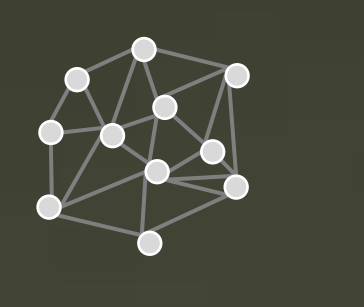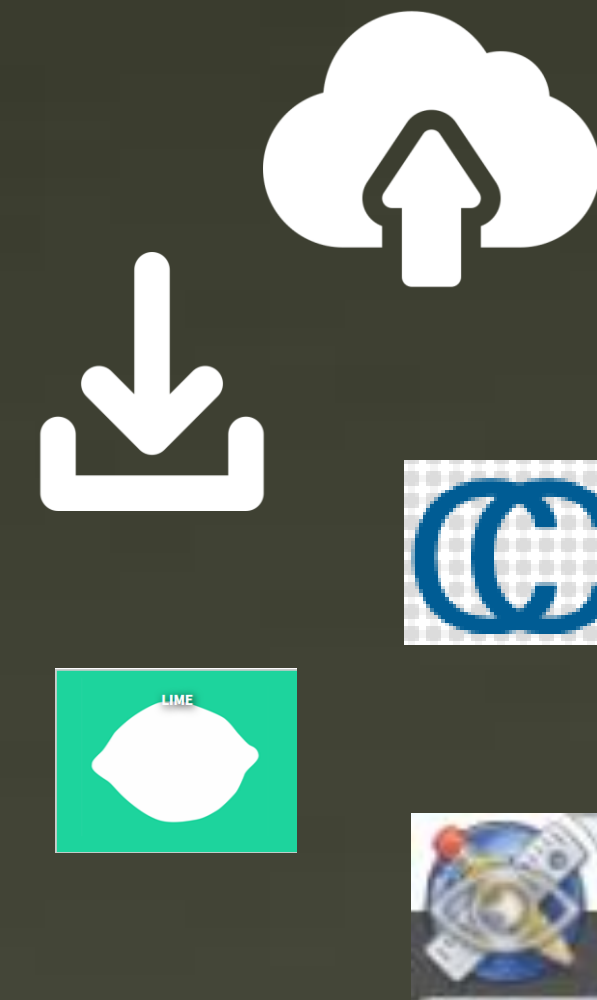
File Transfer and Storage
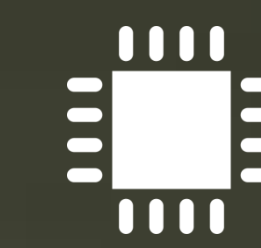
High-end Hardware

Specialist Software

Convert

Reduce

Fixed view
Static   Interaction

Visualization Platforms

➢ Sketchfab
- Web-based
- Proprietary
- Ideal for **meshes**
- Subscription-based
- Limited annotations

➢ potree
- Web-based
- Point clouds or Mesh
- Open-source
- Requires coding
- 'Built in' Tools

➢ Unity (videogame developer)
- Open-source
- Requires coding
- Mesh preferred
- Highly customizable
- Stand-alone executable or App files can be exported for more than 20 systems (e.g., Windows, Mac, iOS, Android, and PS4).

Challenges and Potential

There are several modern visualization platforms capable of rendering large 3D datasets (e.g. point clouds and textured meshes). Web-based services, such as **Sketchfab** and **potree** provide practical options for sharing data with end-users without cumbersome file transfer/storage:

▪ **Sketchfab** offers quick and easy uploads, but is limited by customizability and paid subscription.

▪ **potree** open-source code allows customization to functional data viewer. It is capable of rendering large datasets and may be most practical as a raw data viewer to share with collaborators or commercial partners using any common internet browser.

▪ Game engines (e.g., **Unity**) require significant coding and design for customizable visualizations. They may be best used presenting educational information, such as Virtual Field Trips, in which 'participants' can follow guided prompts or explore a field site on their own.

Modern Platforms for 3D Visualization and Sharing

Sketchfab

Limited customize
Subscription

< 200 MB
WWW

Dinosaur Provincial Park SE (Alberta, Canada)
by Paul

Dipping beds

SCAN ME
Interactive 3D mesh on Sketchfab

potree

Open-source Customizable
coding
Allows Layers
Measure

> GBs
WWW

SCAN ME
Interactive 3D point cloud using potree

unity

Open-source Customizable
coding
Allows Layers

~ GBs
WWW

SCAN ME
Fully Customized Videogame Viewer using Unity
To download **desktop executable** for Windows or Mac

ASK TO TRY THE iOS APP!

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