A Picture is Worth a Thousand Words, a 3D Model is Priceless

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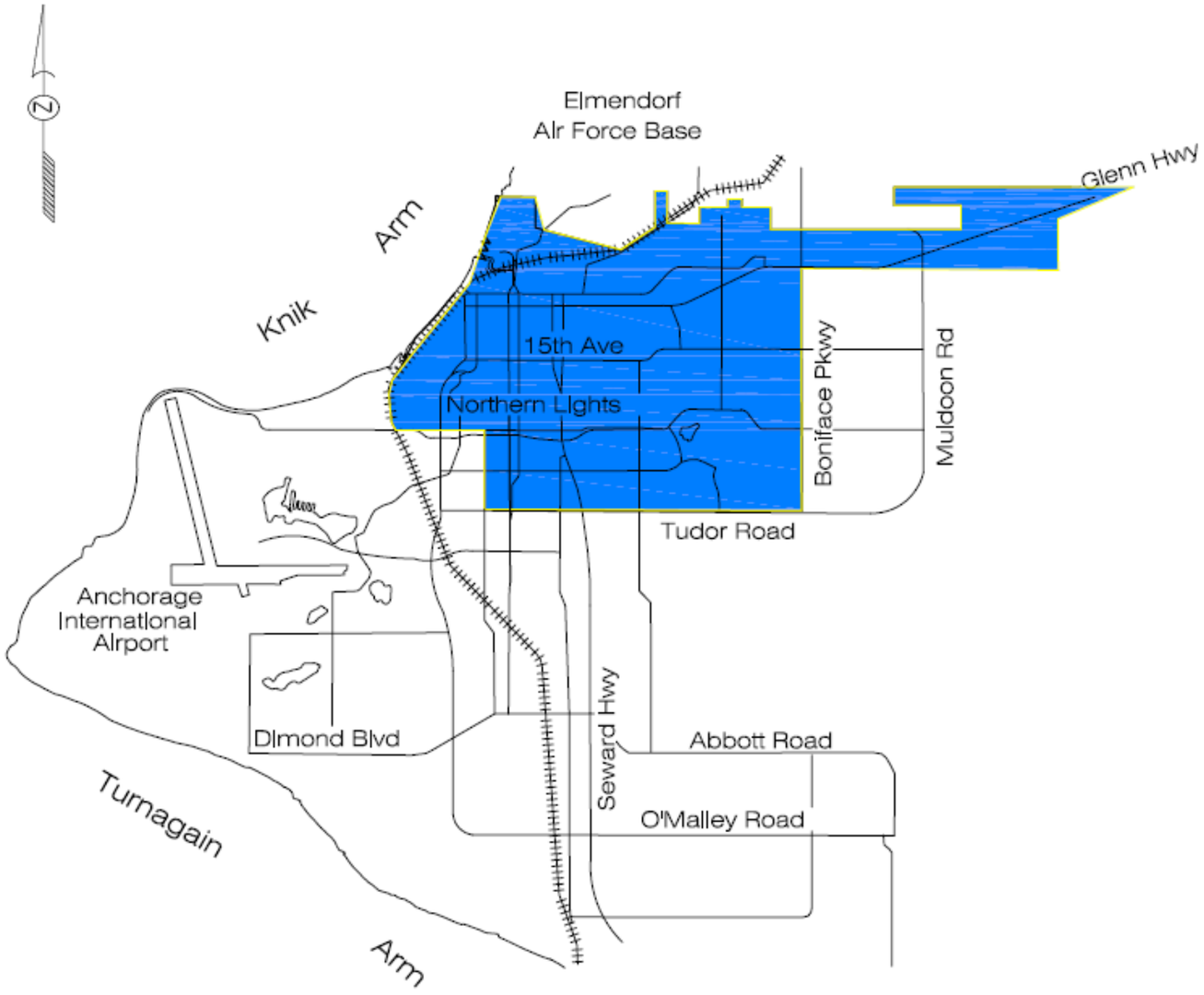
ALASKA


Fairbanks
Anchorage
Kodiak
Juneau

MUNICIPALITY OF ANCHORAGE

MUNICIPAL LIGHT AND POWER



Anchorage Municipal Light and Power

- ML&P serves about 25,000 residential, 6,000 commercial customers, and 2 military bases
- Total Gen. Capacity in 2009: 333.2 MW *
- Vertically aligned utility, own our gas
- ~12c/KWH, lowest rates in Alaska
- 147 miles of overhead (Transmission and Distribution)
- 252 miles of underground

Class summary

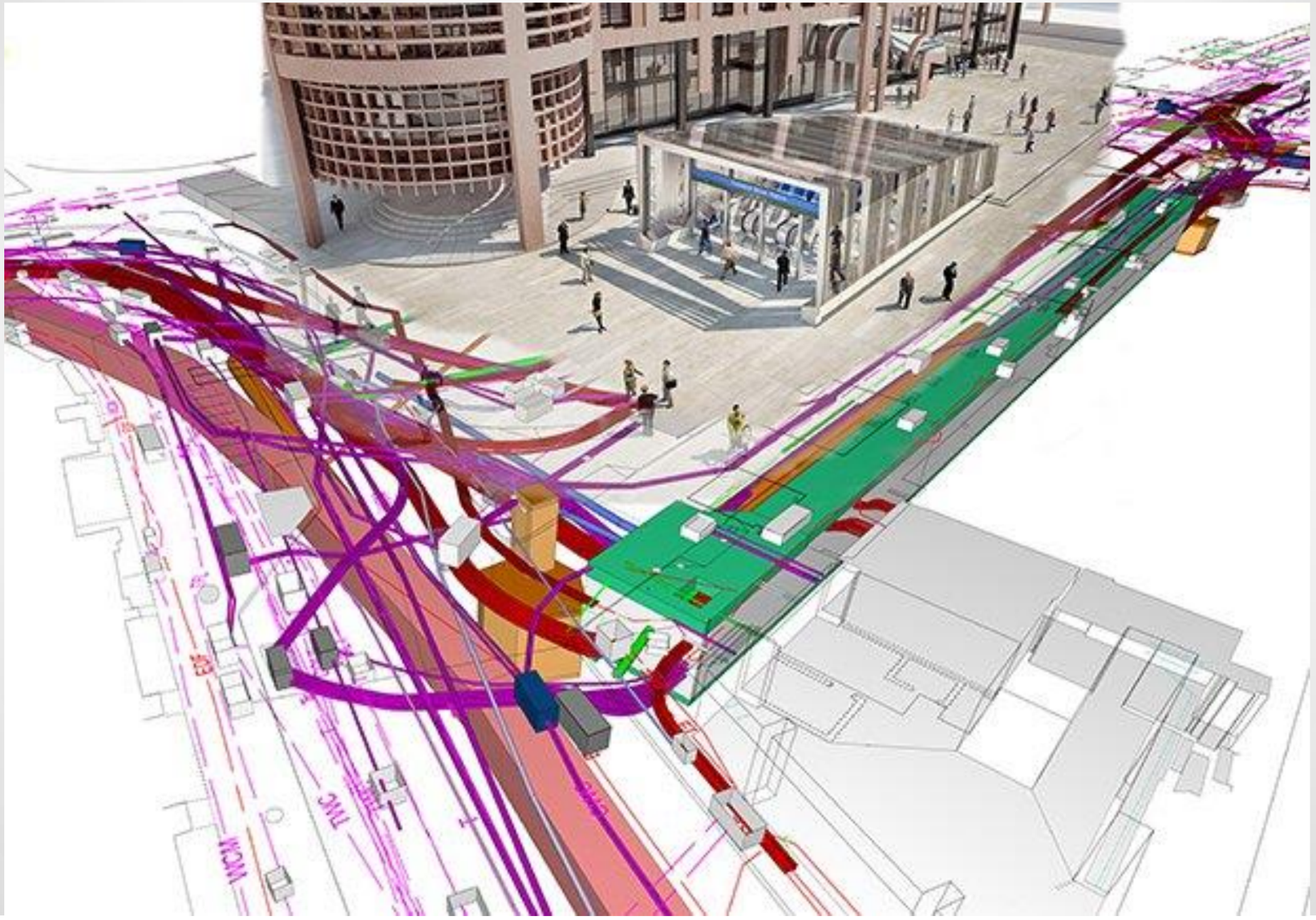
- The Vision
- The Business Problem
- How to build a 3D model from 2D Photos
- Trenches, large project areas, vaults
- Review Vault Models
- Workflow process
- The Future

Key learning objectives

At the end of this class, you will be able to:

- Learn how to take photos and create a 3D model using Recap 360
- Learn how to use Recap 360 software to produce mesh and point cloud models
- Learn how to create and maintain utility asset data using 3D models
- Learn how to make 3D models available to field and office personnel

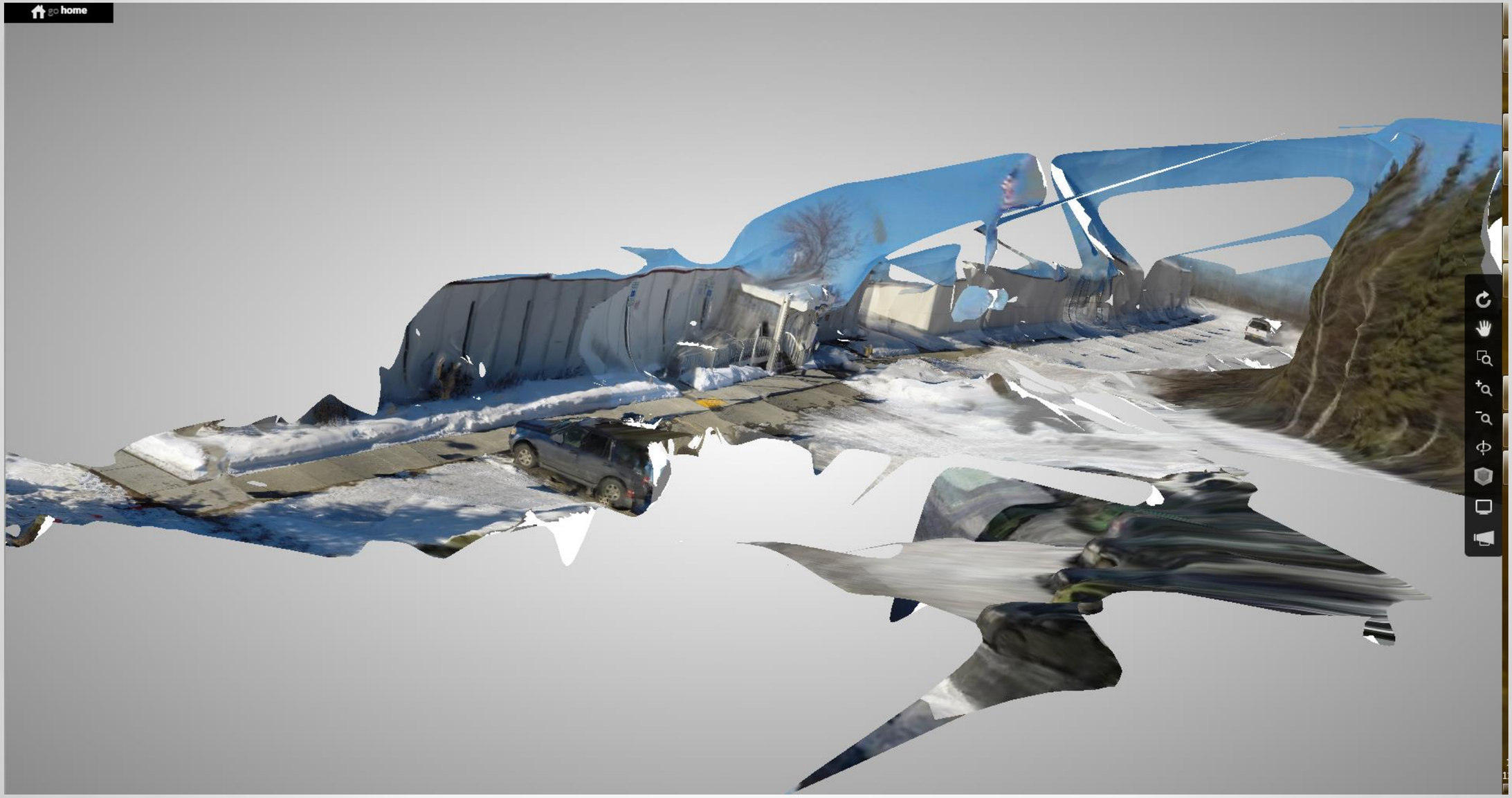
AU 2013 and Reality Computing



The First Vault

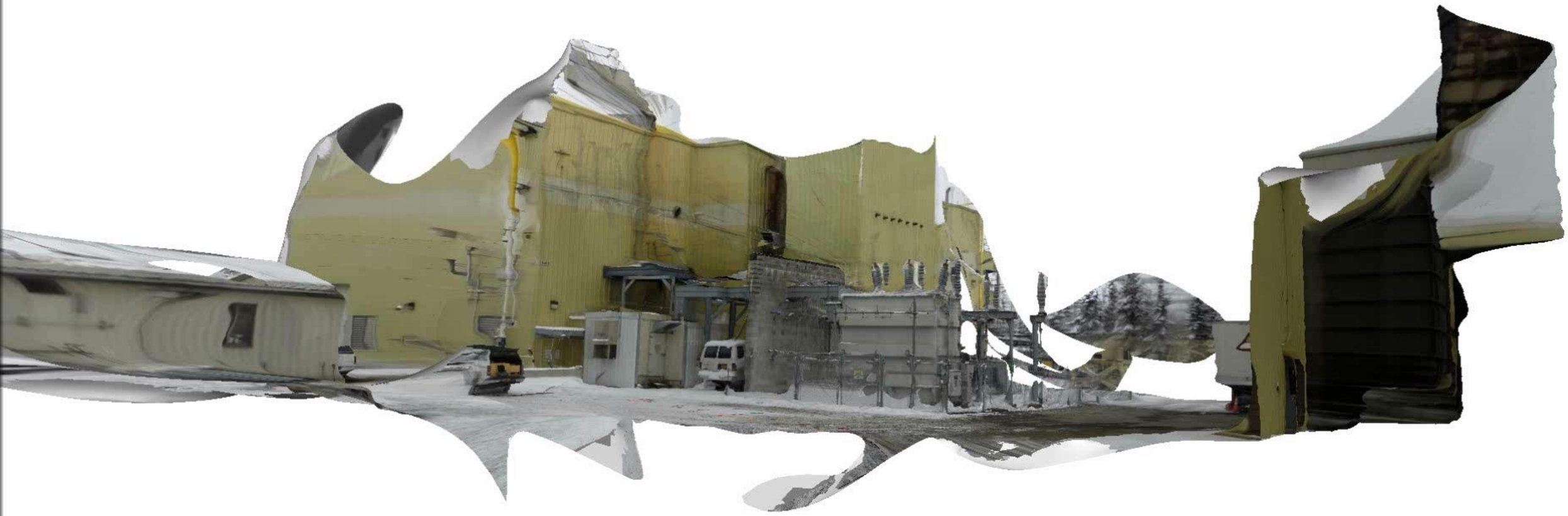
First Vault

Exterior Survey



Exterior Survey, Reverse

Power Plant Before

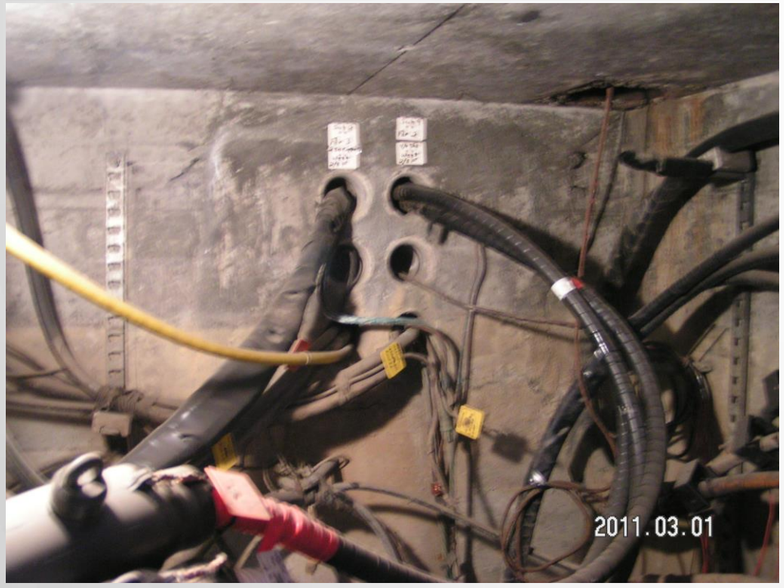


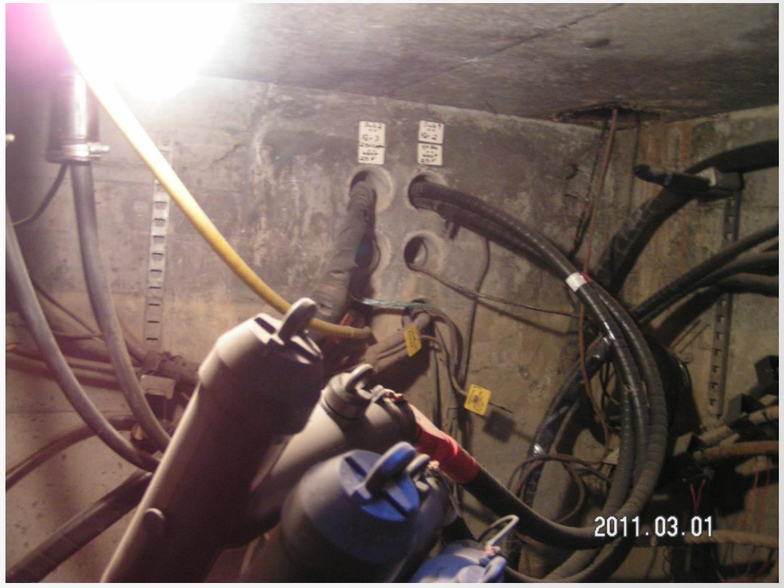
Plant 2 Unit 8 After

Current Situation

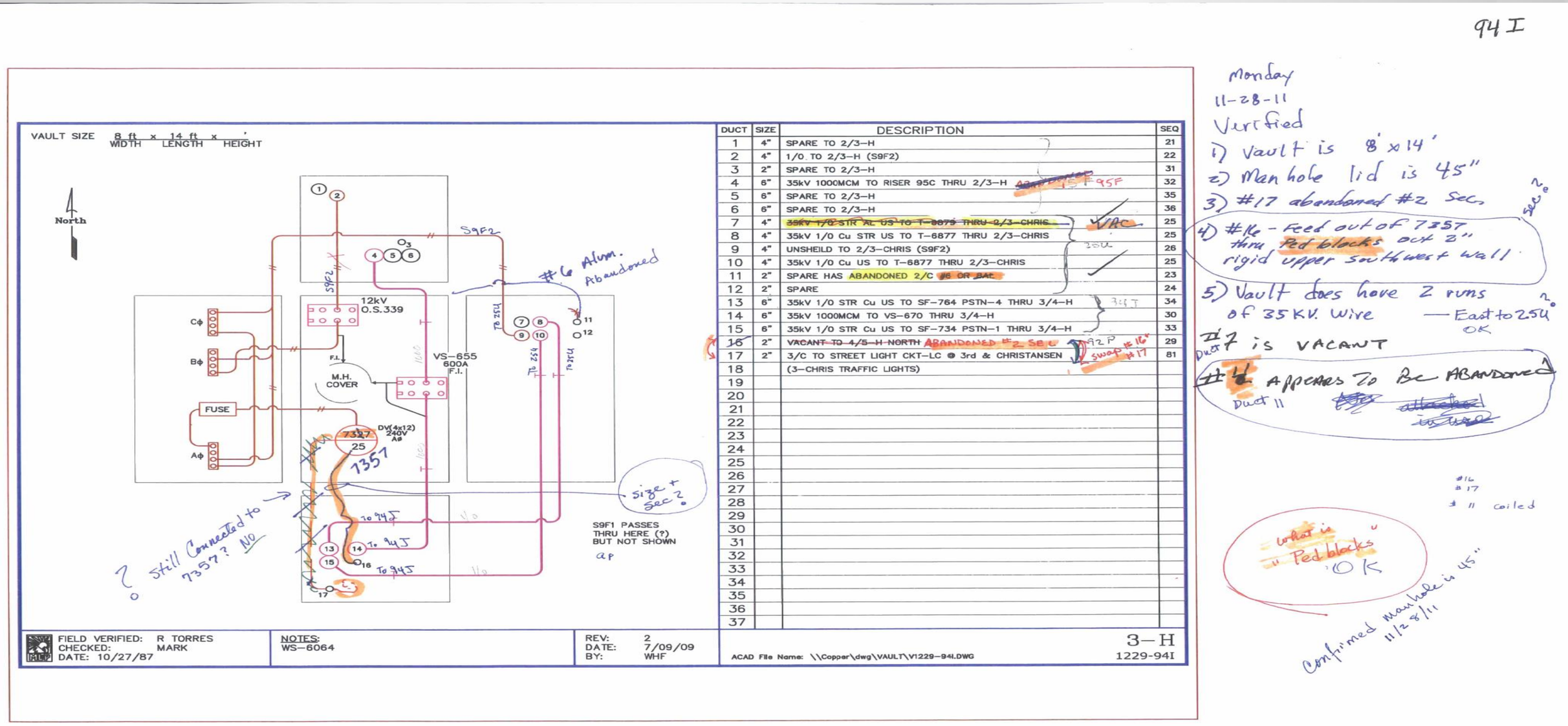
- GIS, Grid Maps, Various Records
- Verifying vaults
- Displaying them in 2D
- Ambiguity
- Errors

Old Vault Photos





Vault Diagram with Redlines



DUCT	SIZE	DESCRIPTION	SEQ
1	4"	SPARE TO 2/3-H	21
2	4"	1/0 TO 2/3-H (S9F2)	22
3	2"	SPARE TO 2/3-H	31
4	6"	35kV 1000MCM TO RISER 95C THRU 2/3-H	32
5	6"	SPARE TO 2/3-H	35
6	6"	SPARE TO 2/3-H	36
7	4"	~~35kV 1/0 STR AL US TO T-6875 THRU 2/3-CHRIS~~	25
8	4"	35kV 1/0 Cu STR US TO T-6877 THRU 2/3-CHRIS	25
9	4"	UNSHEILD TO 2/3-CHRIS (S9F2)	26
10	4"	35kV 1/0 Cu US TO T-6877 THRU 2/3-CHRIS	25
11	2"	SPARE HAS ABANDONED 2/C ~~#6 OR BAL~~	23
12	2"	SPARE	24
13	6"	35kV 1/0 STR Cu US TO SF-764 PSTN-4 THRU 3/4-H	34
14	6"	35kV 1000MCM TO VS-670 THRU 3/4-H	30
15	6"	35kV 1/0 STR Cu US TO SF-734 PSTN-1 THRU 3/4-H	33
~~16~~	2"	~~VACANT TO 4/5-H NORTH~~ ABANDONED #2 SEC	29
17	2"	3/C TO STREET LIGHT CKT-LC @ 3rd & CHRISTANSEN	81
18		(3-CHRIS TRAFFIC LIGHTS)	
19			
20			
21			
22			
23			
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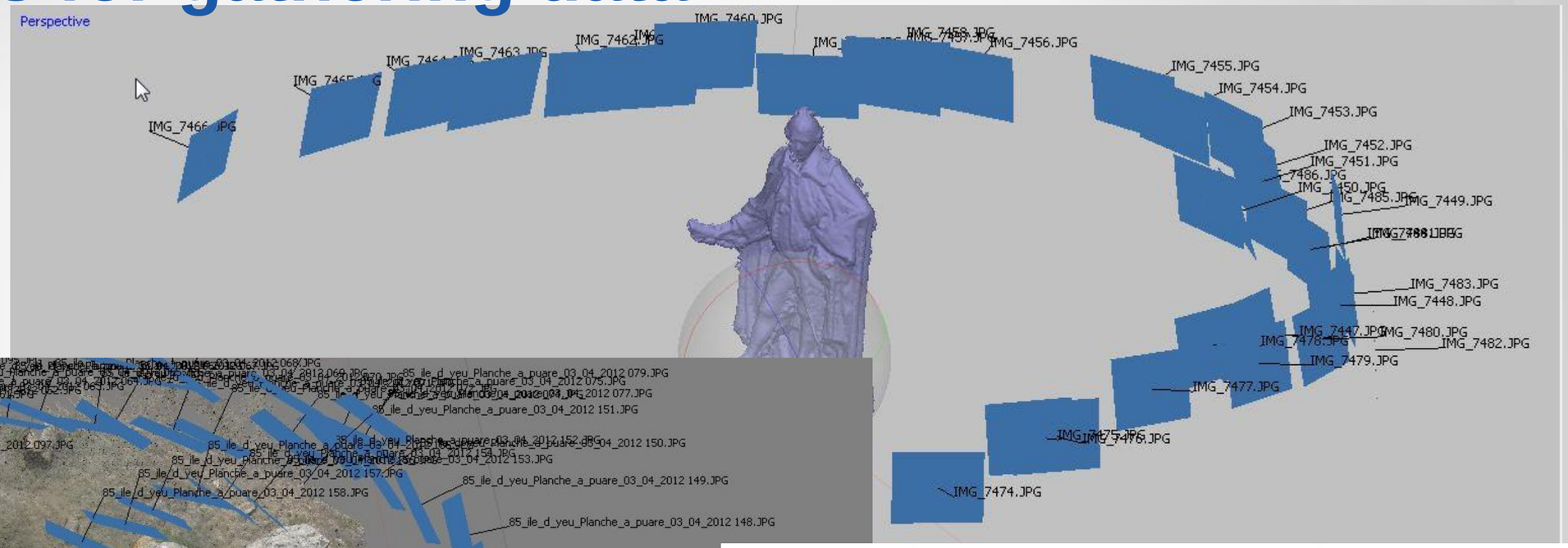
37			

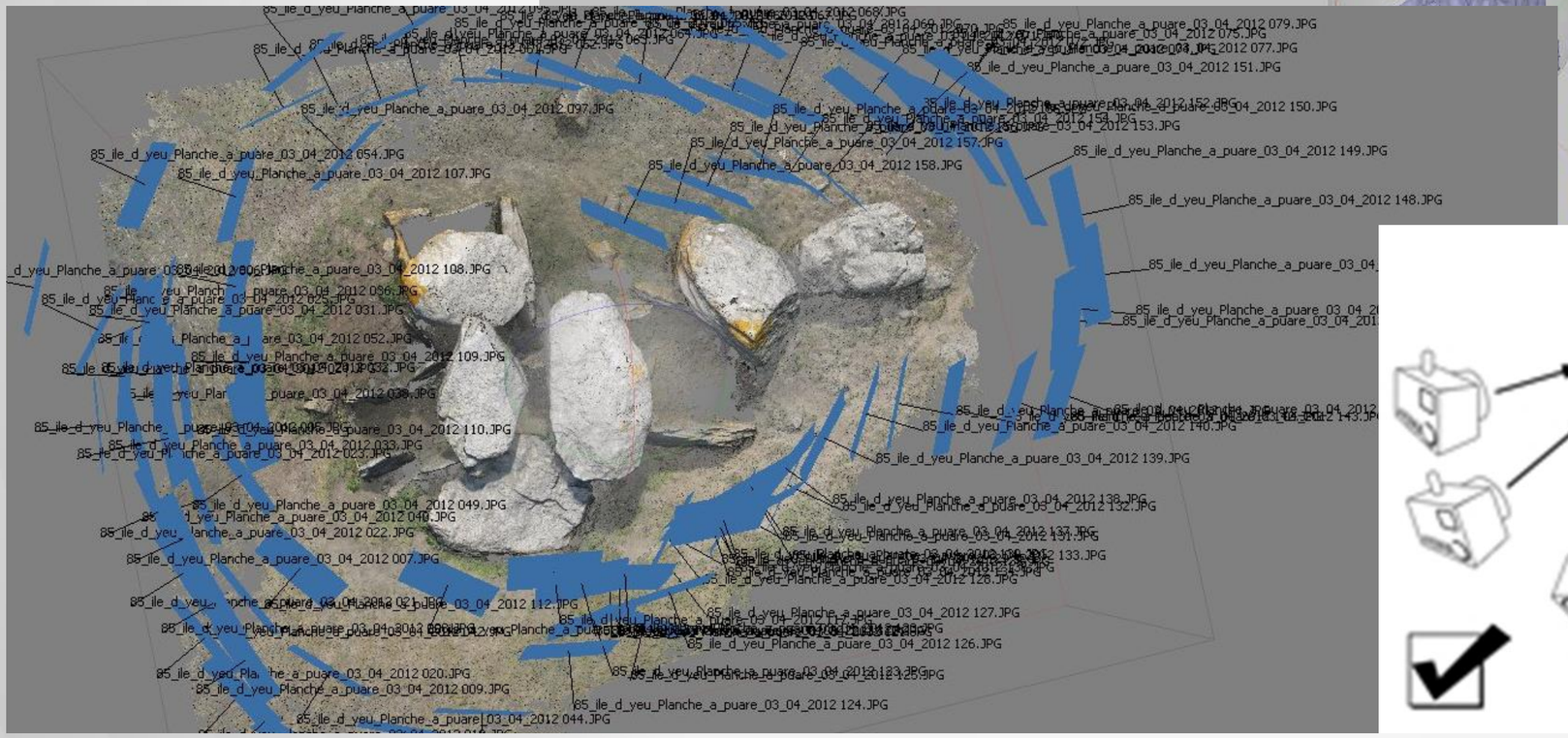
Vault 2

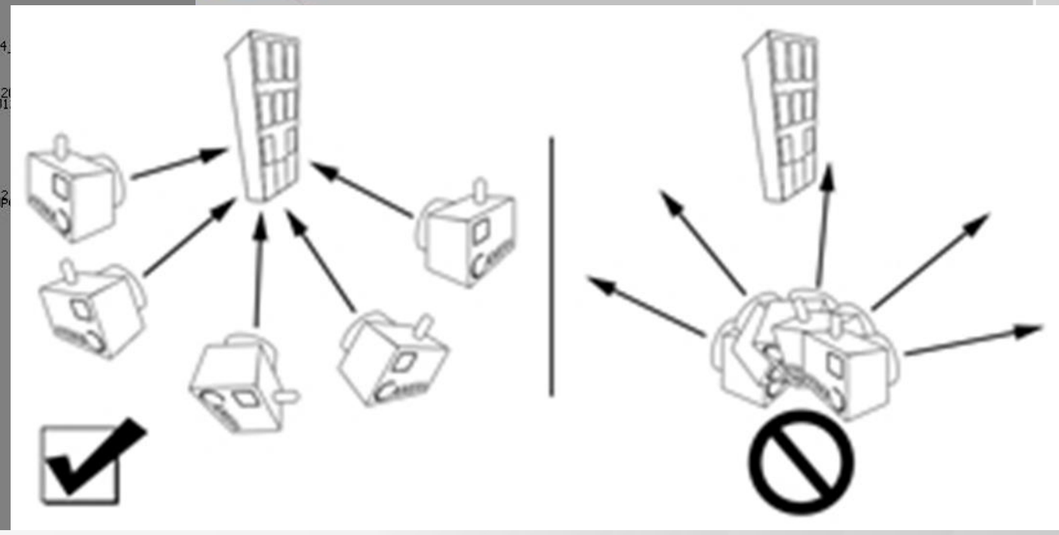
Photogrammetry

- Photography - capturing 3D data into 2D format
- Photogrammetry - a reversal of the photographic process that creates 3D data back from 2d format.
- Process involves triangulating points from two different locations

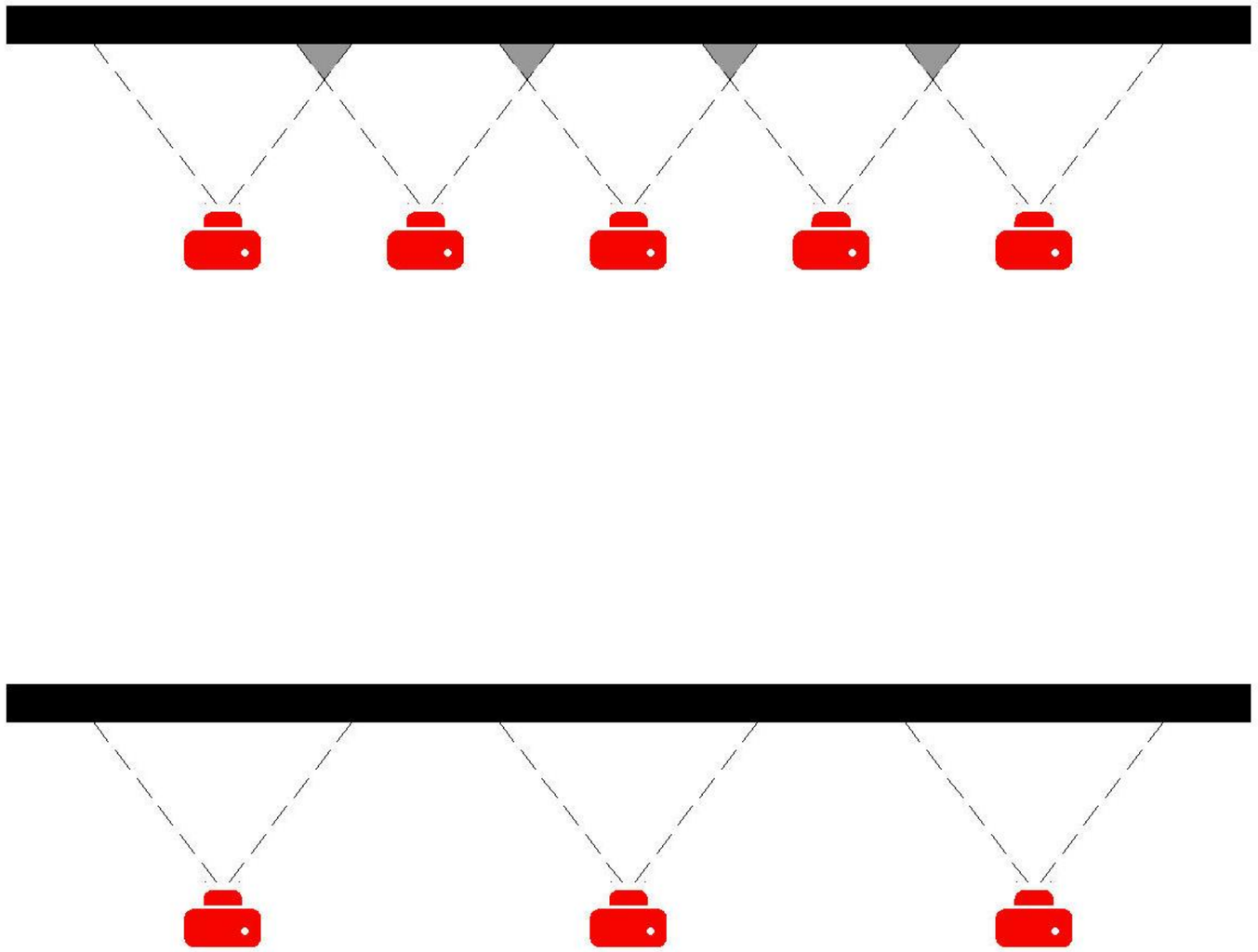
Techniques for gathering data







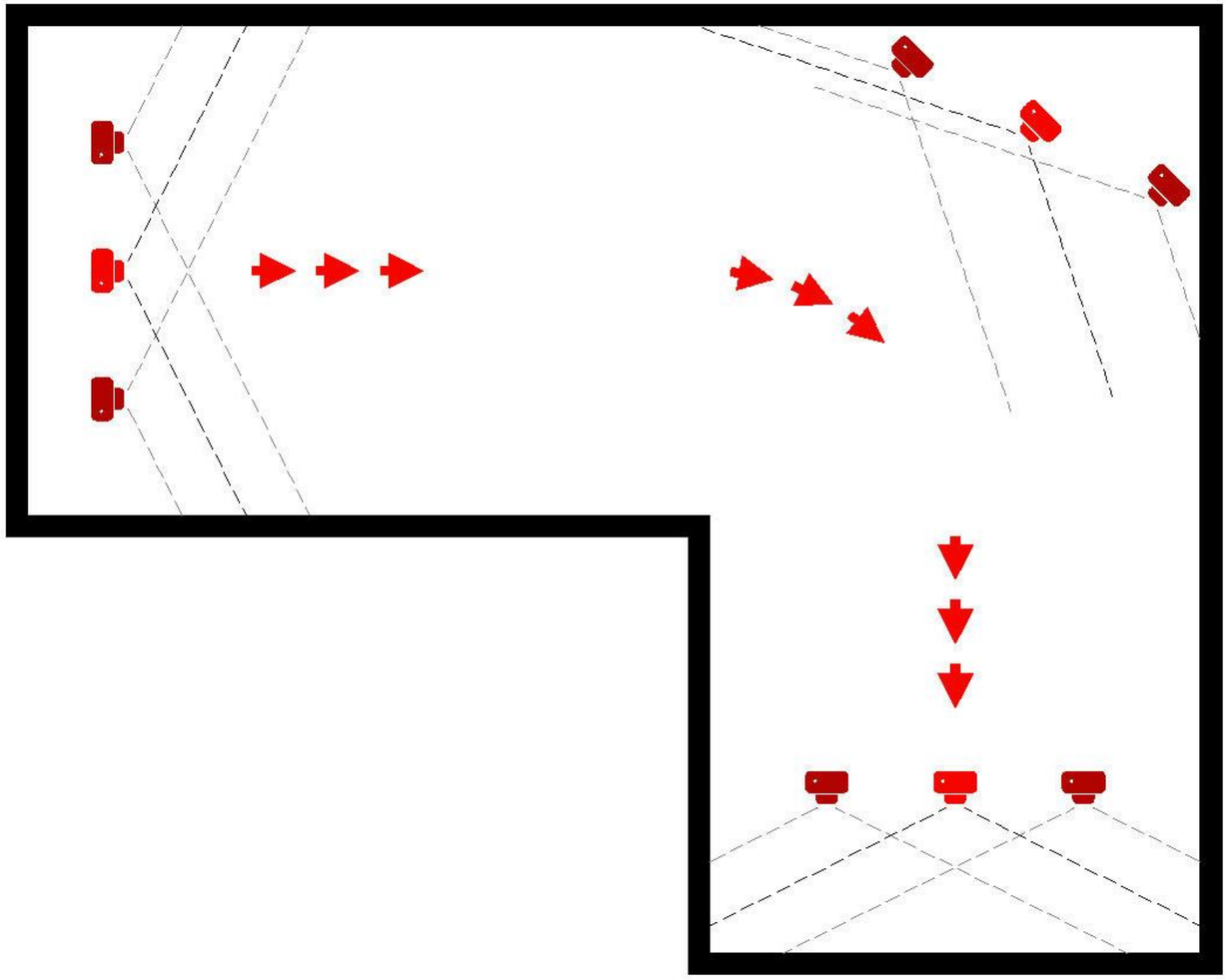
Overlapping Photos



Using Photogrammetry Equipment

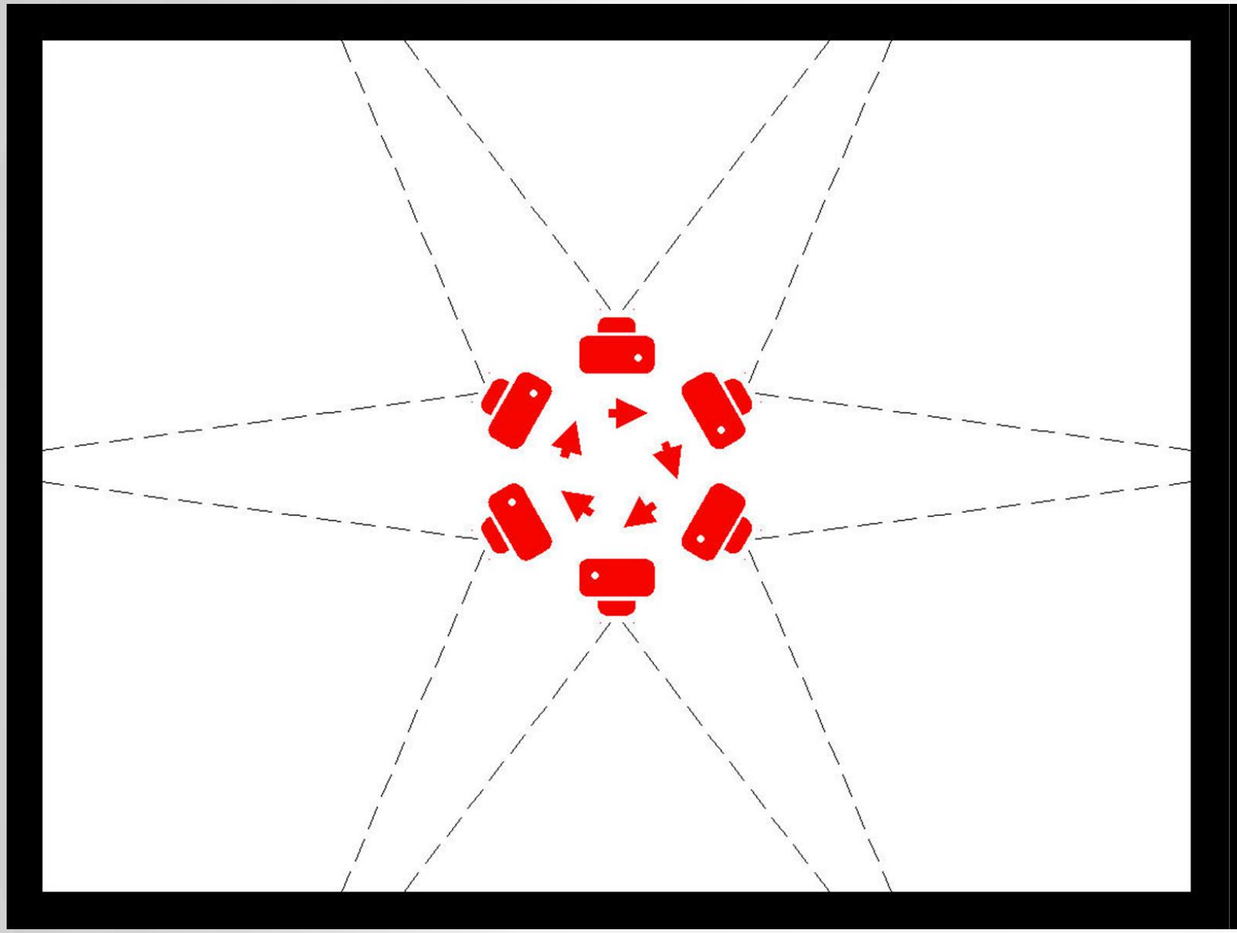
Gathering Data for Exterior Models

Maintain Same Direction and Flow

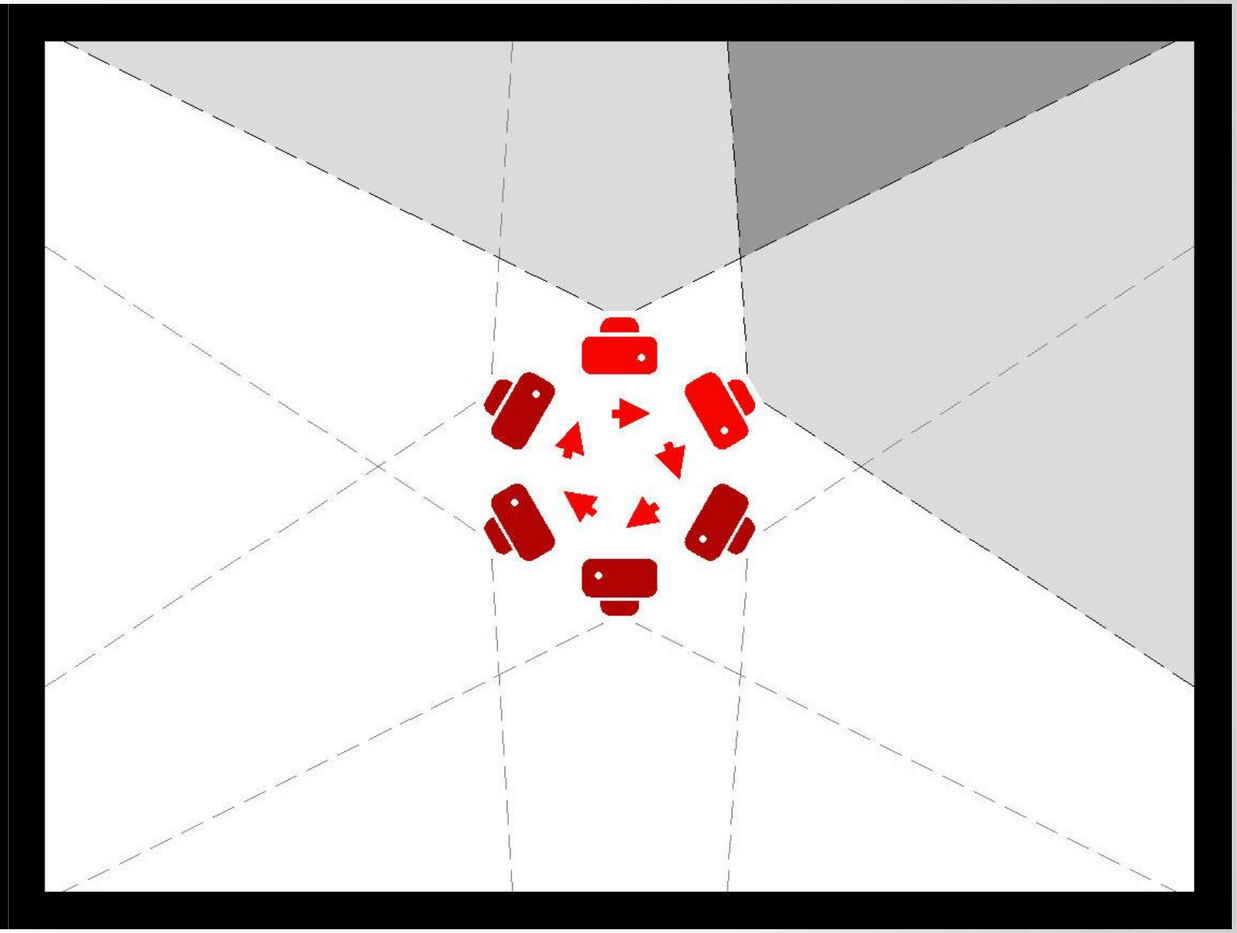


Trench Project

Gathering Data in an Electrical Utility Vault

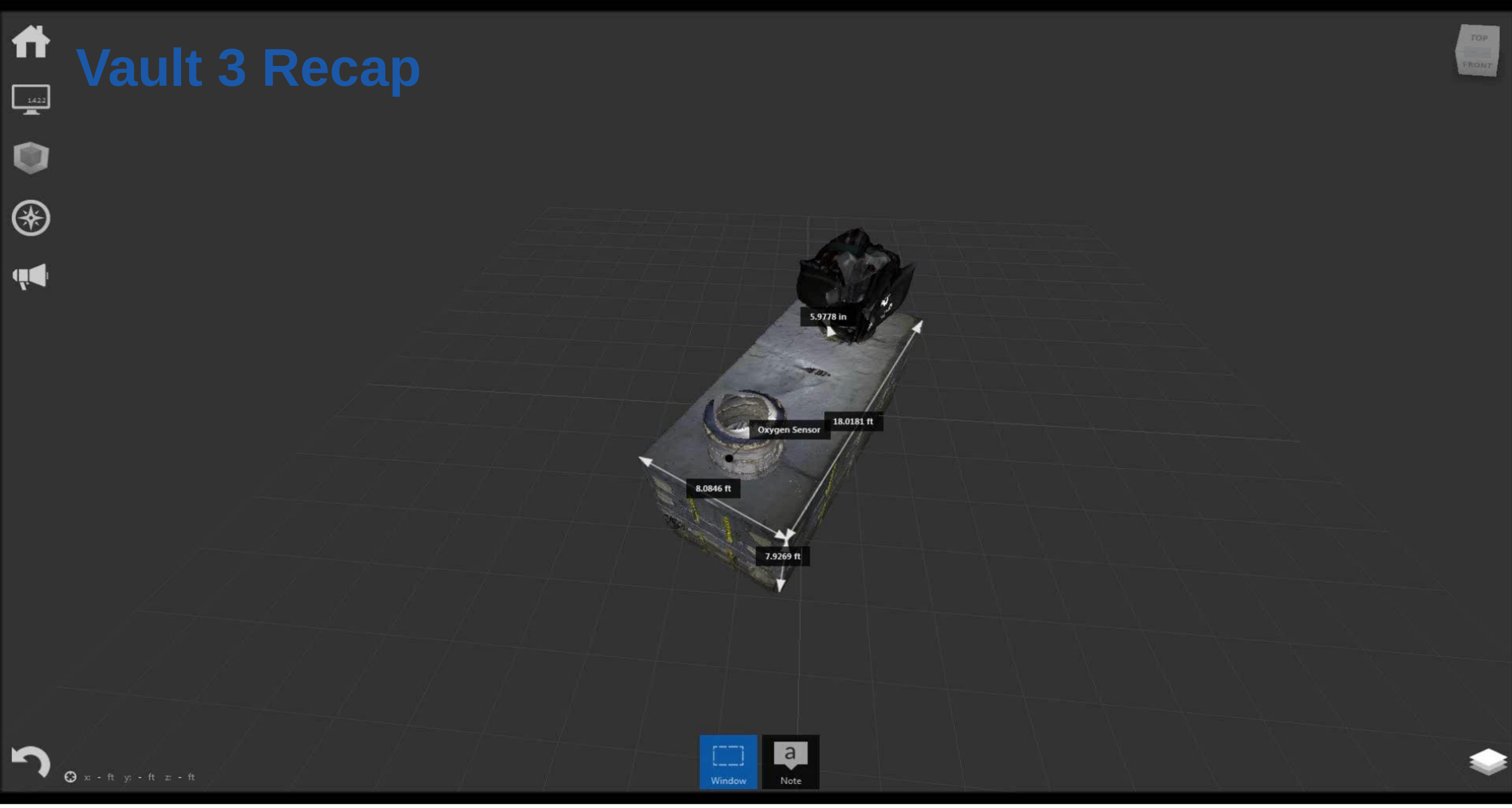


No Overlap



Good Overlap

Vault 3 Recap



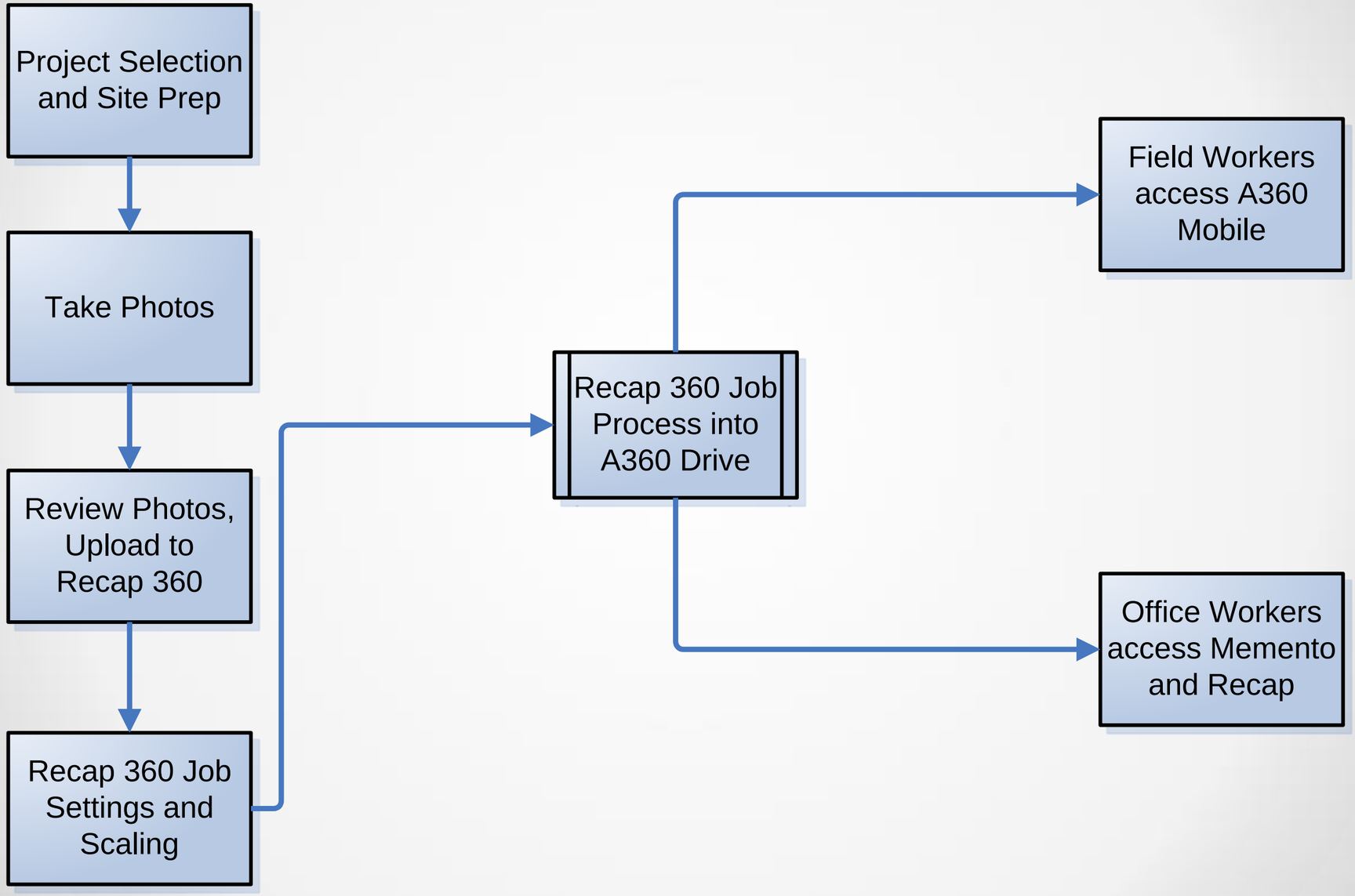
Model Uses

- Measurement of Vaults, Conduits, Conductors, etc.
- Safety Inspection
- Asbuilts
- Engineering Design
- Notes within a point cloud

Instant Communications

Mobile Demo

3D Modeling Workflow



Recap 360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RECAP 360
Everett Clary
3880
62% full on A360
enter a project name
project name
choose your project options
preview
ultra 5
use smart cropping
use smart texturing
units
foot
choose export formats
obj
rcm
fbx
ipm
rcs
ortho
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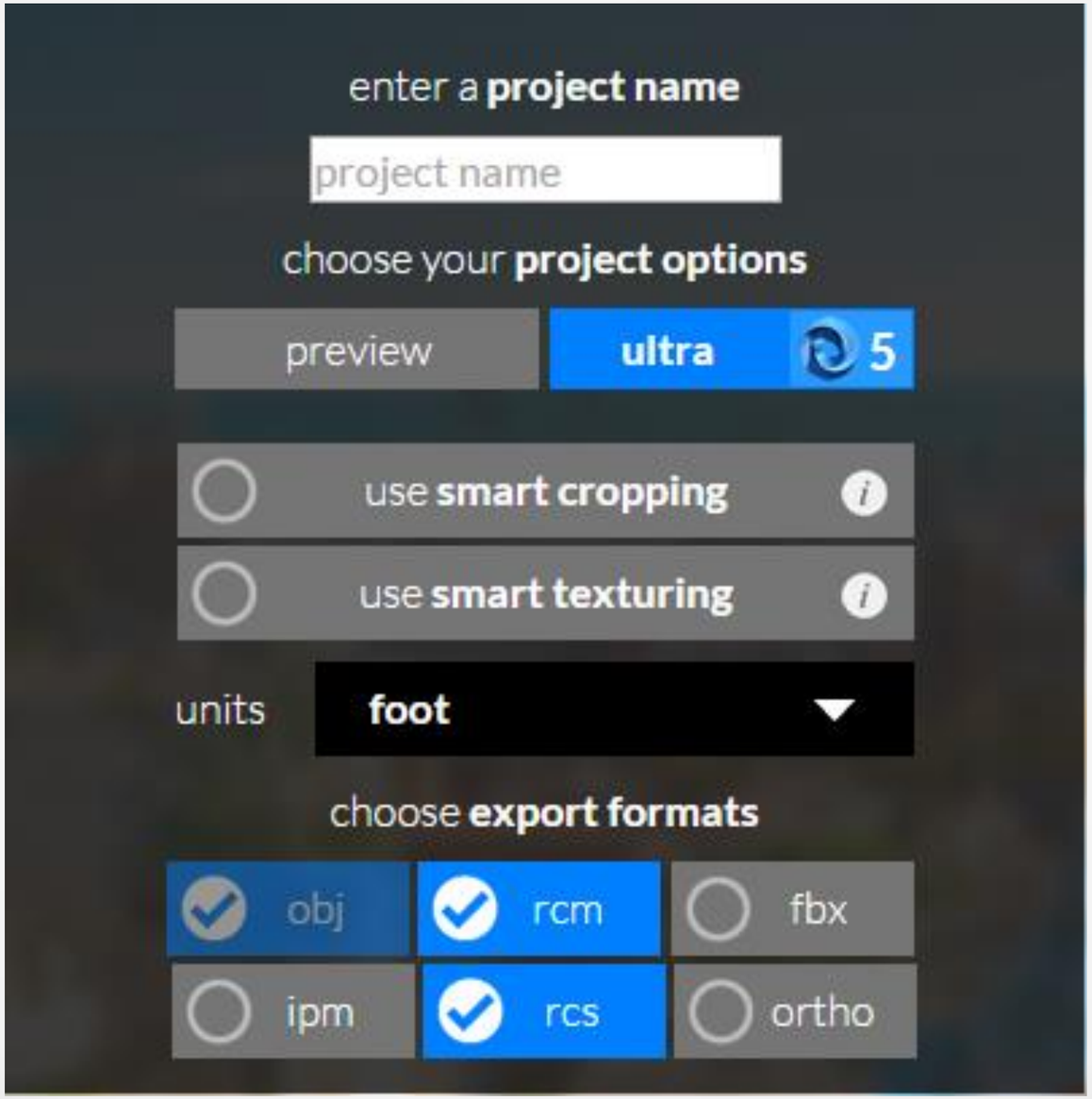
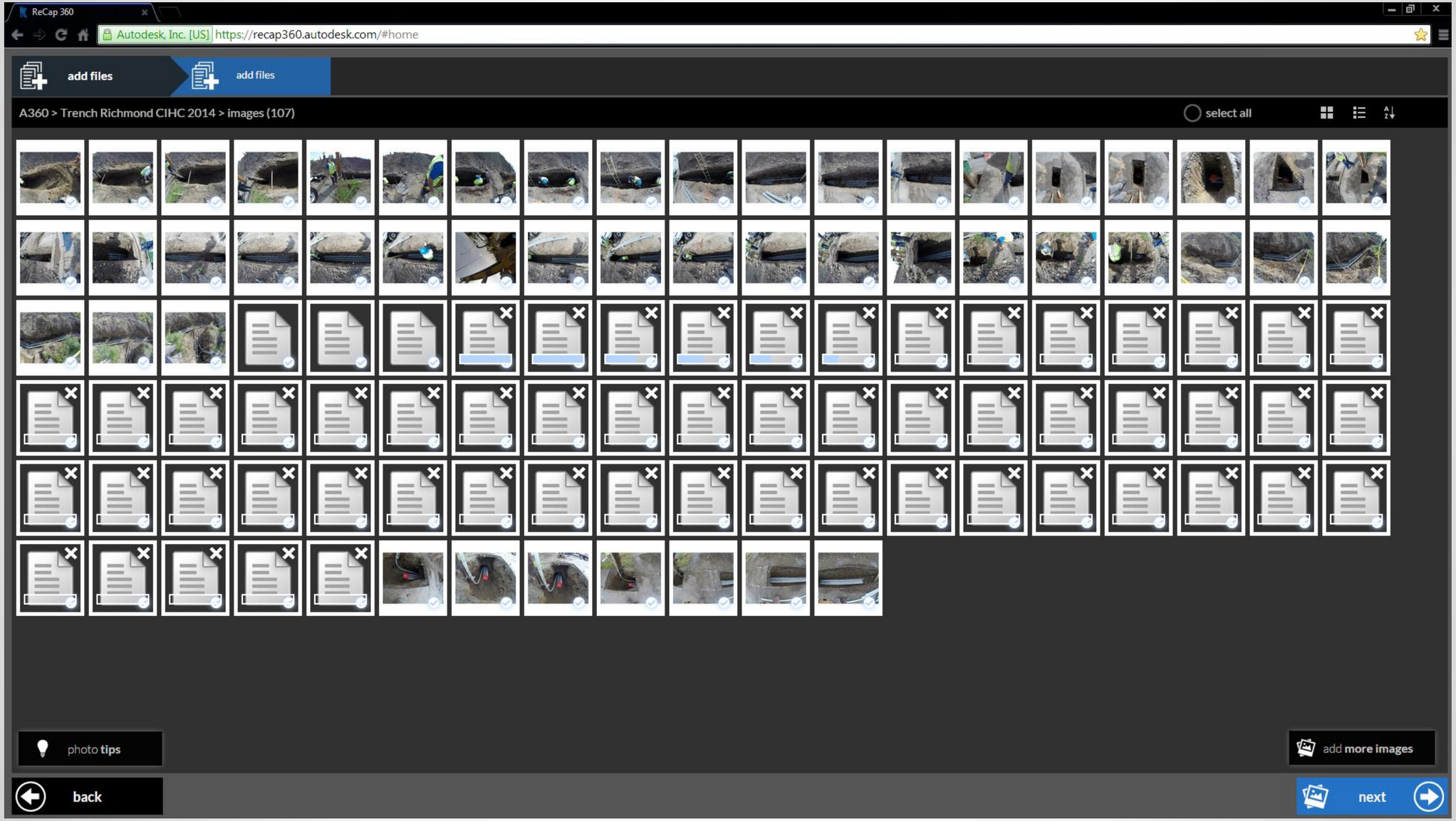
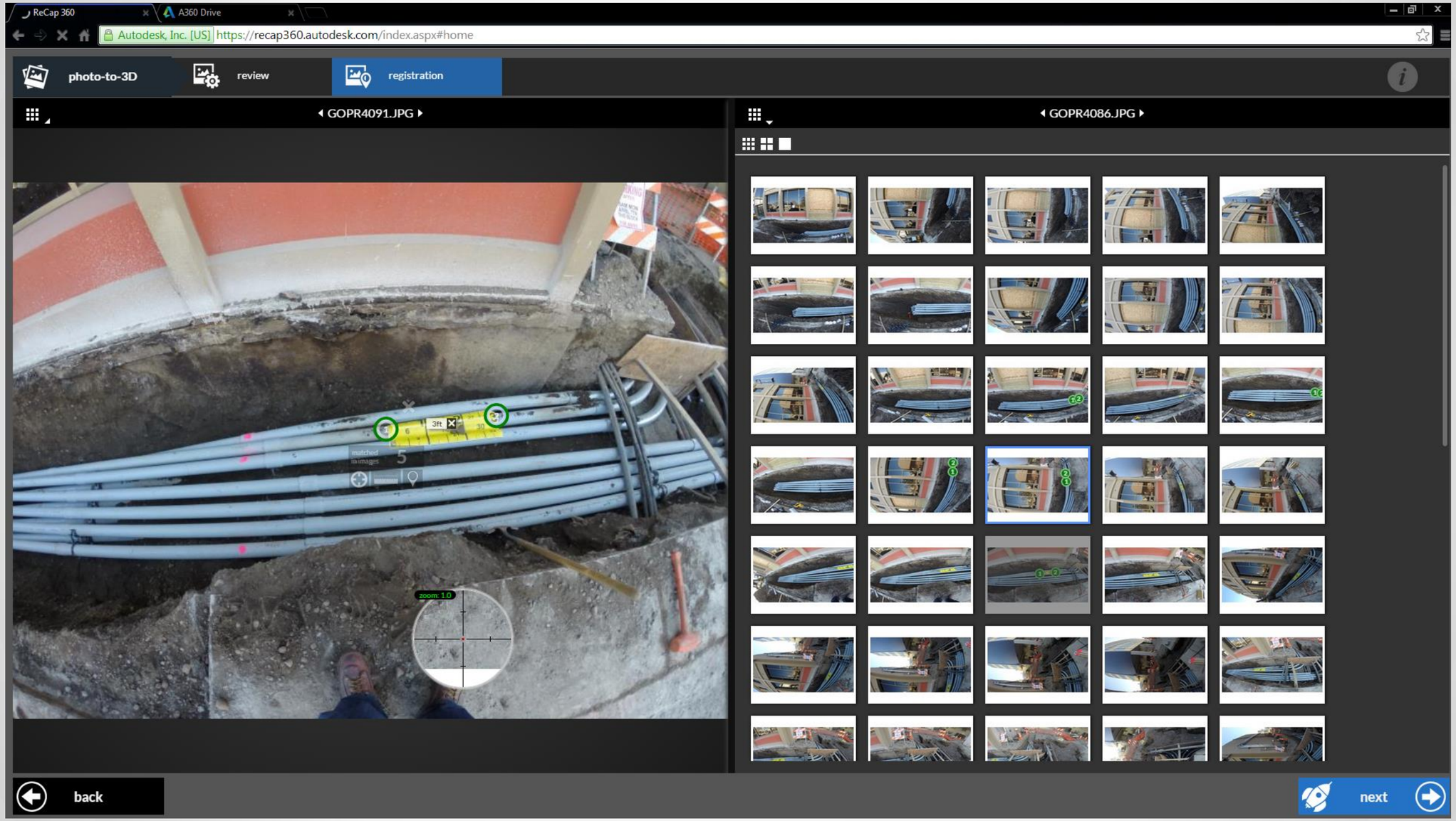
Recap 360, Output Types



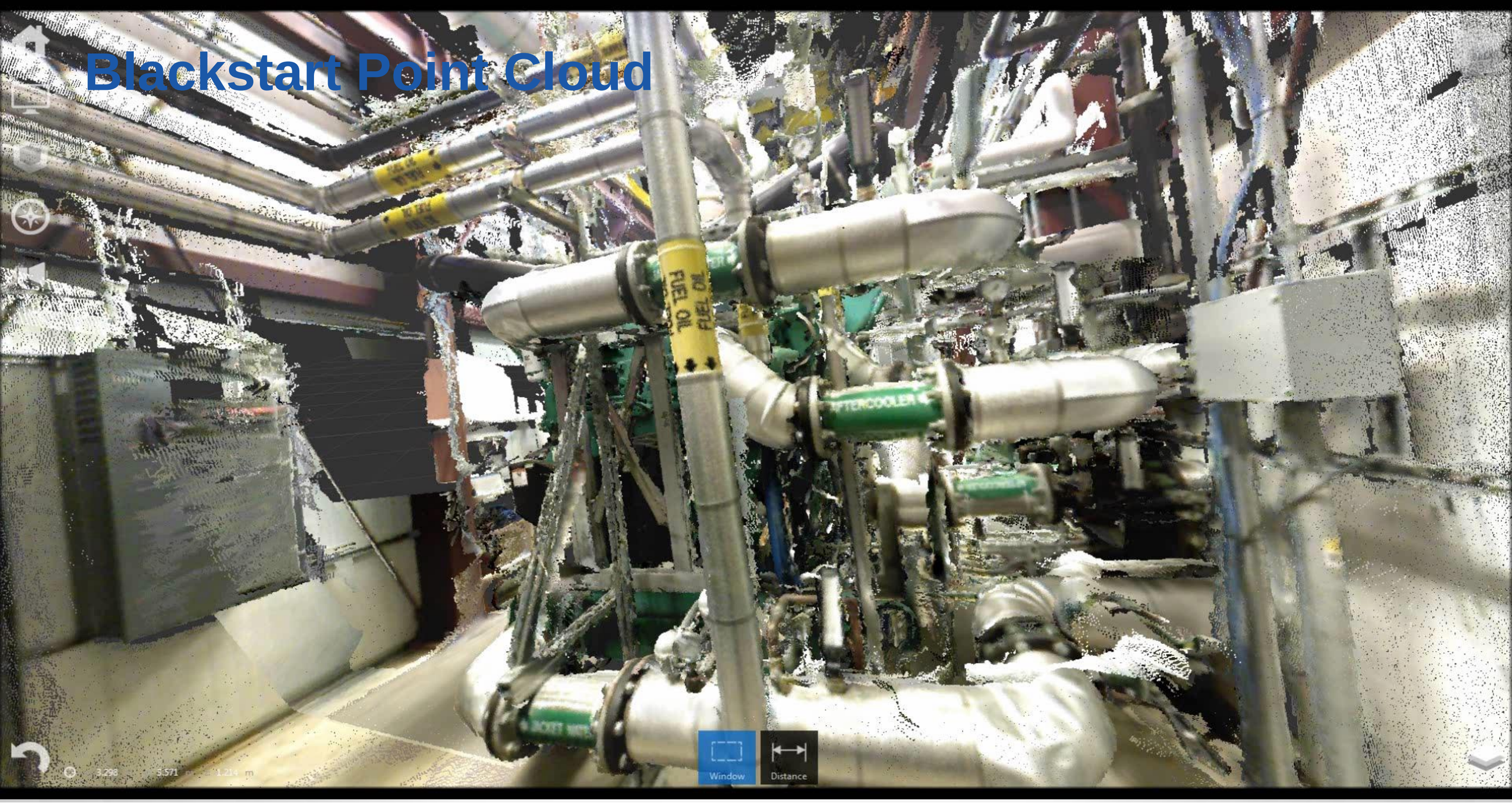
Recap 360, Uploading Photos



Recap 360, Scaling



Blackstart Point Cloud



The Future

- Present multiple data sources in Infraworks
  - GIS
  - Mesh Models
  - Point Cloud Model

Infraworks Hard Rock Café Project

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