

Gathering23

Accelerating BIM adoption

CitA BIM Gathering 2023

TUS Digital Twin Project an analogue journey

Shane Barron, Jonathan Blackmore, Paul Vesey (Speaker)

Objectives

Create a digital twin of an existing building; without using any existing data

Create a digital asset that can be used by staff and students for teaching & learning

Warehouse the digital twin in an accessible platform

Provide for expansion, improvement and updating



Reality Capture

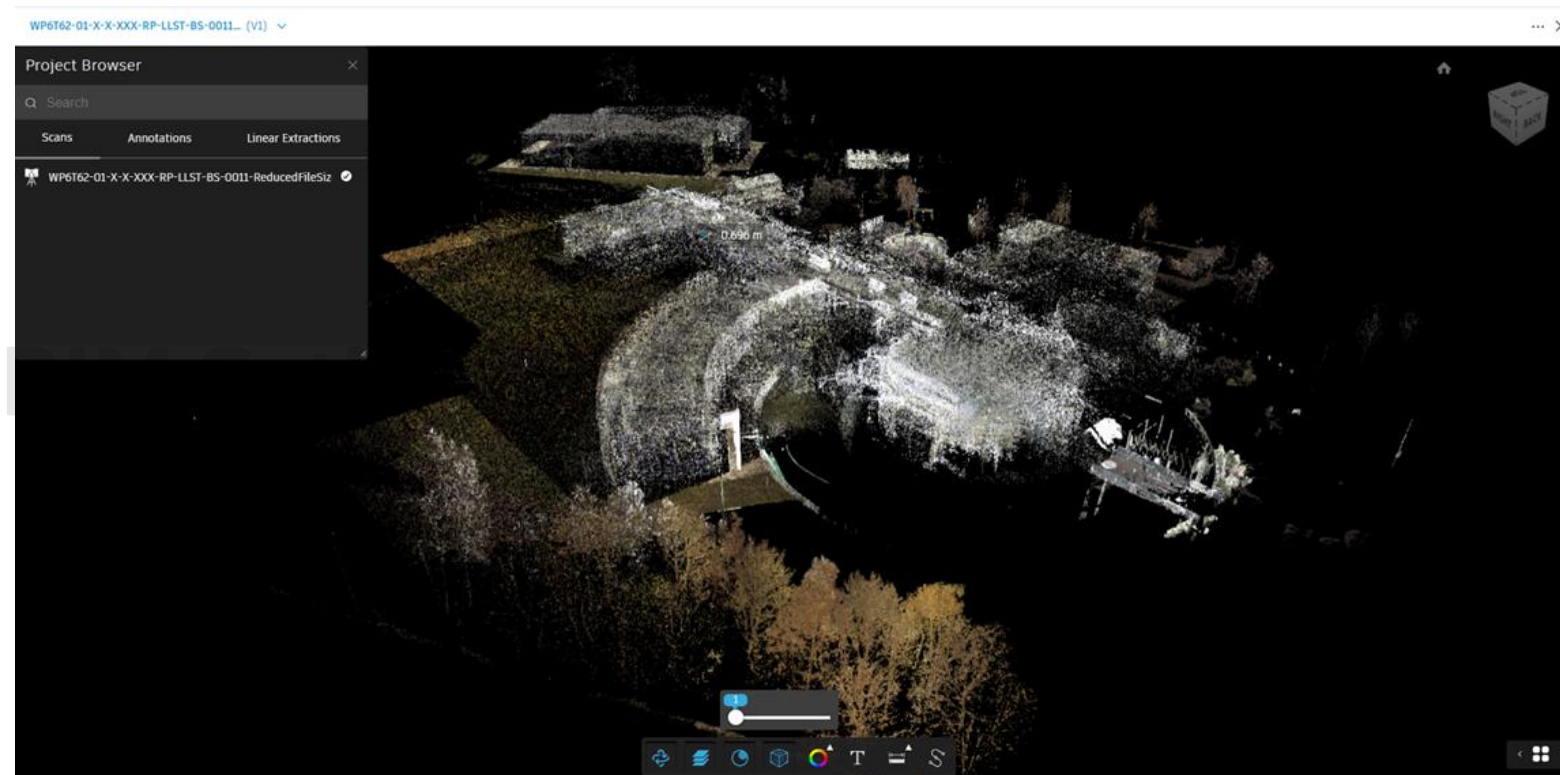
Drone Based LiDAR
Ground Based LiDAR

Initial Processing on proprietary software

Highest Resolution Capture

Targets are necessary

Large Data Sets (>100GB)



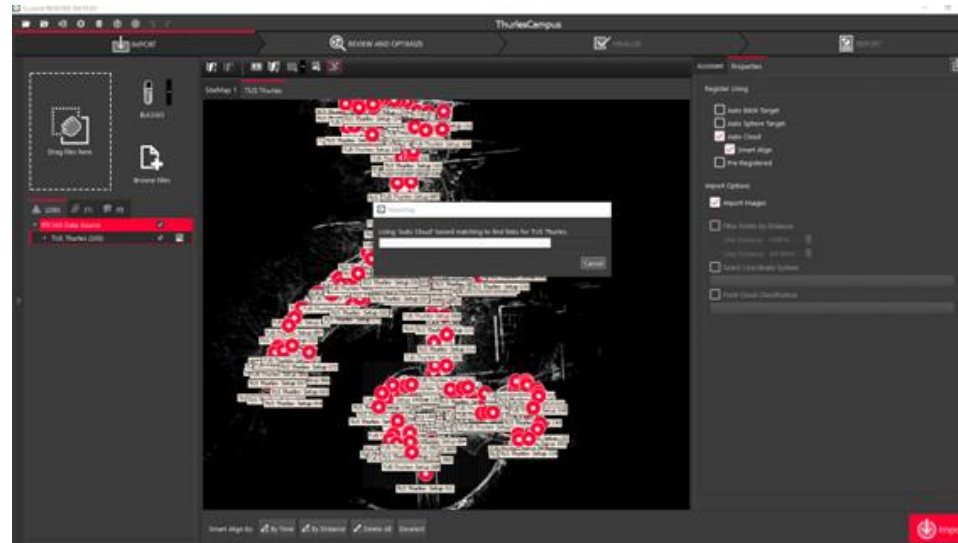
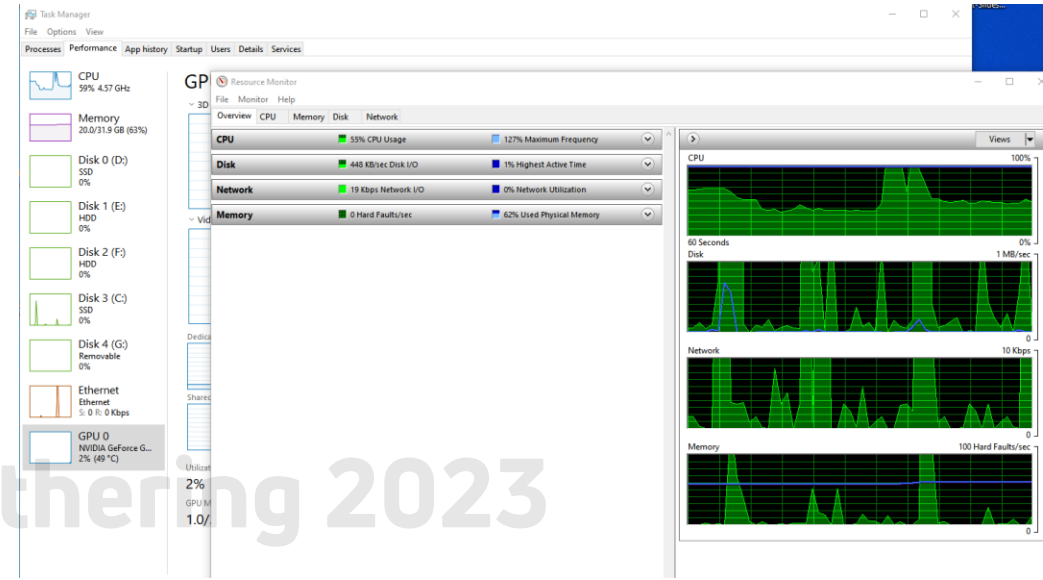
Point Cloud Processing Raw Capture Data to Usable Point Cloud

Initial Stage is Processor Intensive
Later Stages are Graphics Intensive

Hi-Res Capture does slows down processing

Exports can be done in lower resolution.
25mm point-to-point is OK for modelling

RCP, E57, and proprietary file formats



Modelling

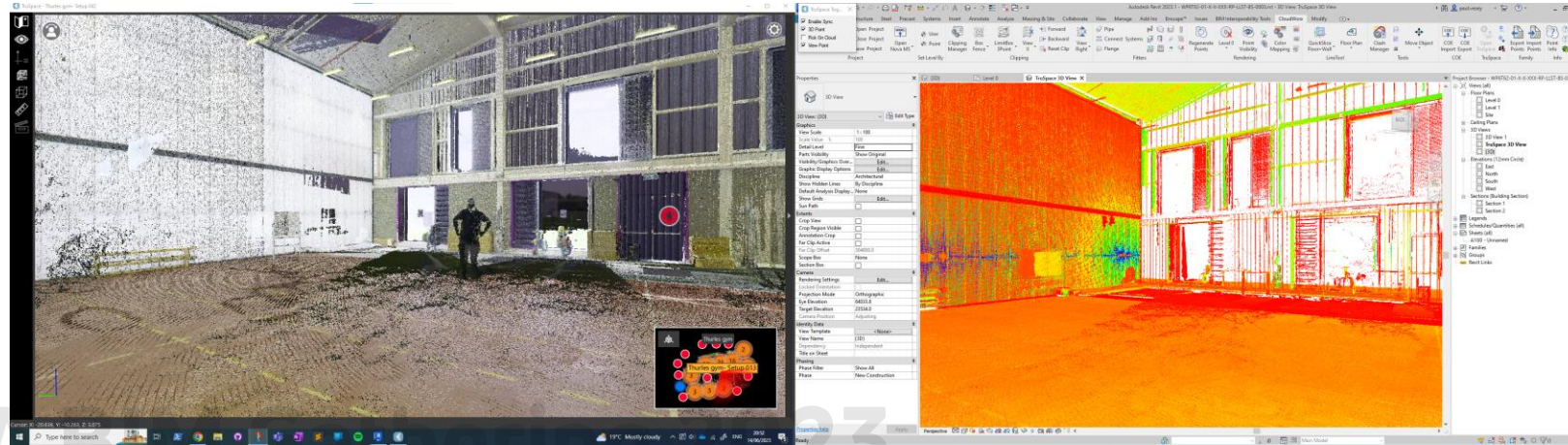
Manual Processing

Automated tools are problematic

360 Images are invaluable in this process

50mm resolution is good enough

Processor and Graphics intensive



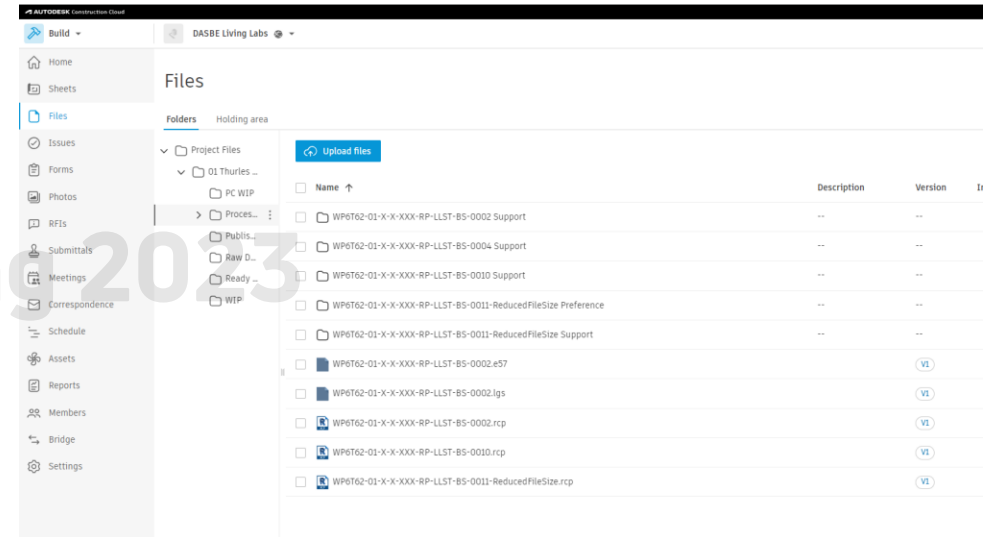
Data Warehousing

Large Datasets present issues in storage and distribution

Uploading and Downloading for Cloud storage tends to fail frequently

High Speed USB combined with SSD storage worked OK.

Autodesk Construction Cloud Supports point cloud
Subject to limits (48GB)
Processed <20GB



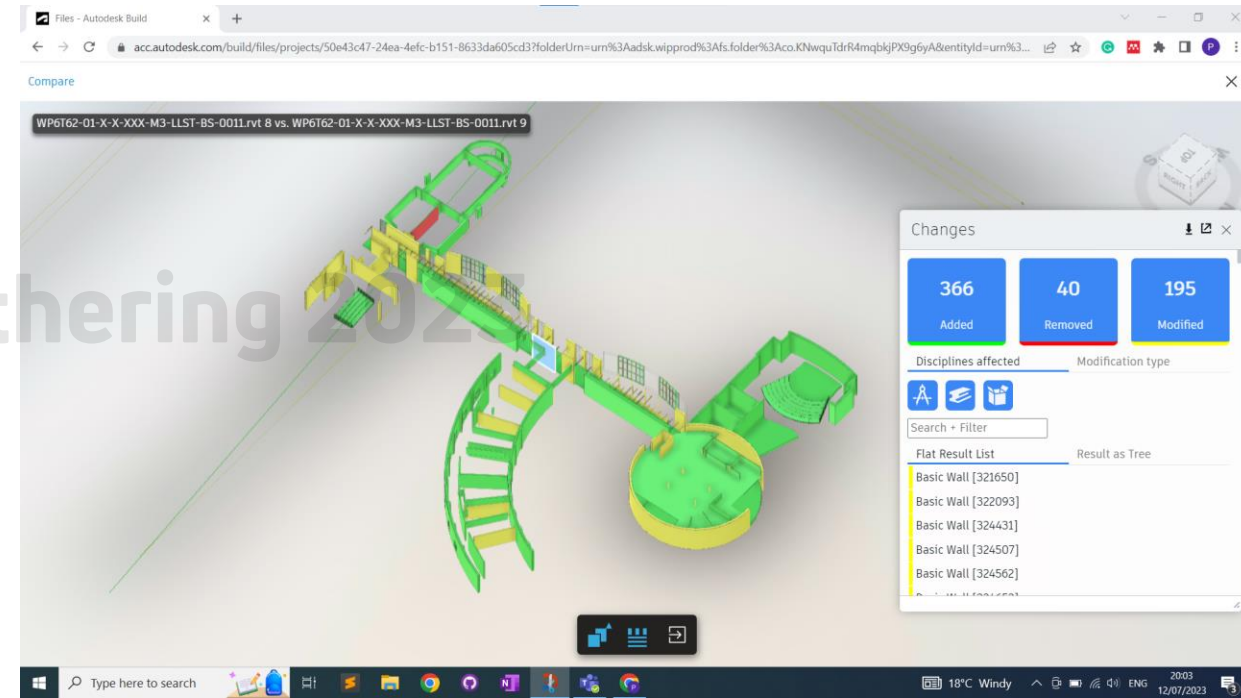
Modelling and Sharing

Autodesk Construction Cloud, Revit, and proprietary viewers used.

Work-shared Revit Model housed in ACC
Linked to Point Cloud also on ACC

Allowed for multiple users to model at the same time

Modelling Progress tracking functionality used



Lessons Learned

'Scan to BIM' is a manual process

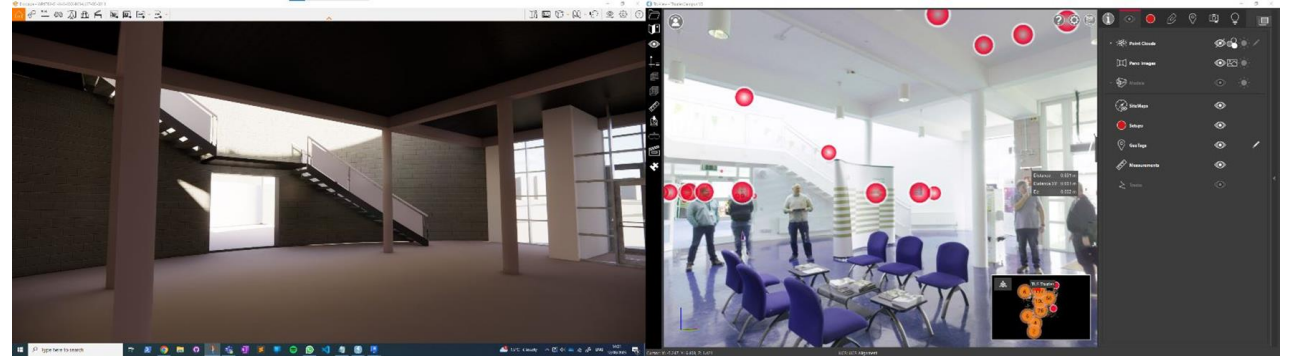
Fieldwork and process is critical

HiSpec computers are required

Automated tools need to be improved

360 images are invaluable for modelling and later use

Access to finished models needs to be controlled



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THANK YOU
Paul.Vesey@tus.ie