Leveraging Esri Web Tools to View 3D Subsurface Utility Data

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Project Partners: Condux and Reduct

75-year+ History of Turning Raw Technology into Practical Energy Solutions

RESEARCH & DEVELOPMENT

PROGRAM MANAGEMENT

TECHNICAL/ ANALYTICAL

CONSULTING

TRAINING

COMMERCIALIZATION

400+ EMPLOYEES

World-class piloting facilities headquartered in Chicago area

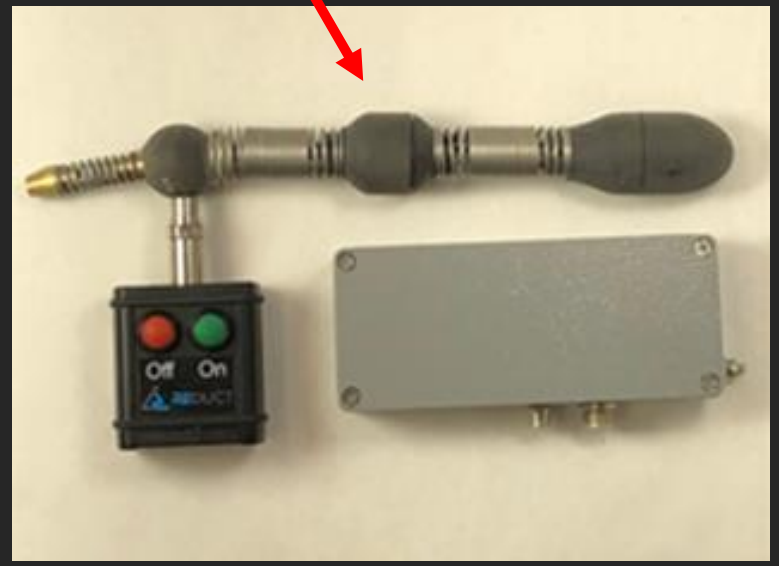
Project Background

- The purpose of this PHMSA and Operations Technology Development (OTD) sponsored project was to:
  - Identify unlocatable plastic pipe with high accuracy
  - Work on live gas pipes
  - Record X, Y, and Z data
- We utilized Esri web service tools to complete the following:
  - Provide tools for any type of user to visualize results
  - Create ways to deliver results (email, direct to SDE, store in Portal)
  - Results need to be 3D capable

Technology Background

Live-gas Insertion

Mapping probe

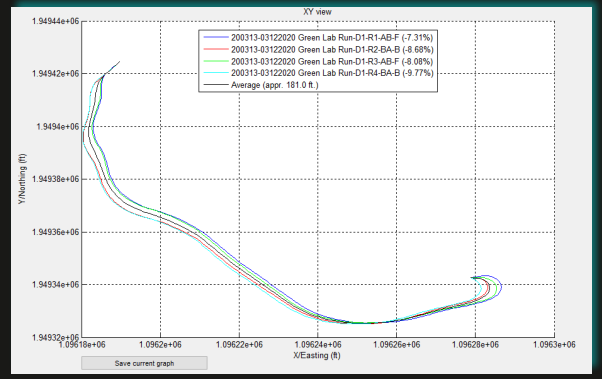


Duct rod pusher

Duct rod spool

- GeoProcessing Services turned Web App Builder Widgets
- Web App Builder application
- Portal for ArcGIS
- ArcGIS Server
- SQL SDE Enterprise Database

Data Collection Workflow

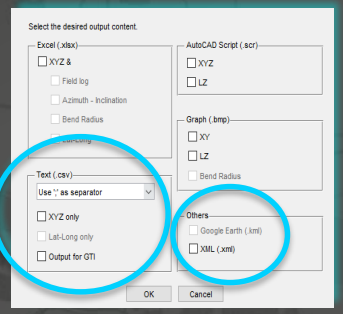


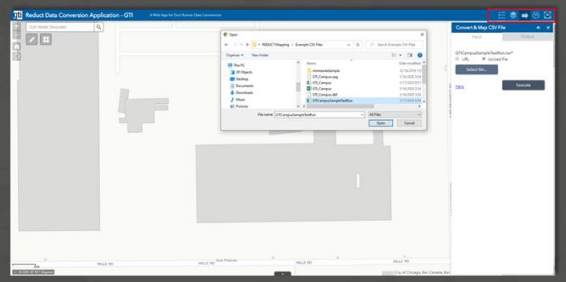
Tap into the Pipe and Insert Probe

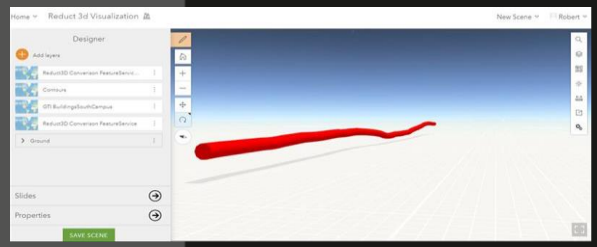
Push & Pull Probe Inside the Pipe

Extract Probe & Download Data

Normalize Data





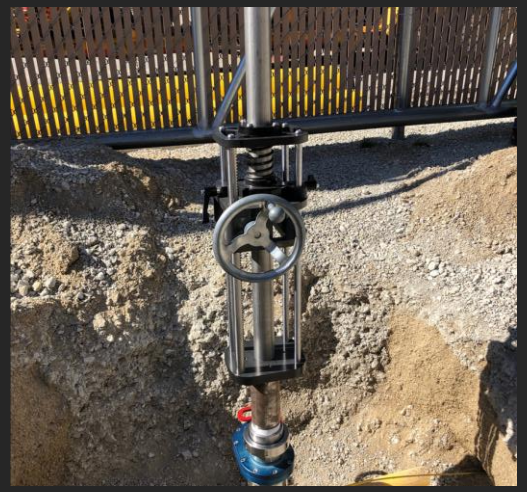


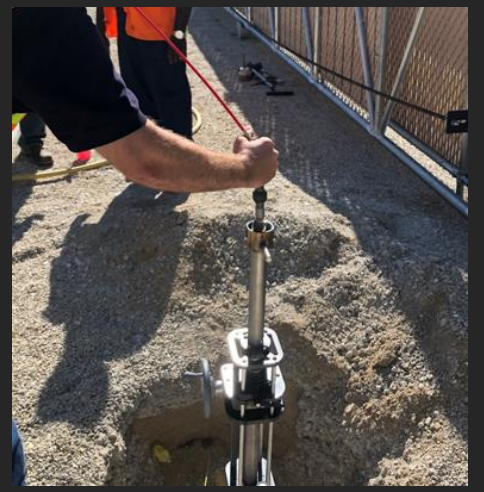
Export Result to CSV

Load CSV to Web App

Map !

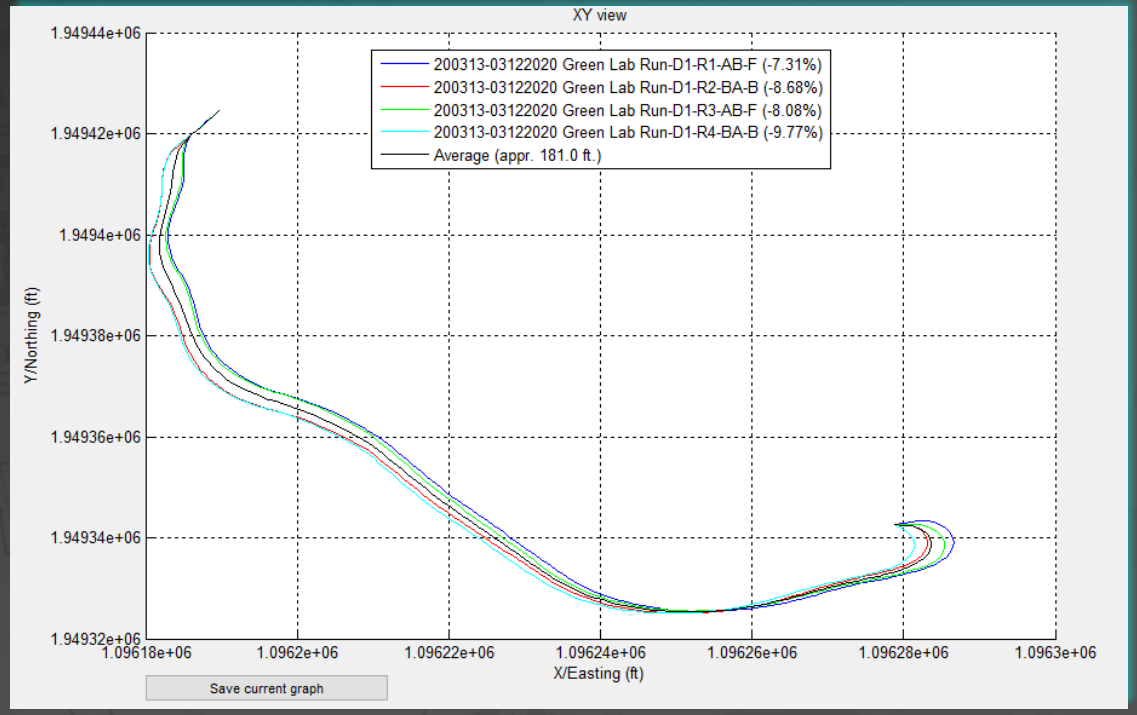
Demonstration – Insertion of Probe into Live Gas Pipe

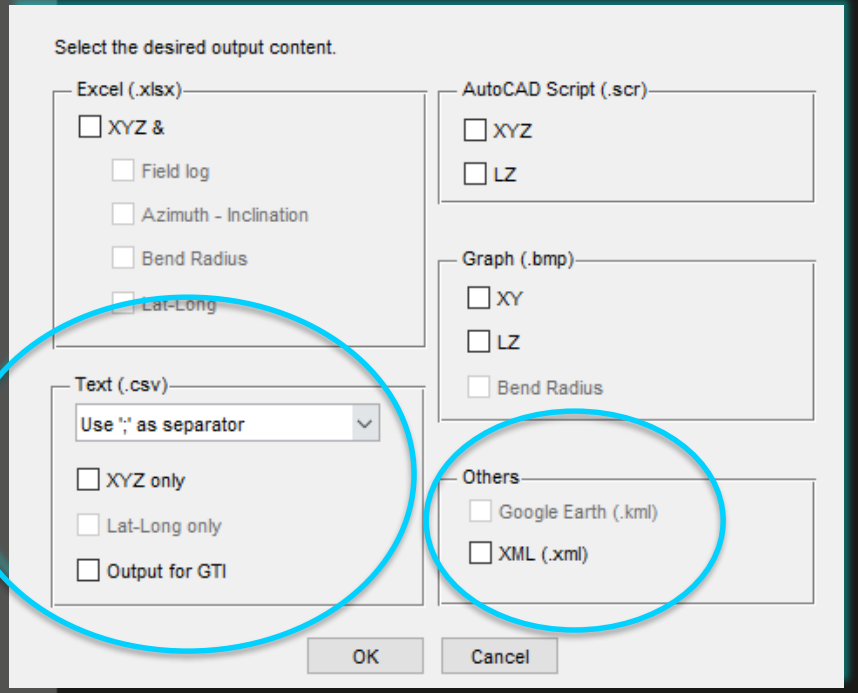




- Mapped with 22-25 psig pressurized natural gas pipelines
- Validated bi-directional performance
- Displayed results in multiple formats, 2D, 3D, SDE integration

Demonstration – Data Extraction & Data Normalization





Distance_	Easting	Northing	Depth	Azimuth	Pitch
0	1095724	1950015	0	0	0
1.7	1095726	1950015	0.038	77.8	1.3
2	1095726	1950015	0.042	77.1	0.7
3	1095727	1950015	0.064	77.6	1.3
4	1095728	1950016	0.108	78	2.5
5	1095729	1950016	0.135	78.9	1.6

Demonstration – Mapping & Visualization

Output CSV File

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Python Scripts

GeoProcessing Services

Convert CSV to Points and Line

Export Data to Portal

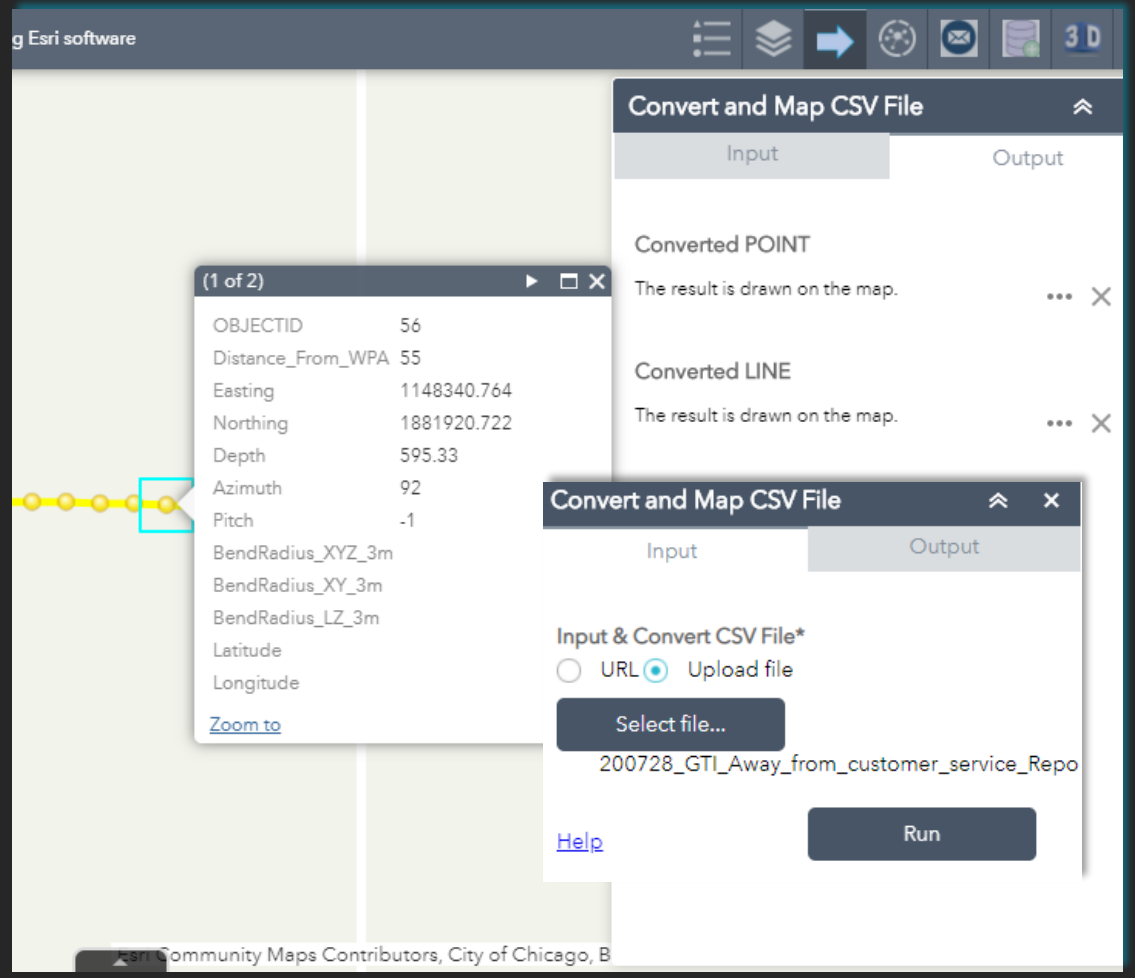
Email Data as Zip File

Export Data to Enterprise SDE

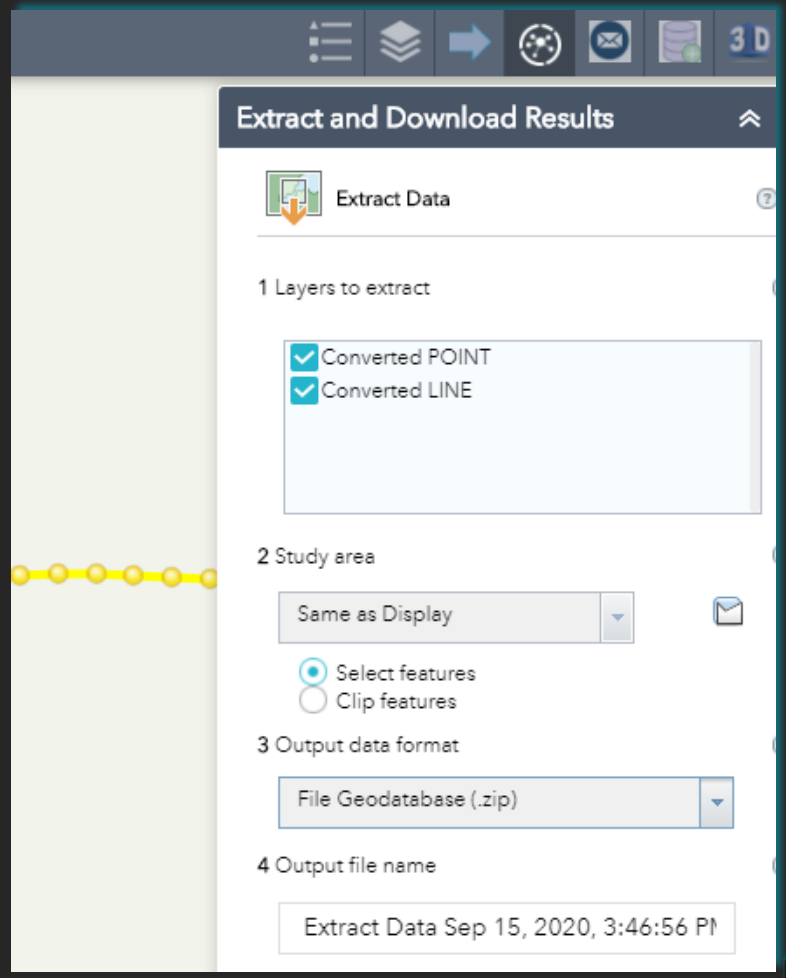
Convert Data to 3D

Demonstration – Mapping & Visualization

Convert CSV to Points and Line

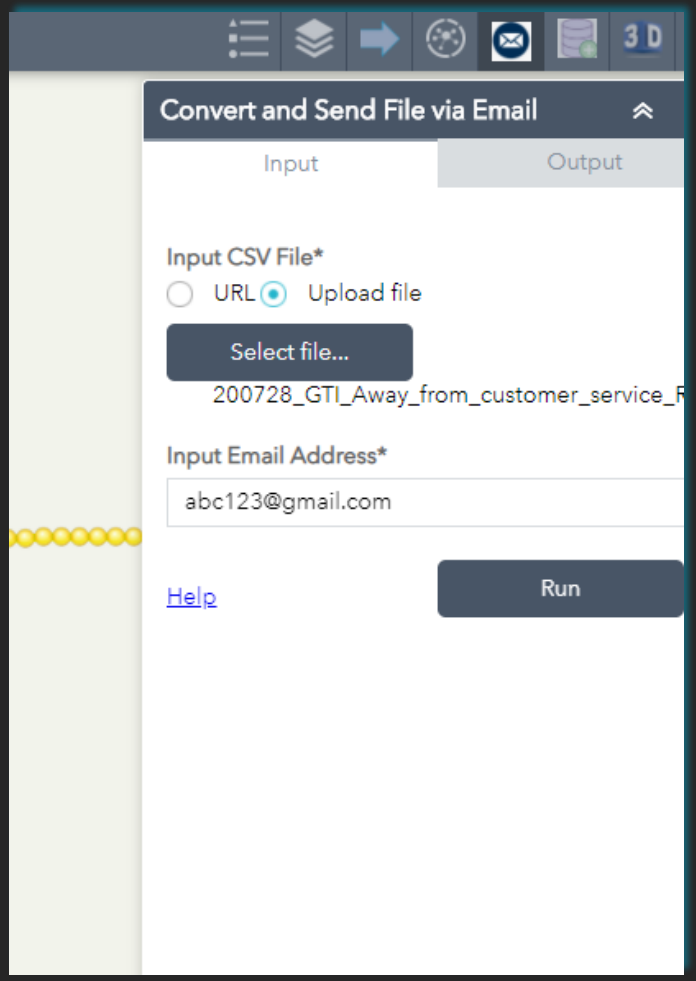


Export Data to Portal

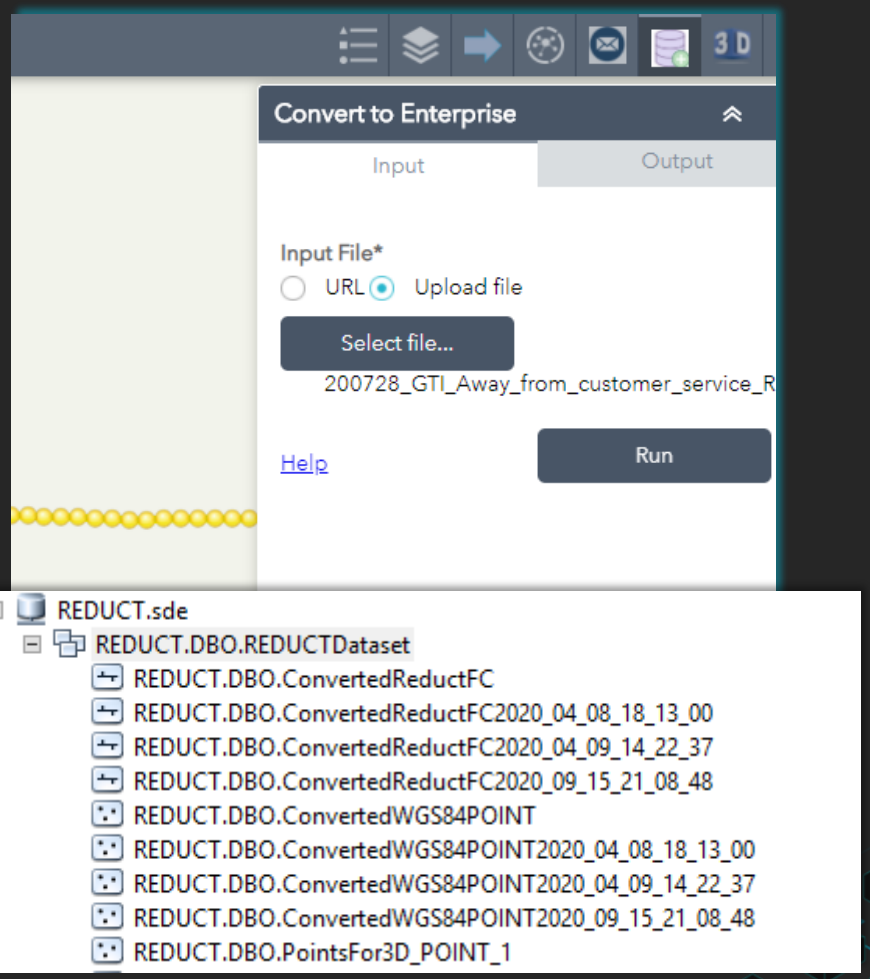


Demonstration – Mapping & Visualization

Email Data as Zip File

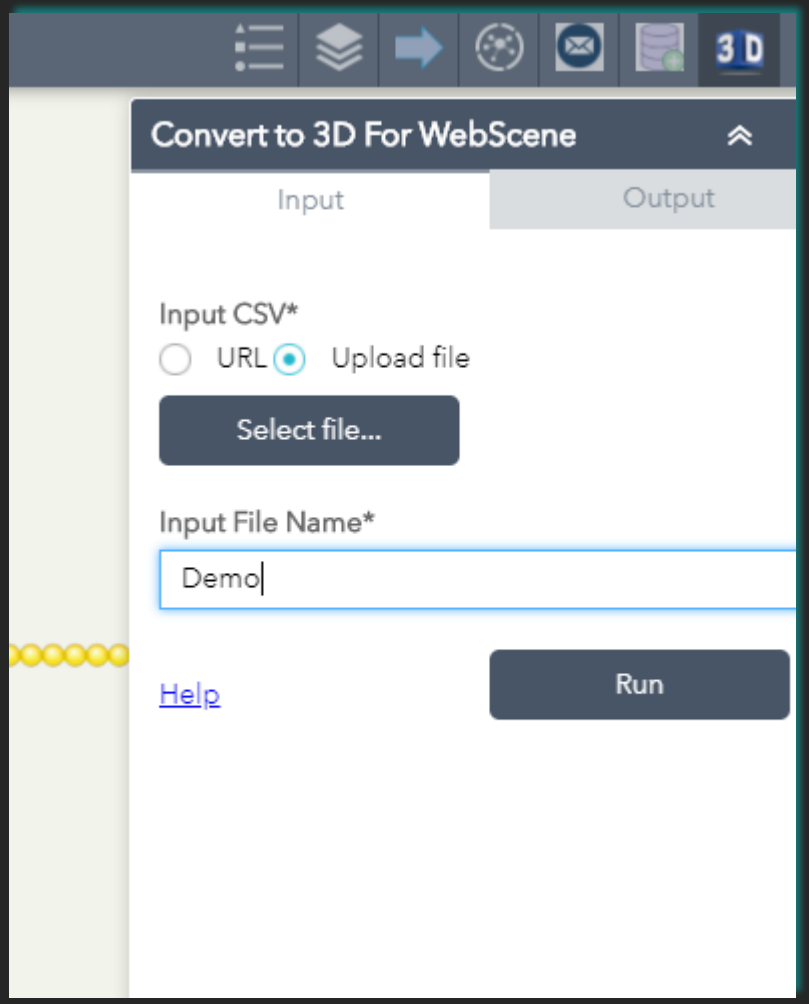


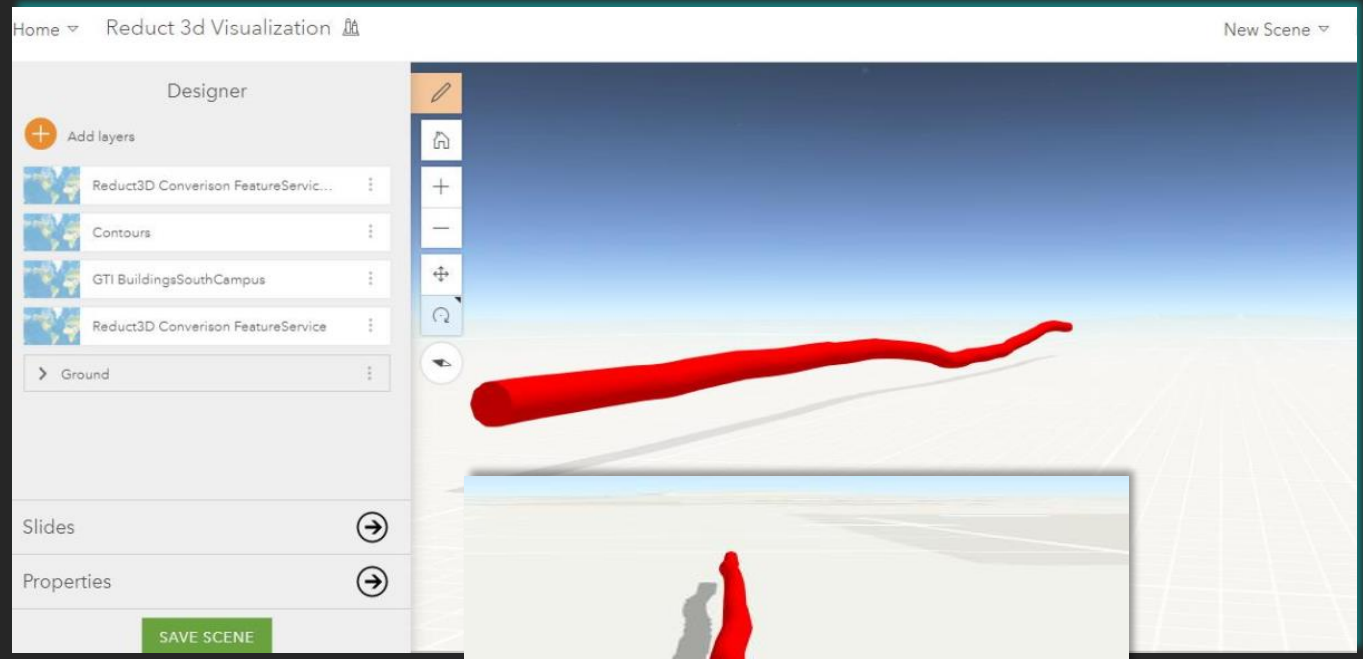
Export Data to Enterprise Database (SDE)

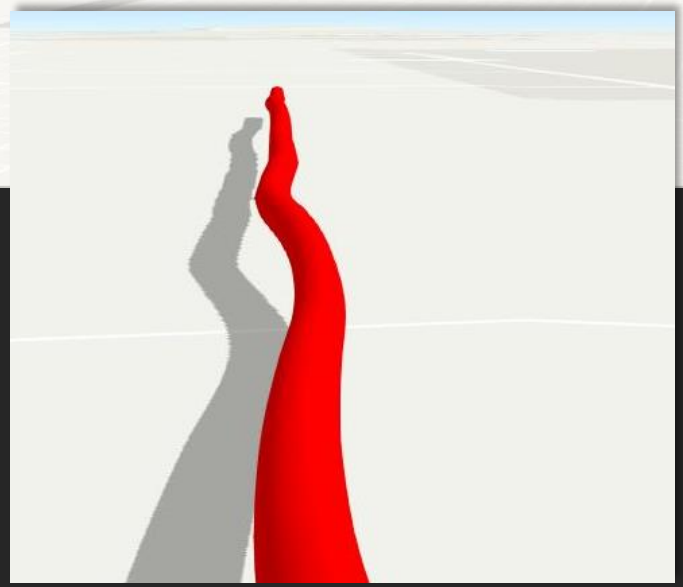


Demonstration – Mapping & Visualization

Convert Data to 3D







Please contact us with questions.

Contacts:

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