

Agenda

– Introducing

Bentley® Pointools™ V8i

for *Producers*

for *Users*

– iWare Apps :

Bentley Pointools View

Bentley Pointools PODcreator

Presenter

Dan Cutler

Application Engineer

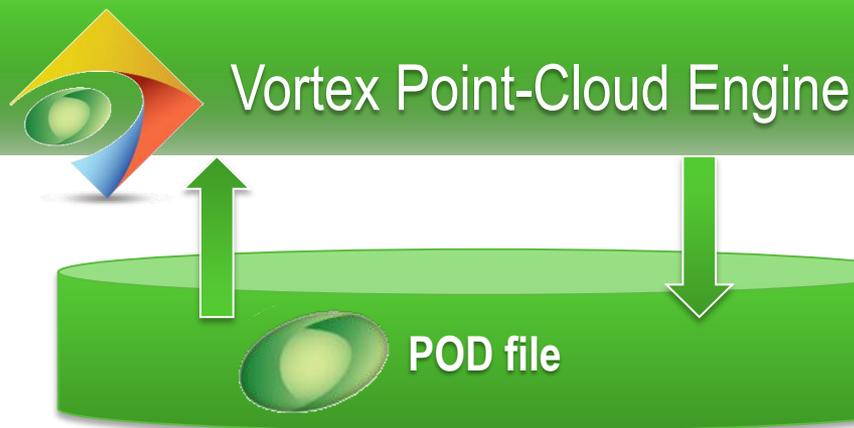
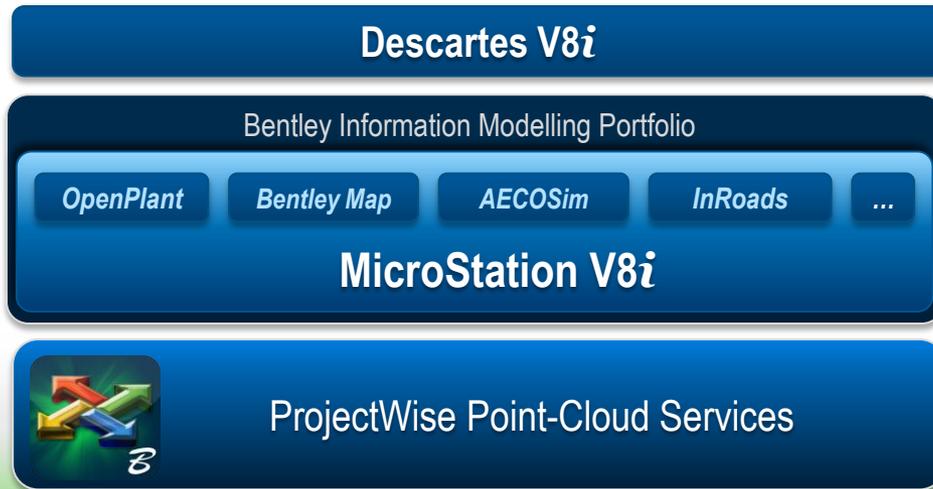
dan.cutler@bentley.com

Bentley Systems, London

Point Clouds at Bentley

MicroStation based Workflows

Standalone Workflows



Bentley® Pointools™ V8i

A POWERFUL TOOLKIT FOR POINT CLOUD CENTRIC WORKFLOWS

Easy

To Learn

Intuitive, easy to learn
requiring minimal
training



Fast

To Use

Take the pain out of
working with large point
cloud files



Useful

Results

Deliver meaningful
output and enhance
point cloud workflows

Bentley® Pointools™ V8i

WHATS NEW?

New User Interface

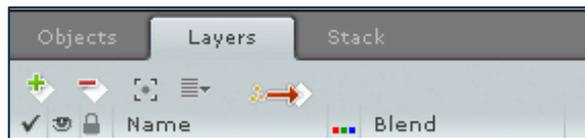
Data Import

LAZ

E57

ZFS/ZFW

Improved spatial filtering (sub-sampling)

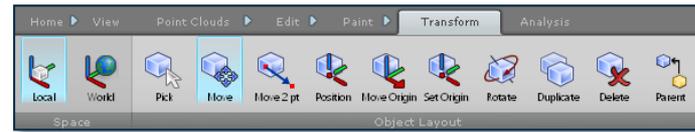


Improved layers system

128 layers

Layer by layer editing

Classification to layer



Object transformation tools

Full in viewport move, rotate

Key-in position or offset

Object parenting

Script behaviours

Animation and Rendering

Object Animation

Stereo rendering

Tiled rendering

Point cloud density (for fade in/out)

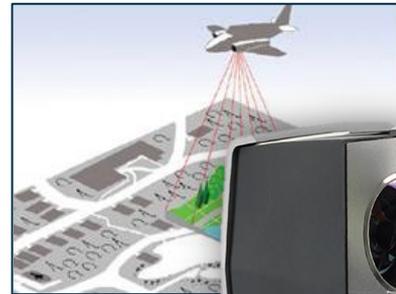
Faster anti-aliased rendering

Clash Detection and Differencing

Bentley® Pointools™ V8i

for *Producers*

- You capture point clouds using laser scanning or other methods

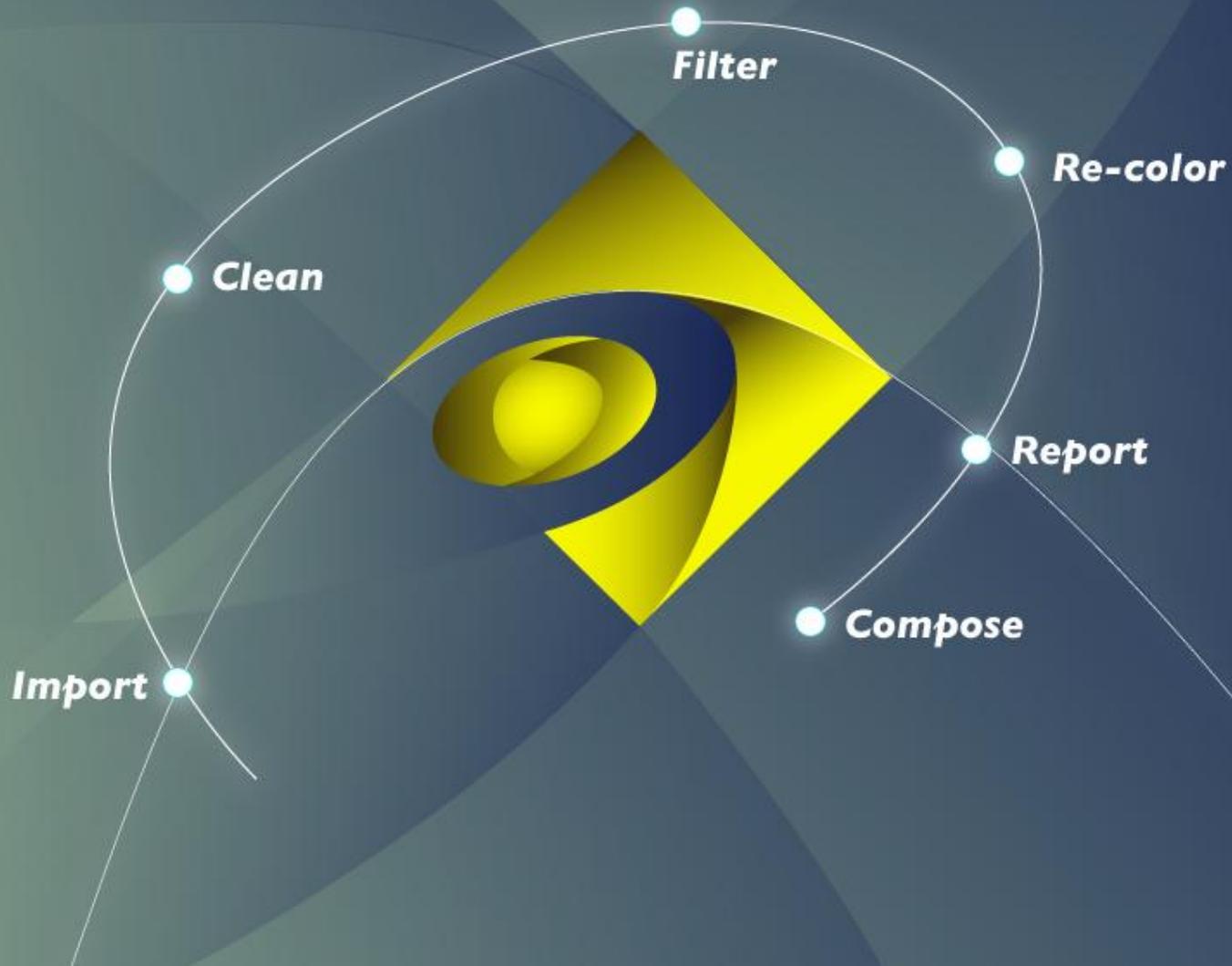


- Point clouds are a deliverable for your internal or external clients



Bentley Pointools V8*i*

for *Producers*



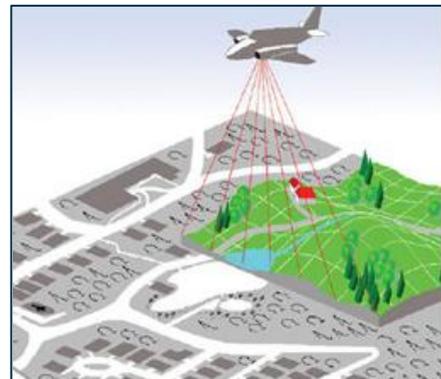
Bentley® Pointools™ V8i

for *Producers*

IMPORTING DATA

- Hardware Interoperability
 - Broad Format Support
 - Minimize data conversion
 - Hardware agnostic

 - Standards Support
 - LAS / LAZ
 - E57



Bentley® Pointools™ V8i

for *Producers*

CLEAN UP

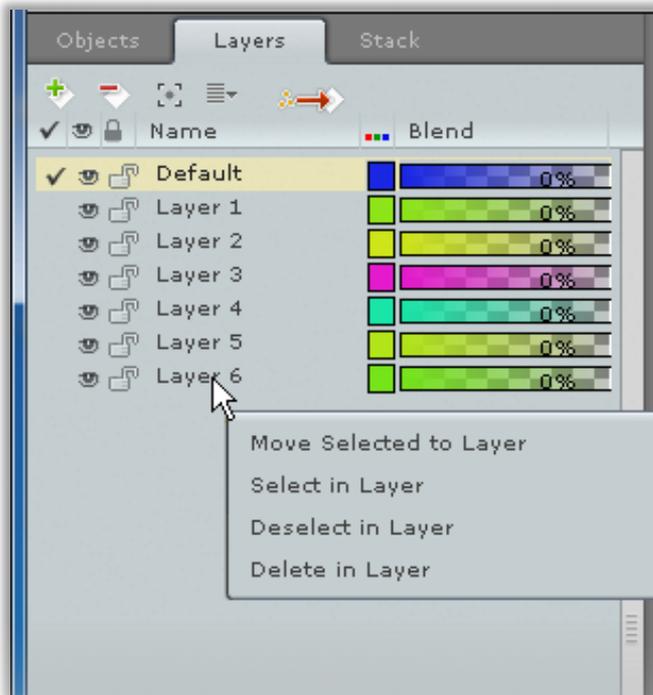
- Fast layer based editing tools



Bentley® Pointools™ V8i

for *Producers*

CLEAN UP

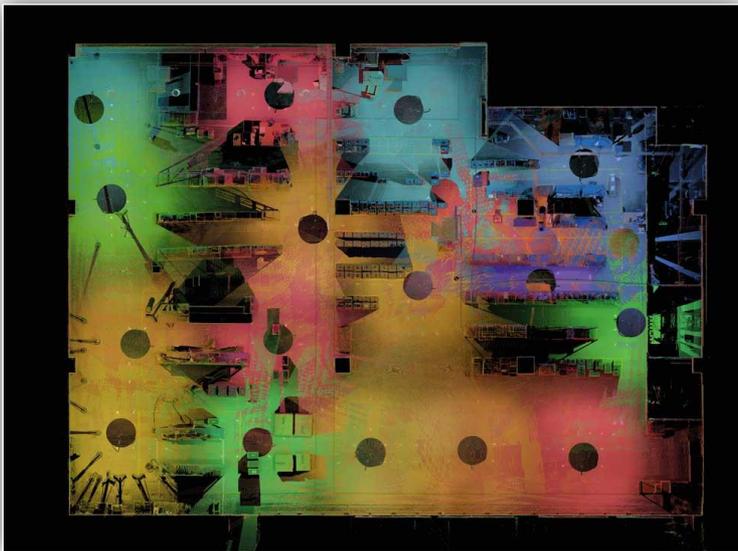


- CAD like layers system, with layer color and blend
- Enables faster noise removal, clean-up and segmentation

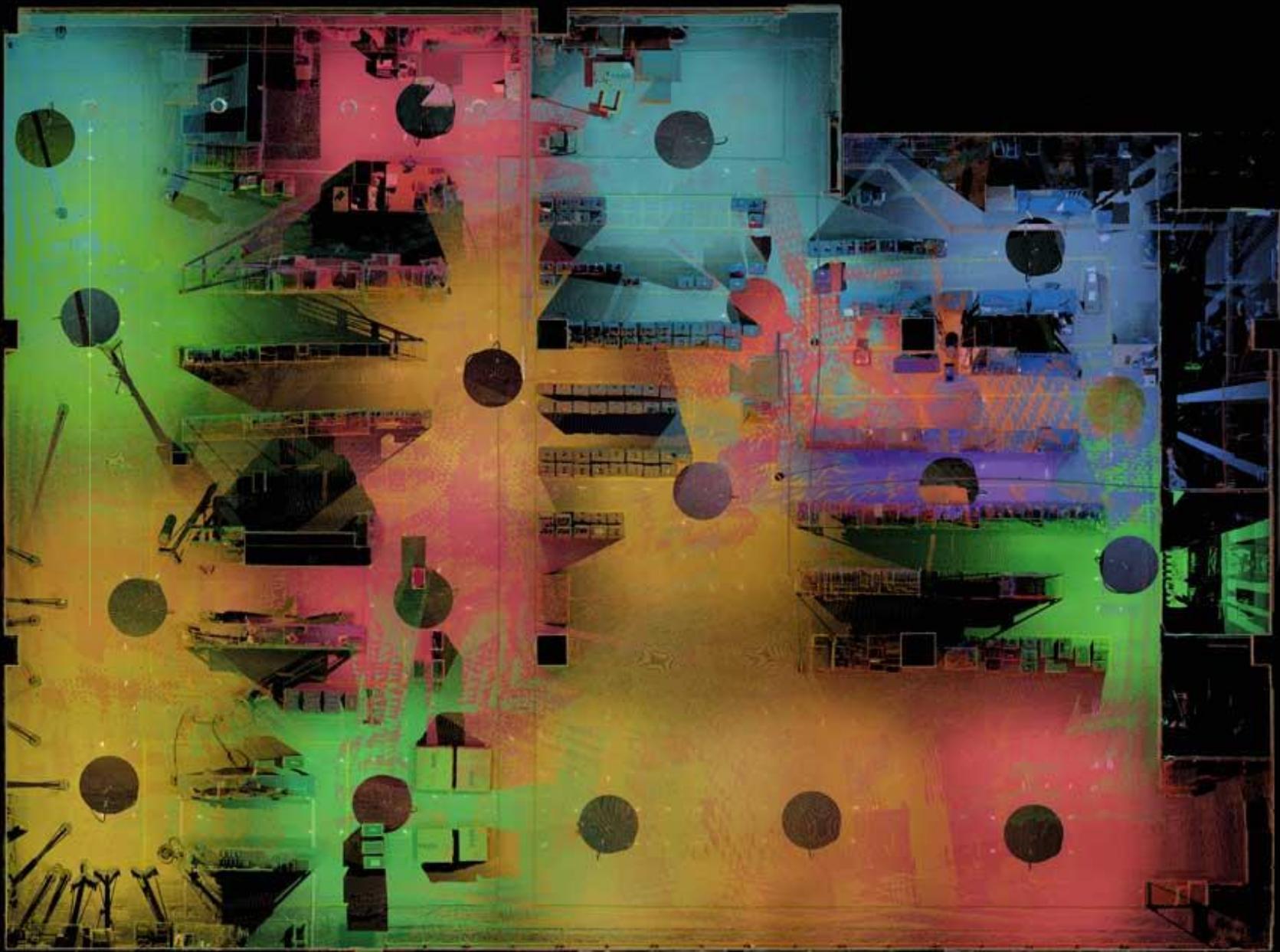
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for *Producers*

SCAN BY SCAN EDITING



- Using Layer Isolation Mode
- Layer Colors help in identification











LEARN MORE: LAYERS

YouTube GB

Faraz Ravi 0

Bentley Pointools by PointoolsDRC

47

Bentley Pointools V8i Preview - Interface by PointoolsDRC

Bentley Pointools V8i Preview - Layers by PointoolsDRC

Bentley Pointools V8i Preview - Object Animation by PointoolsDRC

Product Tour Bentley Pointools V8i by PointoolsDRC

Bentley Pointools V8i - Clash Detection and Dif... by PointoolsDRC

1:07 / 2:00

Bentley Pointools V8i Preview - Layers

PointoolsDRC · 62 videos

619 views

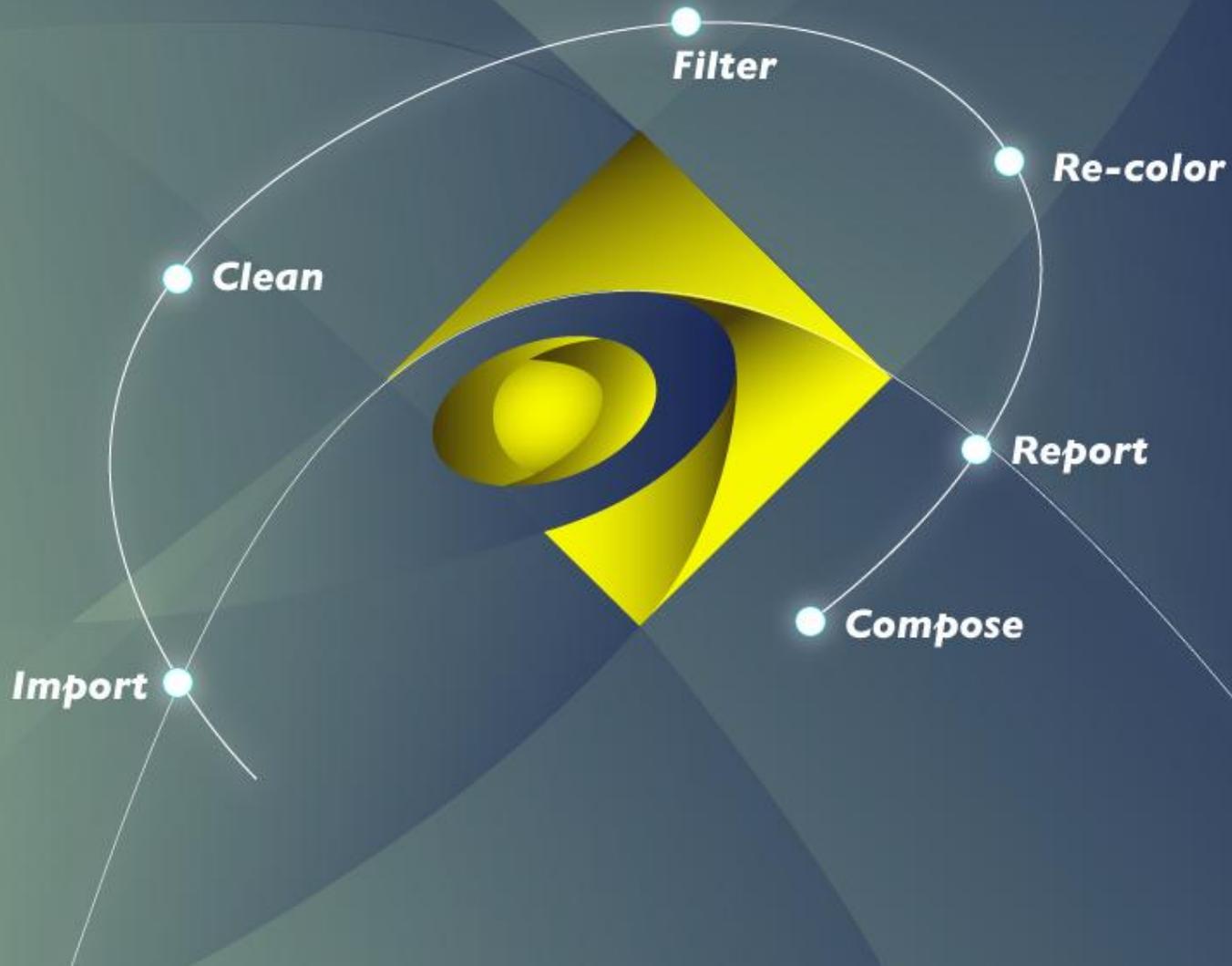
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www.youtube.com/pointoolsDRC

Bentley Pointools V8i

for *Producers*

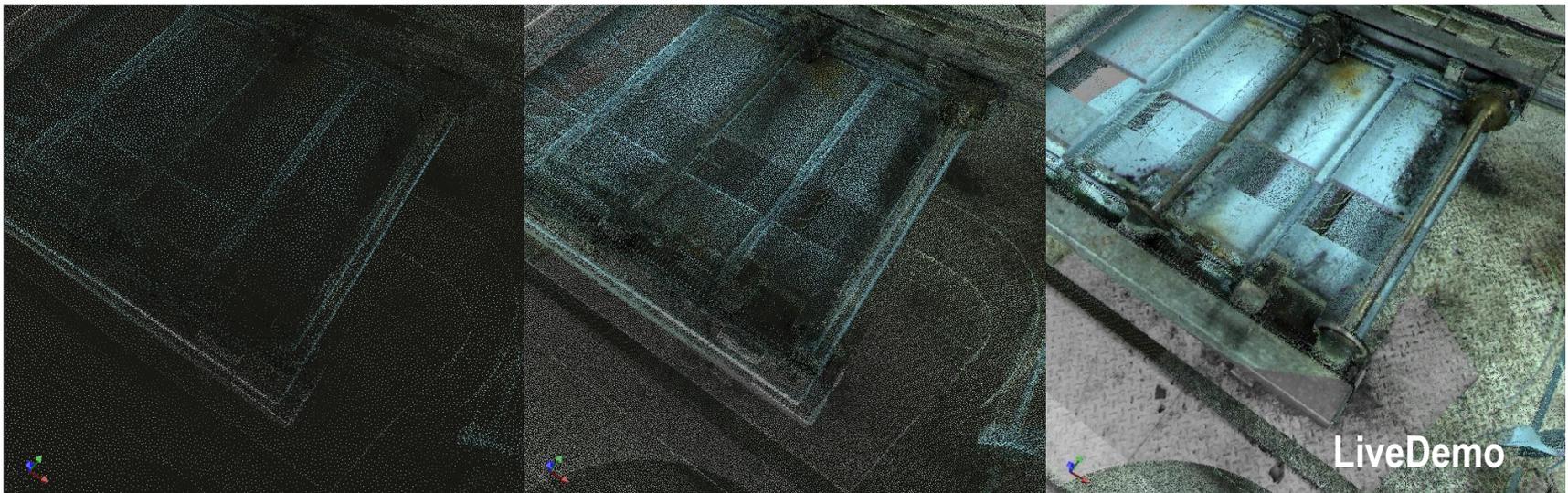


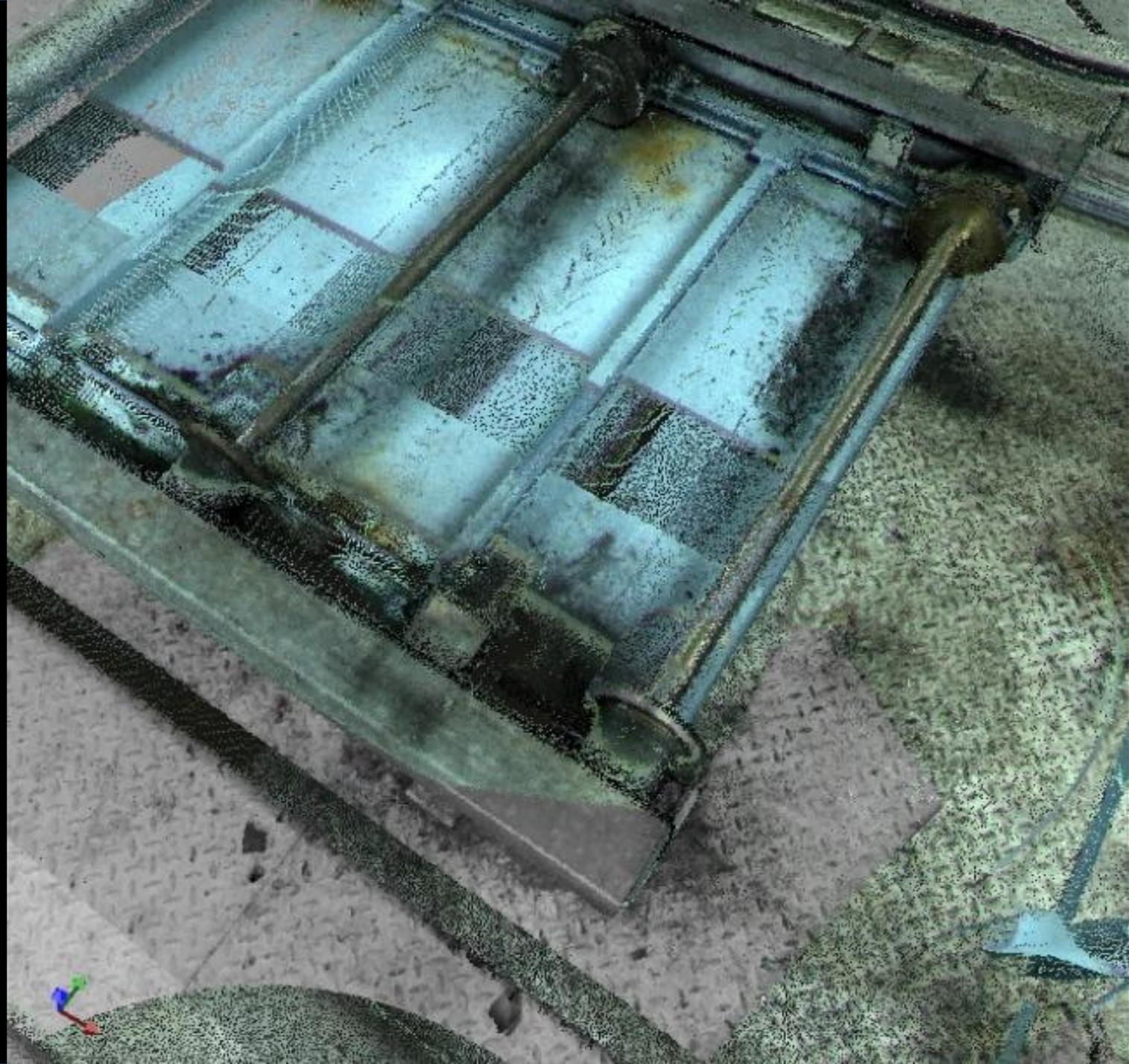
Bentley® Pointools™ V8i

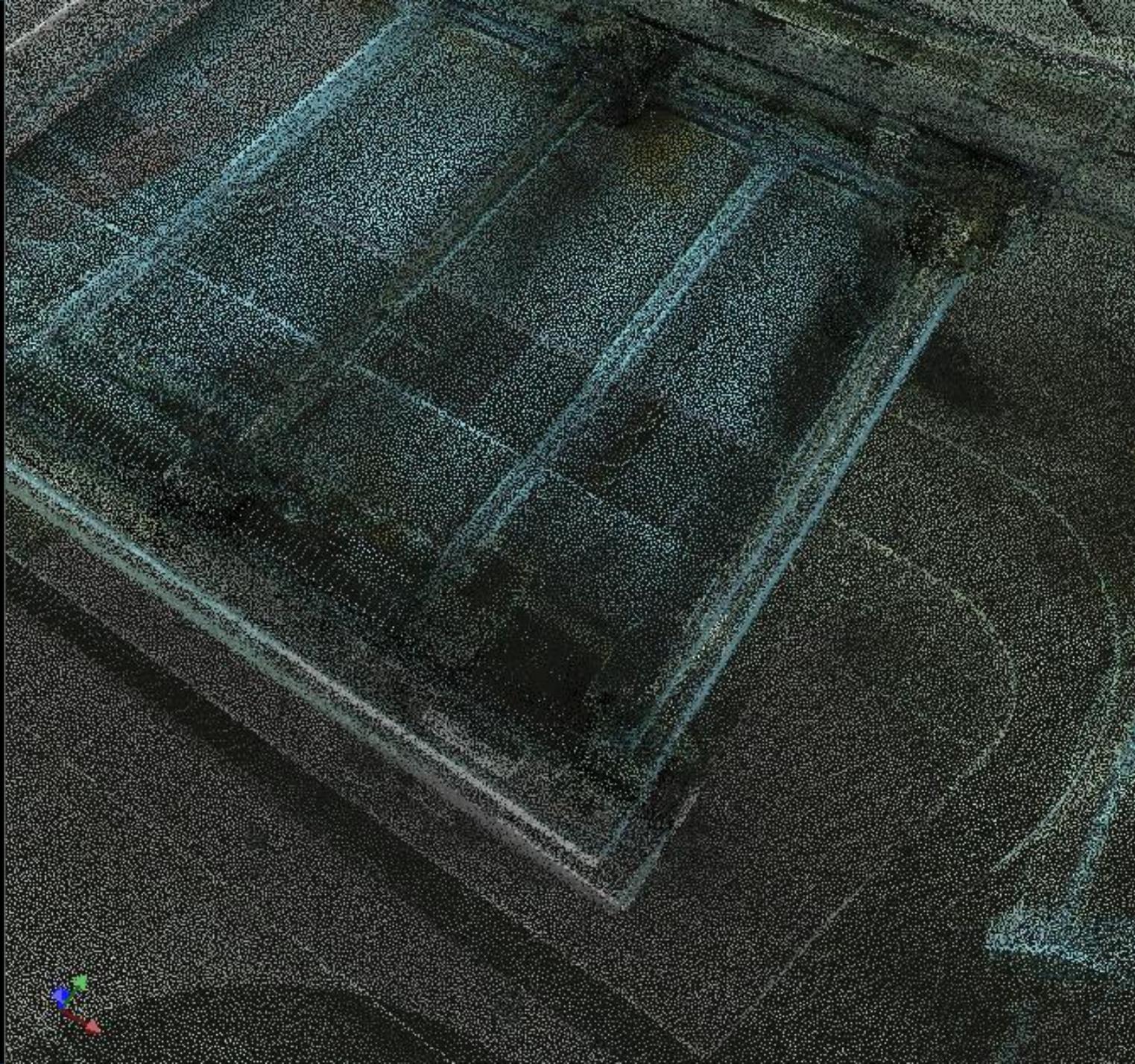
for *Producers*

SUB-SAMPLING / FILTERING

- High Quality Sub-Sampling
- Uniform density without moiré

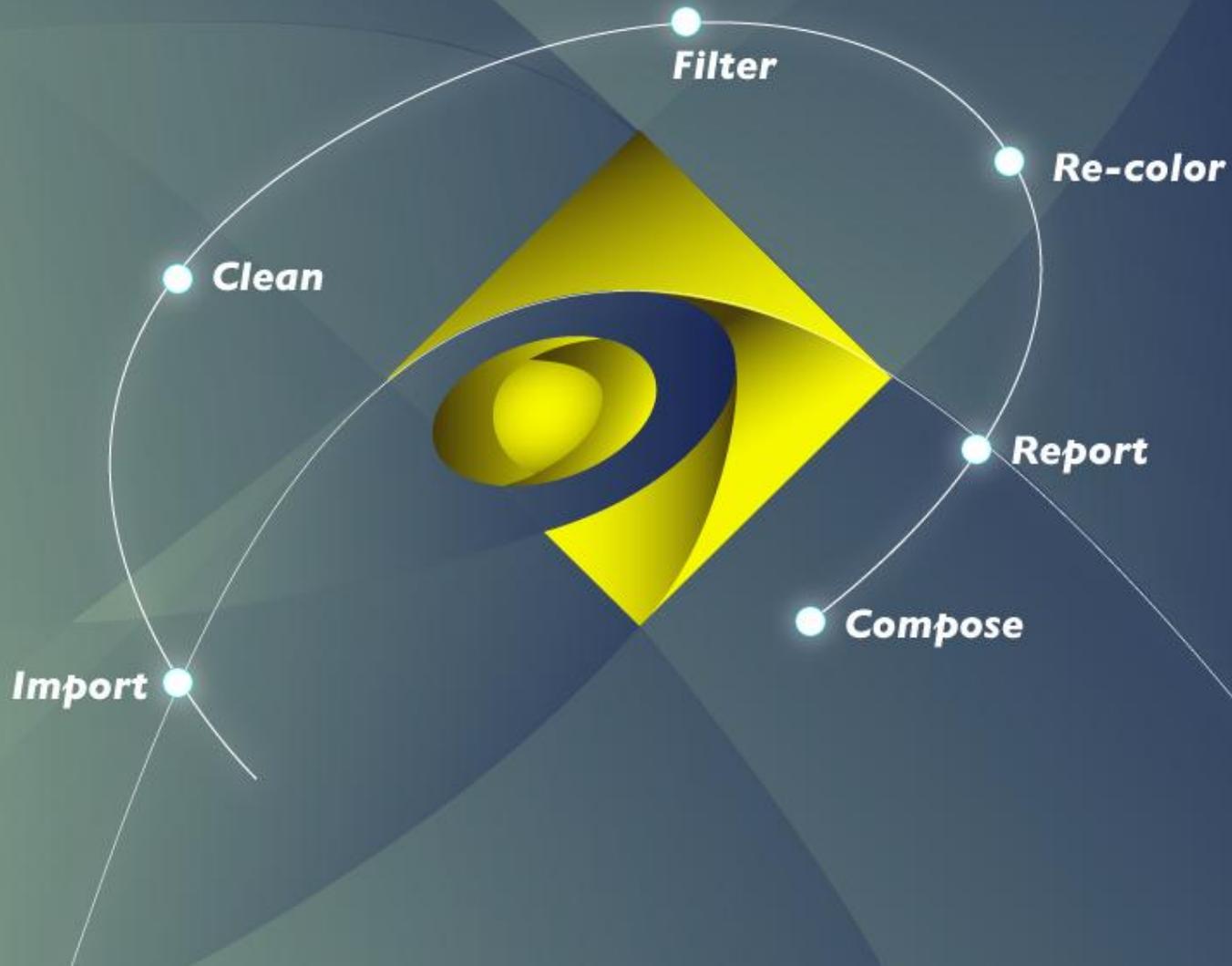






Bentley Pointools V8i

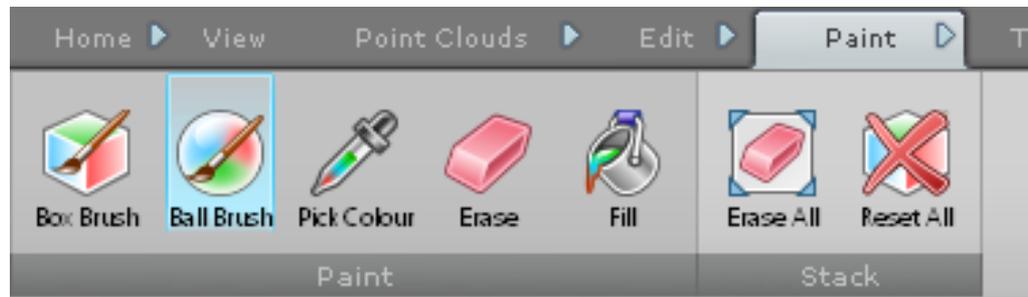
for *Producers*



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for *Producers*

RE-COLOR POINTS



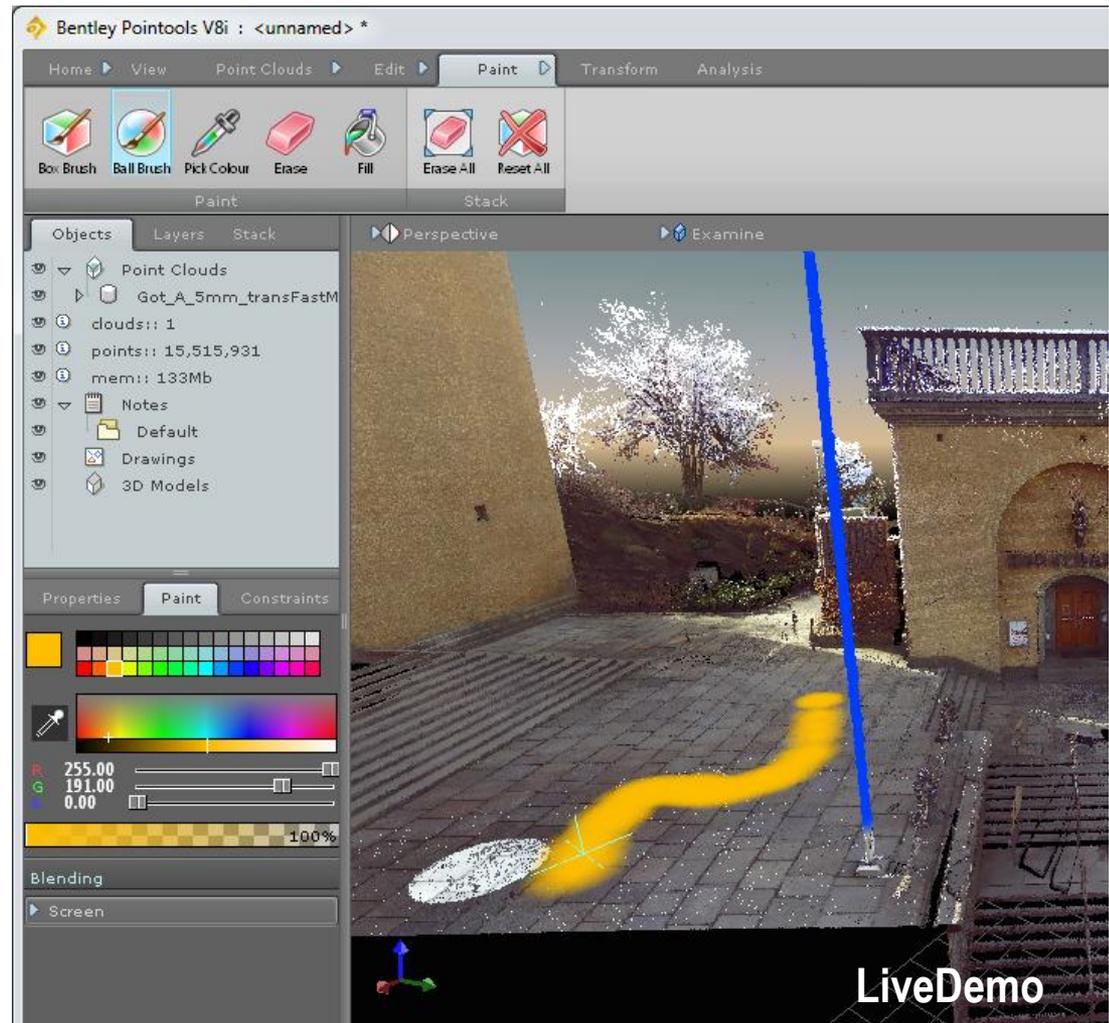
- Direct paint on points
- Global color adjustments

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for *Producers*

RE-COLOR POINTS

- 3D brush
- Fill
- Use layers to mask areas
- Erase brush

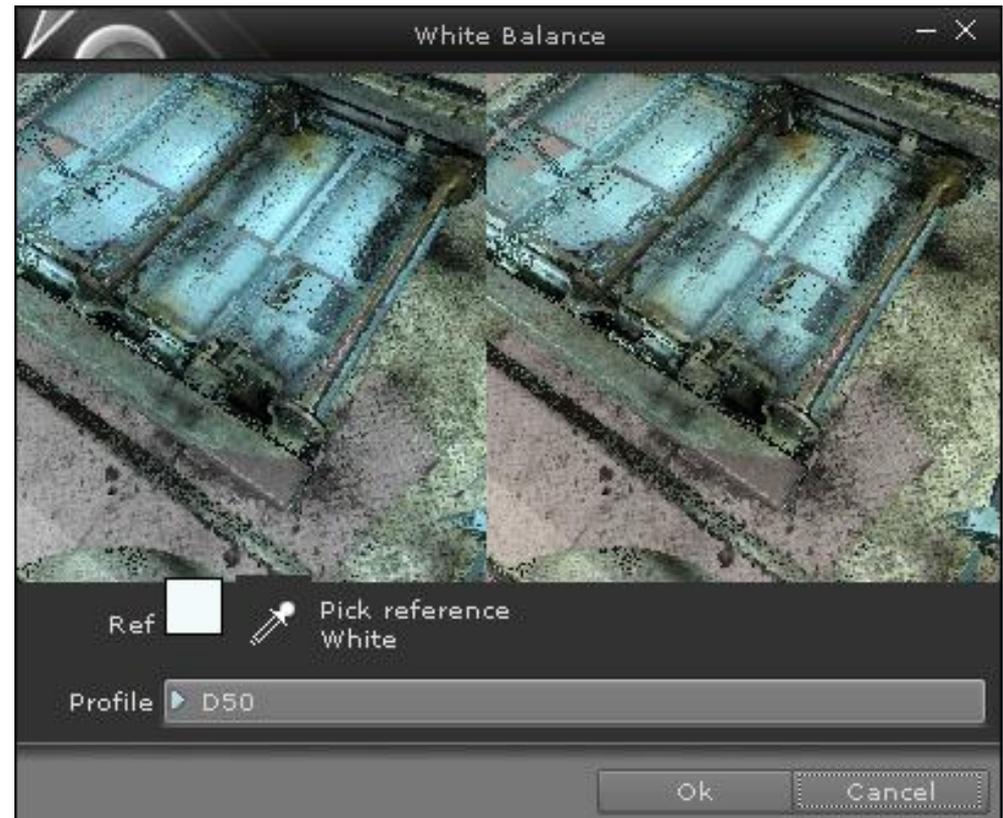


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for *Producers*

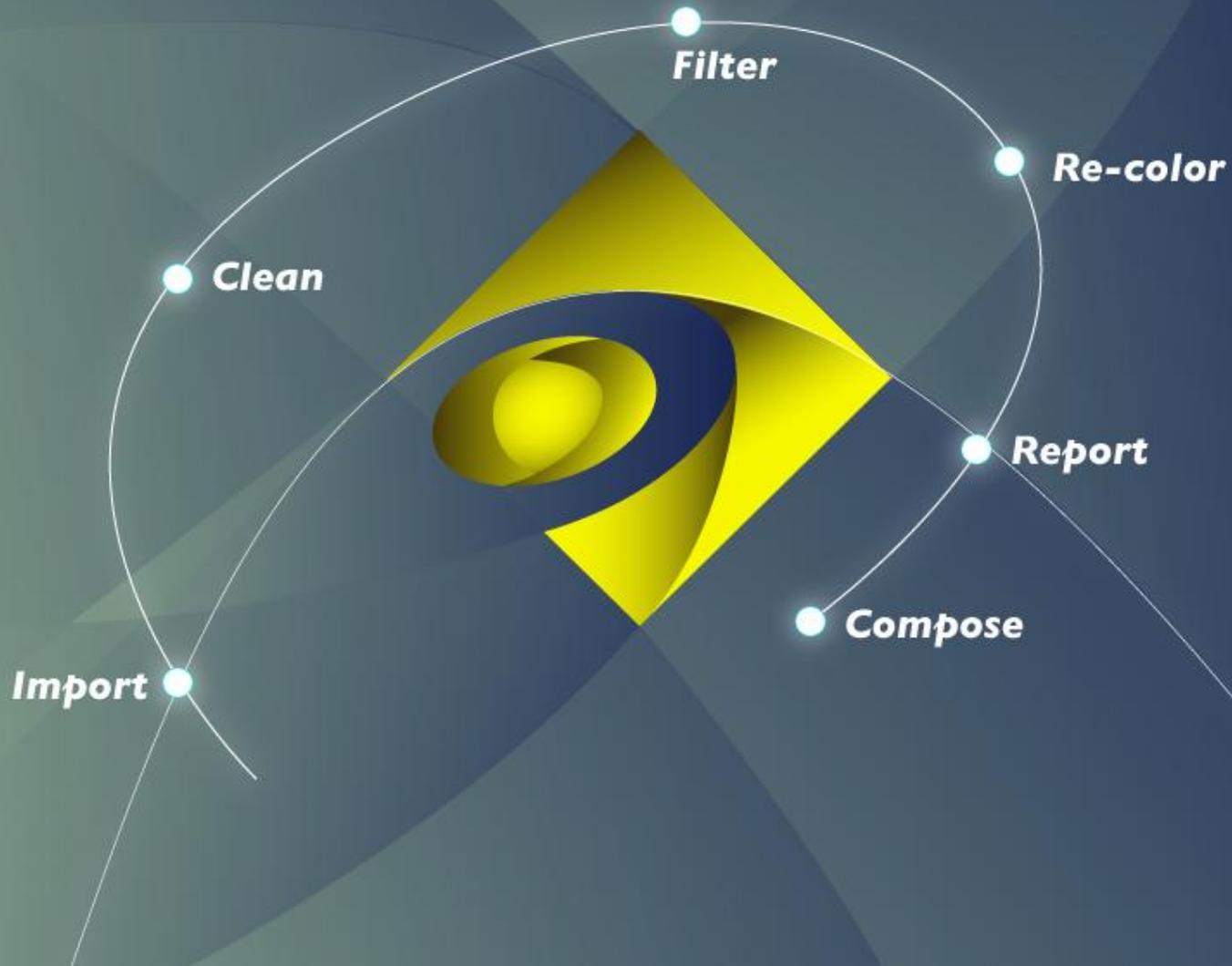
RE-COLOR POINTS

- Brightness / Contrast
- Hue / Sat / Lightness
- White Balance



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for *Producers*

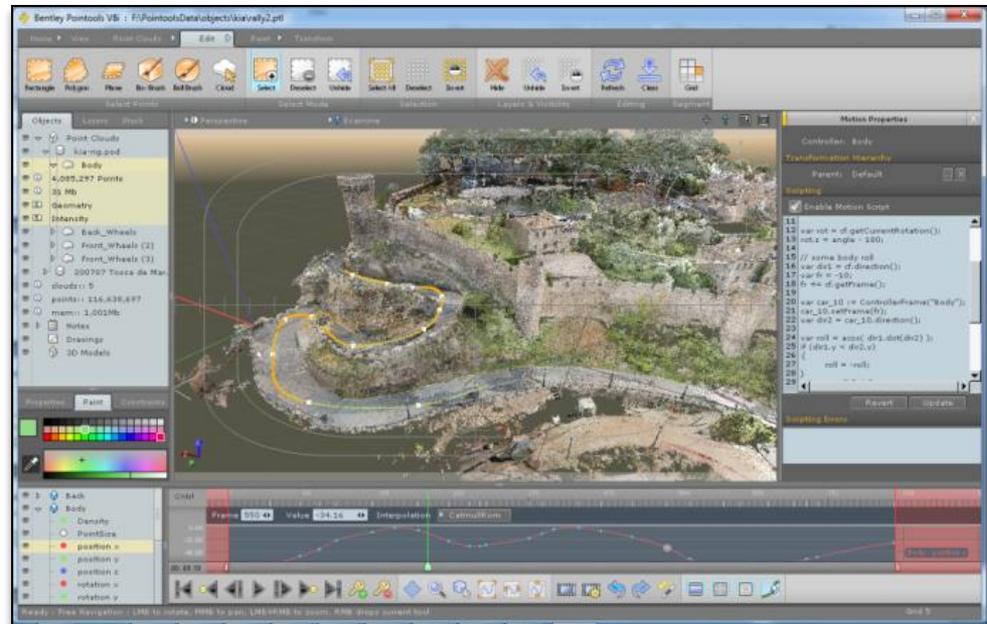


Bentley® Pointools™ V8i

for *Producers*

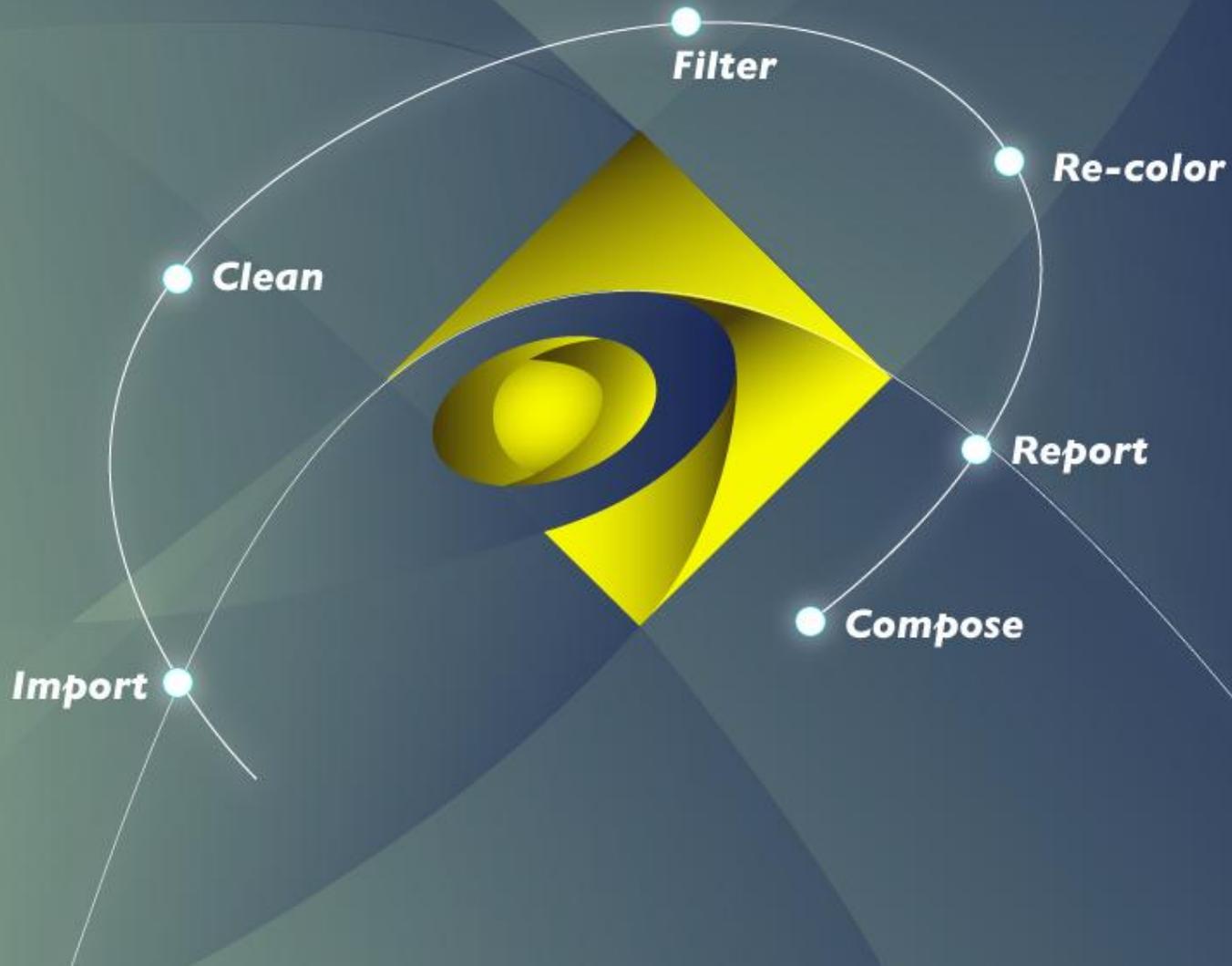
PRODUCE MOVIES

- As portfolio
- As client deliverable
- Easy to produce high quality results



Bentley Pointools V8*i*

for *Producers*

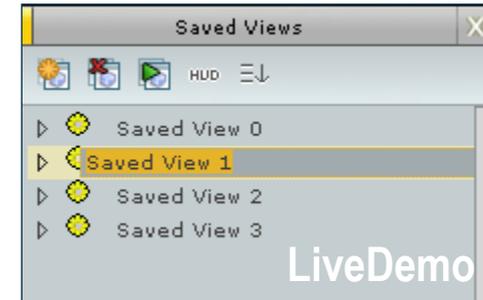


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for *Producers*

COMPOSE PROJECTS

- Compose point clouds drawings, saved views and annotation in project
- Enable clients to extract greater value from LS surveys

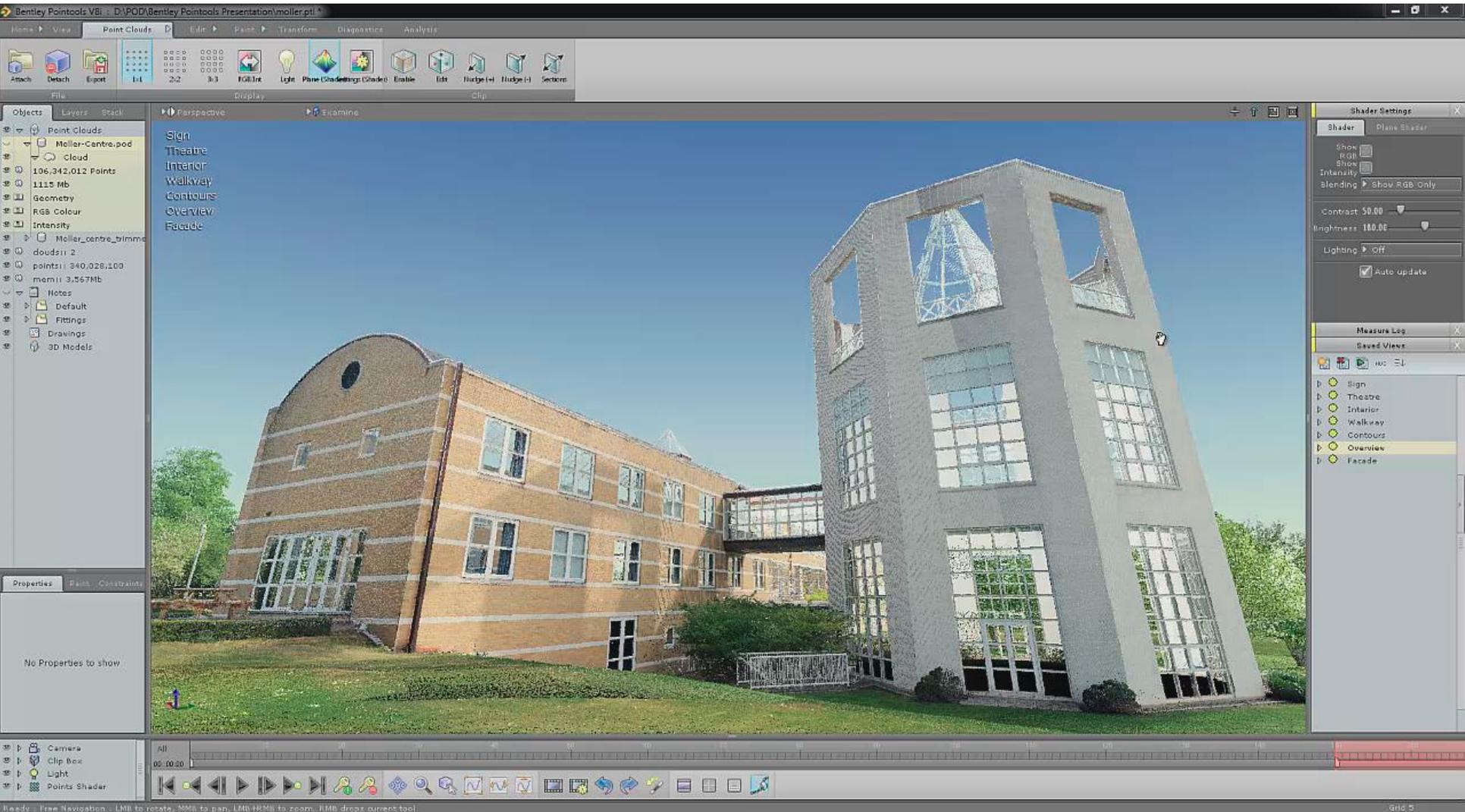


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for *Producers*

Hyperlinks.mp4

DEMO MOVIE



Bentley® Pointools™ V8i

for *Users*



- Your projects use point cloud data to represent existing conditions or hybrid modelling

Bentley® Pointools™ V8i

for *Users*

HIGH PERFORMANCE VISUALISATION

- Work with billions of points
- Engine based on points streaming
- Fast data import from laser scanning and other formats
- Efficient memory usage
- Some operations use multi-CPU cores where available

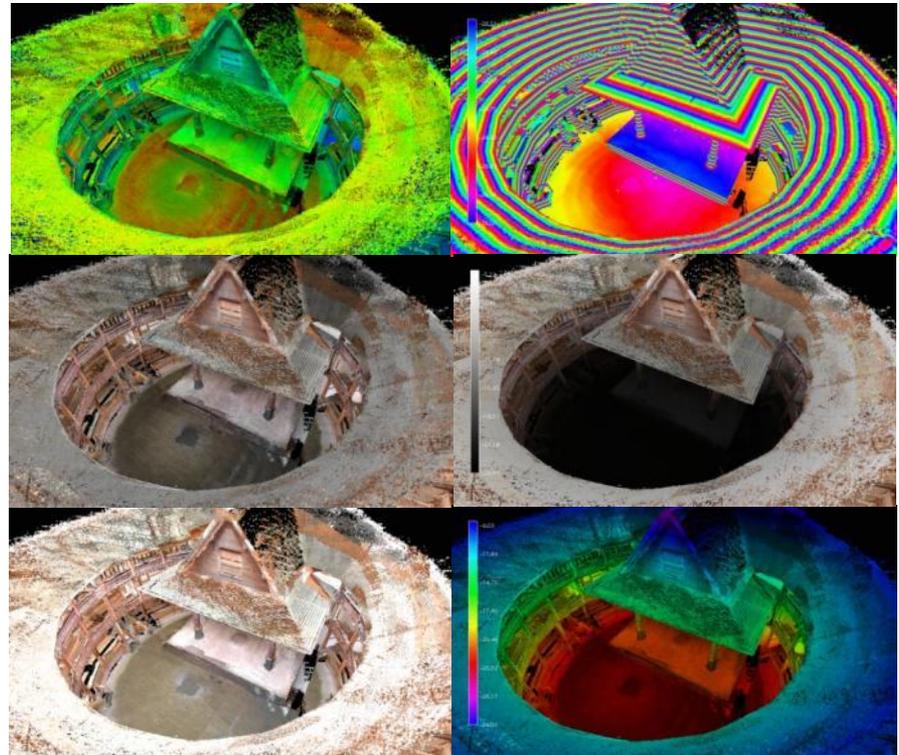


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for *Users*

ENHANCED VISUALIZATION

- Multiple shading modes
- Shading modes fully blendable
- Point lighting
- Fog
- Different background display styles

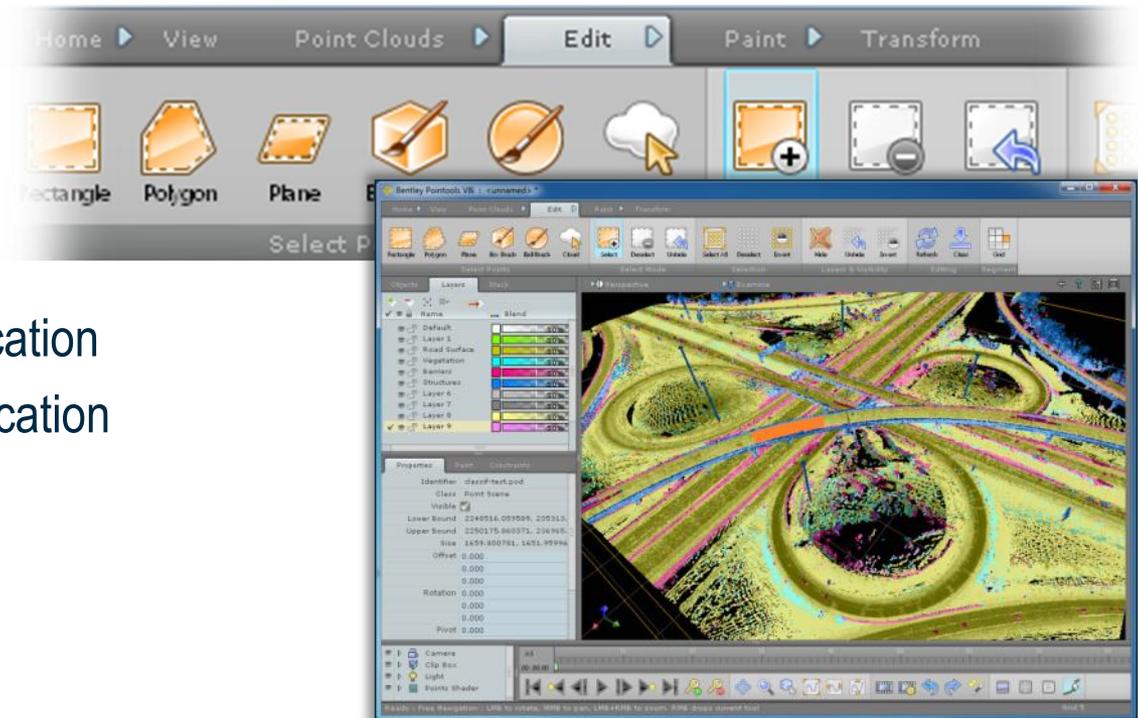


Bentley® Pointools™ V8i

for *Users*

FAST LAYER-BASED EDITING

- Up to 128 layers
- Fast point selection tools
- 3D brush selection
- Color-layers for easy identification
- Layer extraction from classification

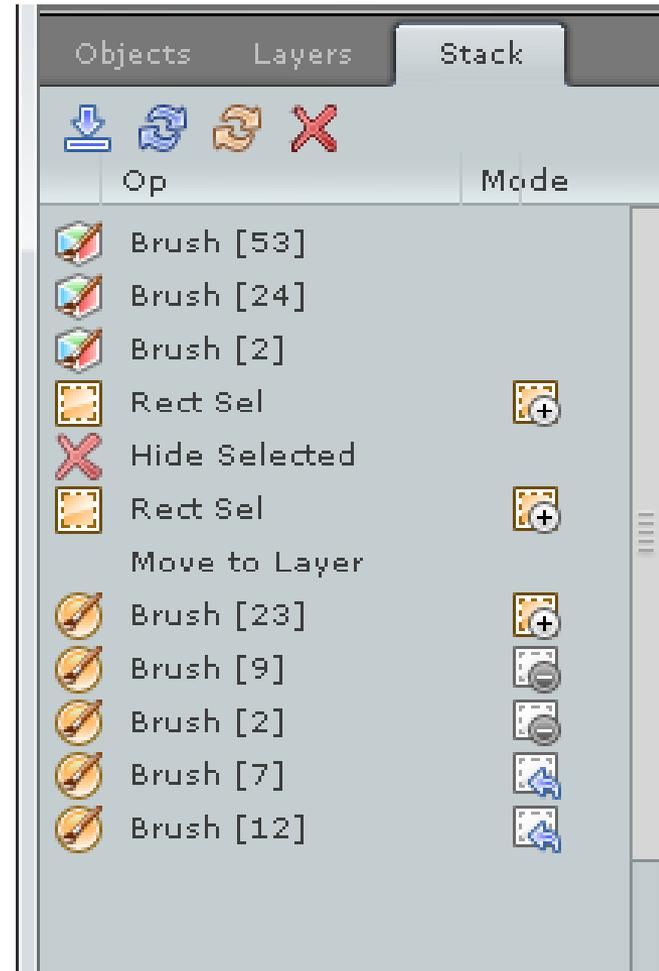


Bentley® Pointools™ V8i

for *Users*

NON-DESTRUCTIVE WORKFLOW

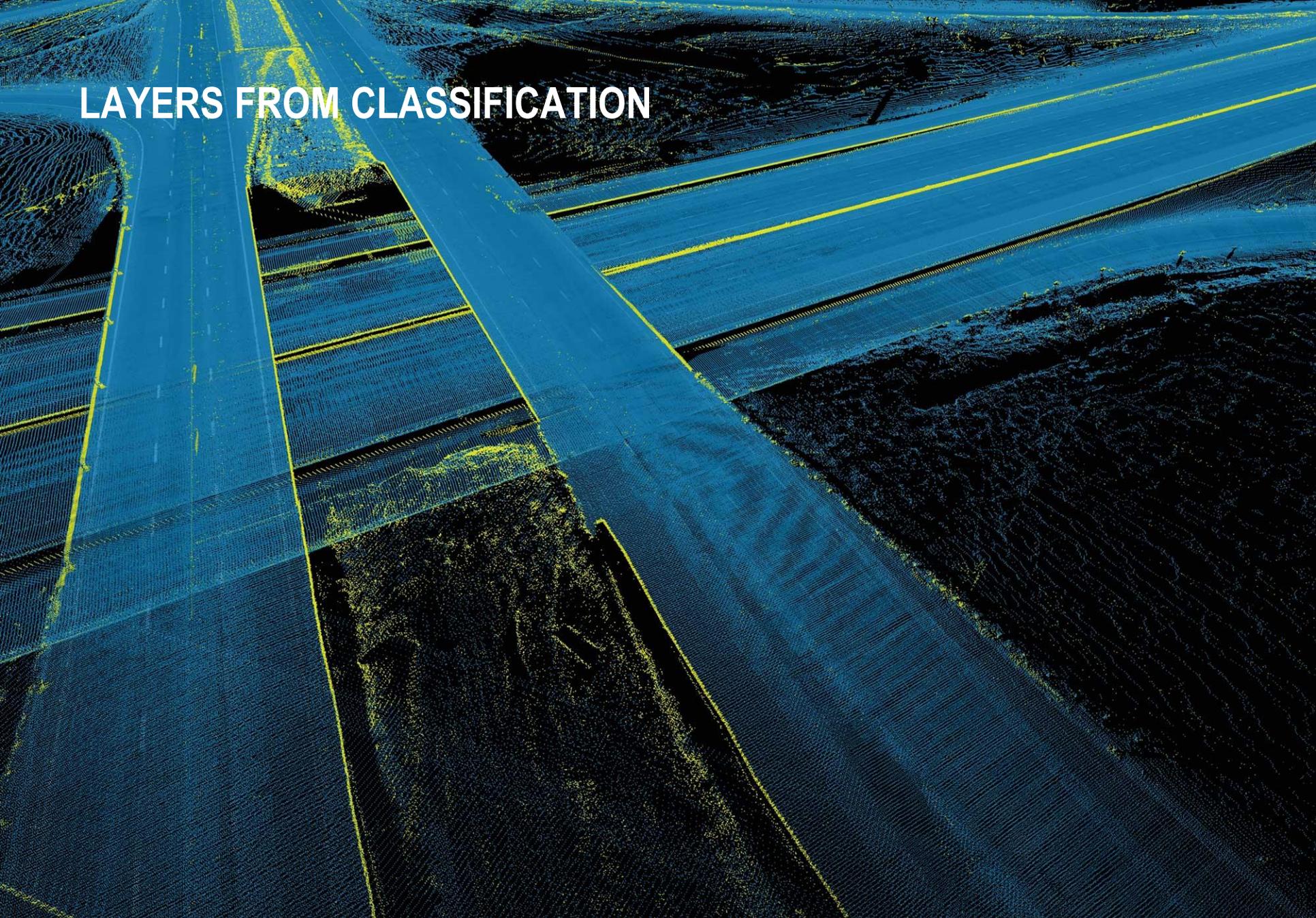
- Work fluidly at view density
- Operations are stored
- Reapplied on export



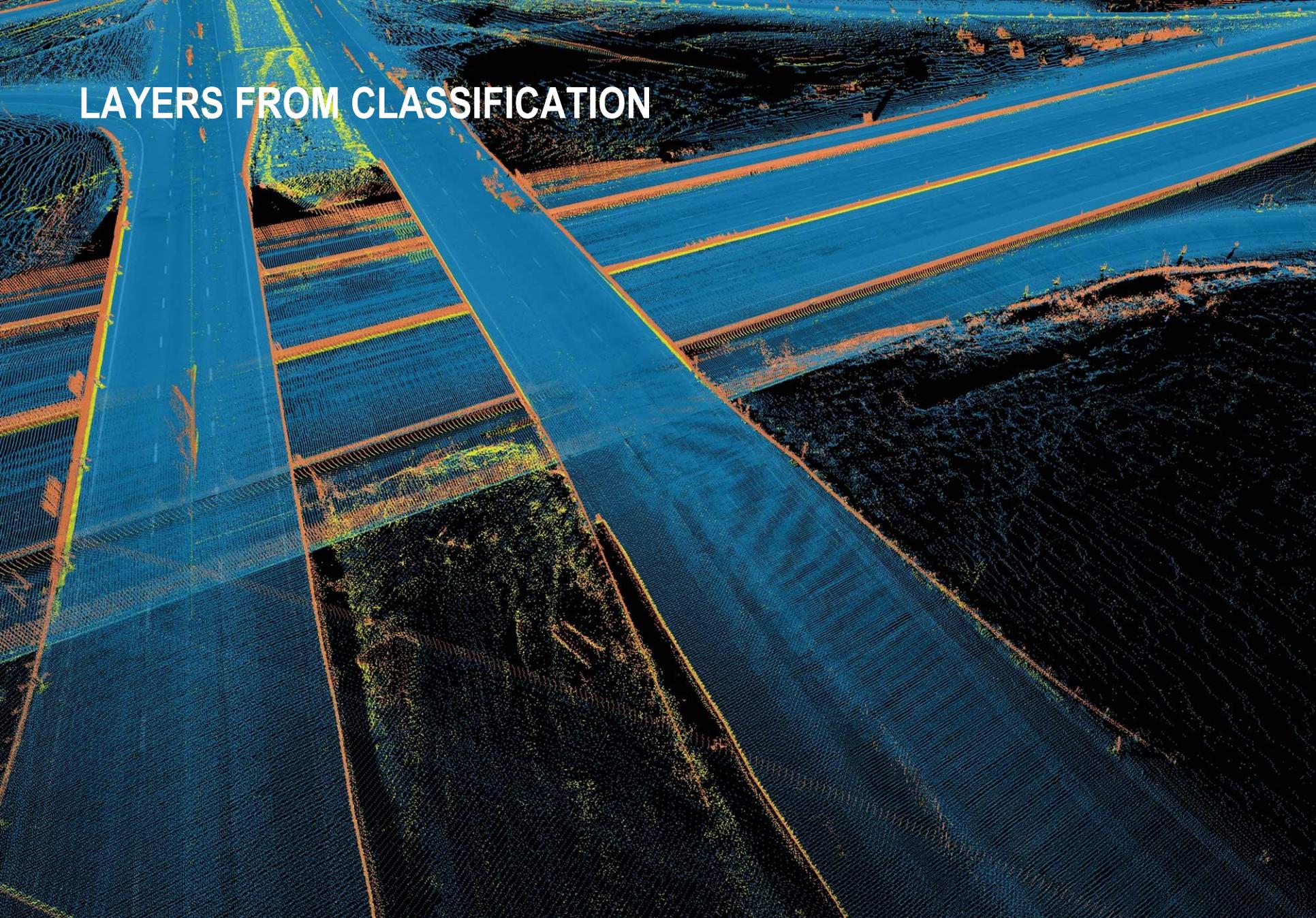
LAYERS FROM CLASSIFICATION

- Single Layer Mode
- Set up LAS layers
- Apply Random Layer Colours
- Reset Layers
- Point Cloud per Layer
- Layers from Classification**
- Layers from Selected Classification
- Hide All Layers (exc Current)
- Show All Layers
- 0% Colour Blend
- 25% Colour Blend
- 50% Colour Blend
- 75% Colour Blend
- 100% Colour Blend

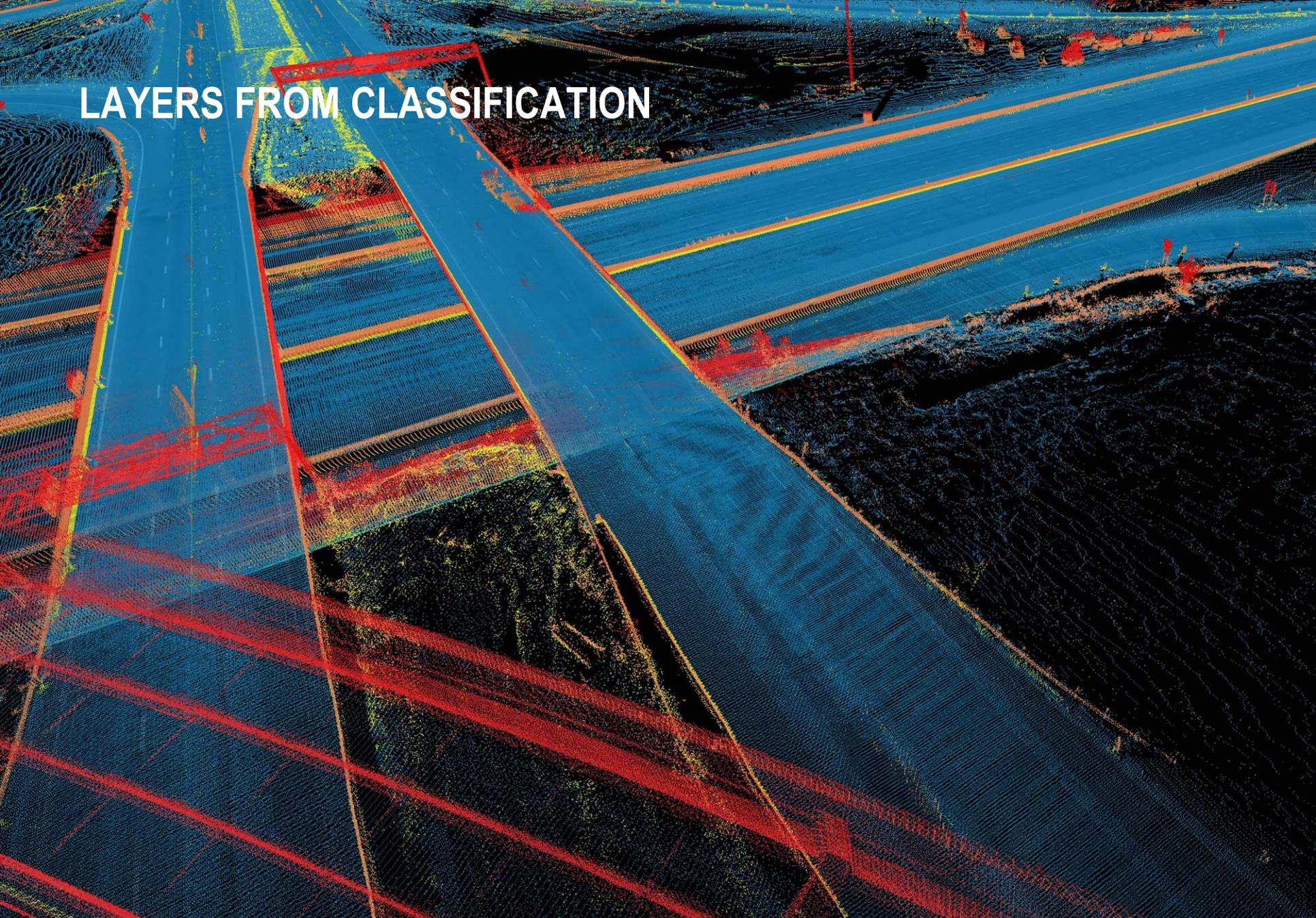
LAYERS FROM CLASSIFICATION



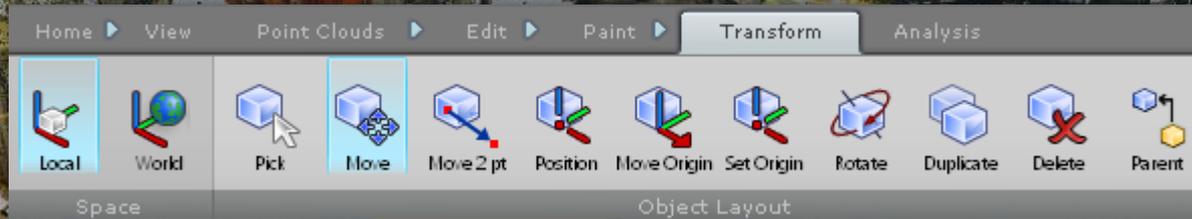
LAYERS FROM CLASSIFICATION



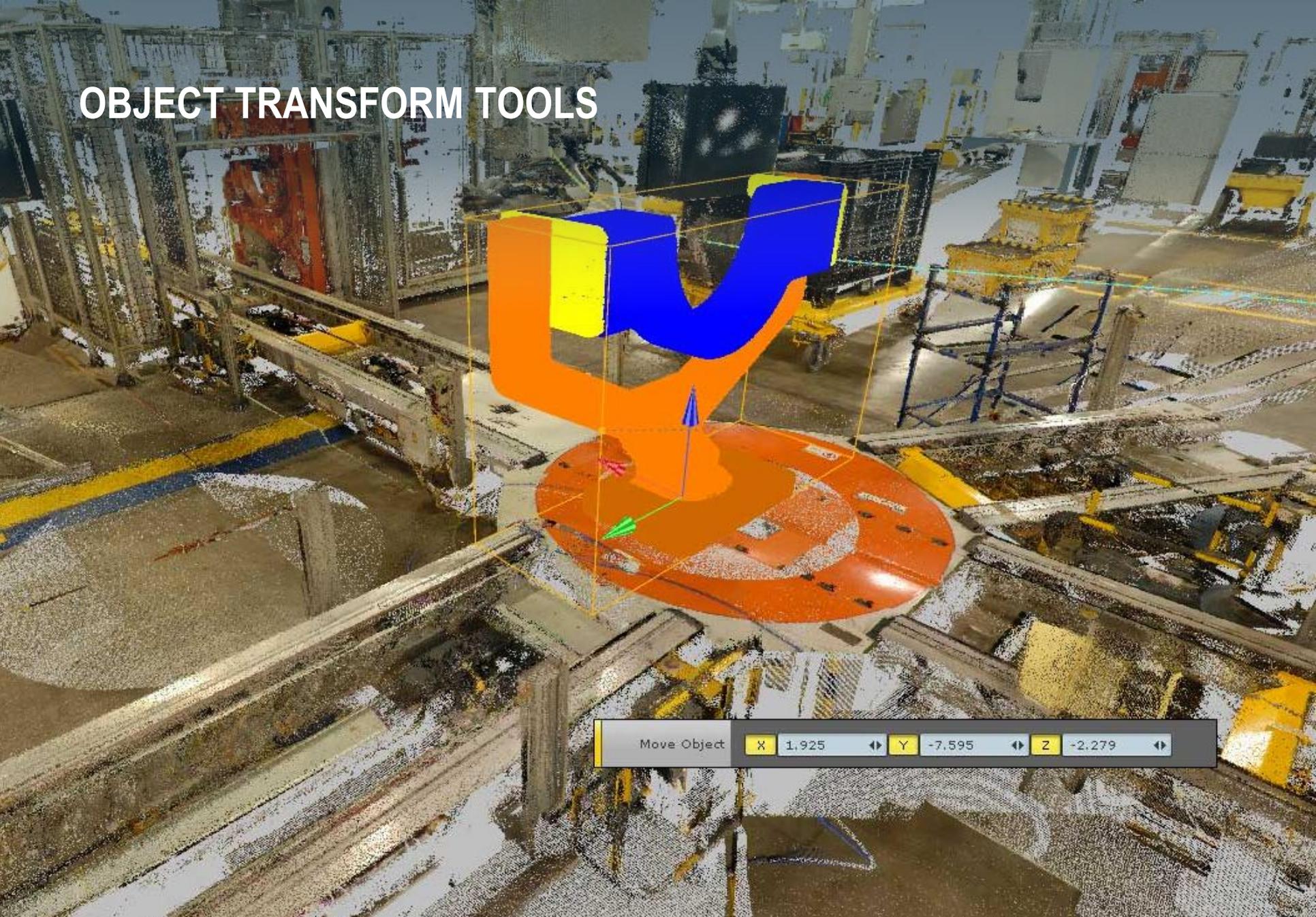
LAYERS FROM CLASSIFICATION



OBJECT TRANSFORM TOOLS

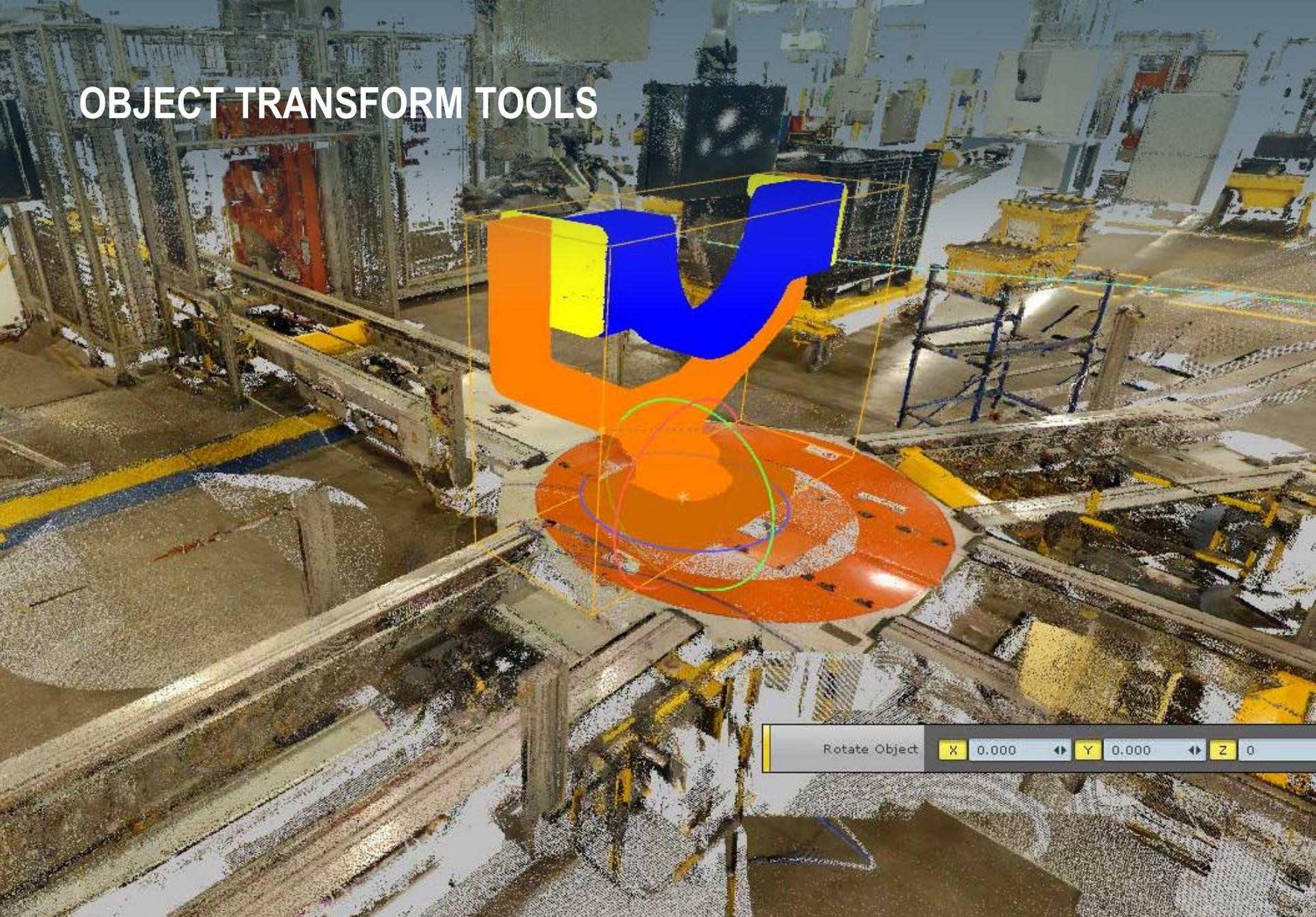


OBJECT TRANSFORM TOOLS

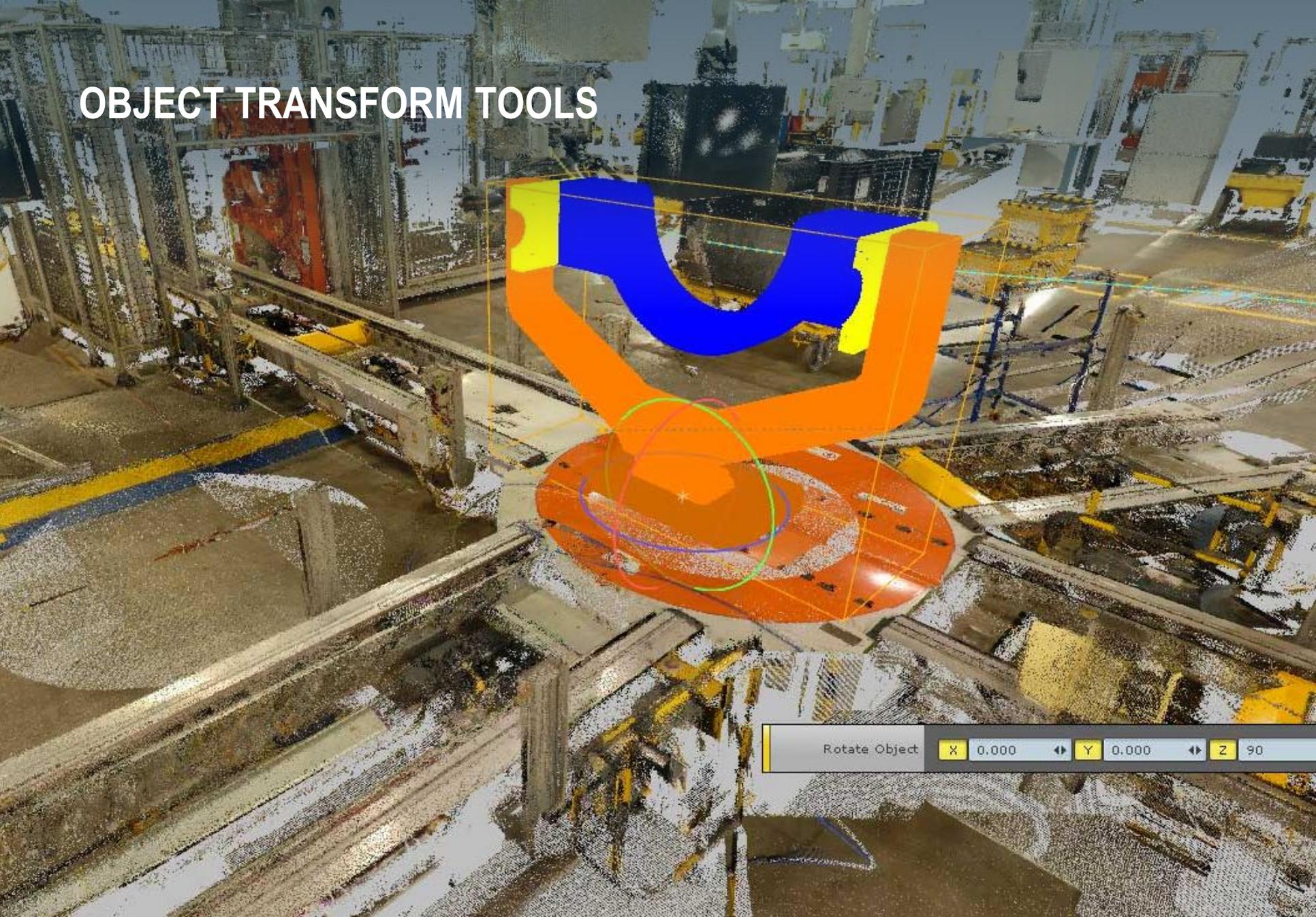


Move Object X 1,925 Y -7,595 Z -2,279

OBJECT TRANSFORM TOOLS

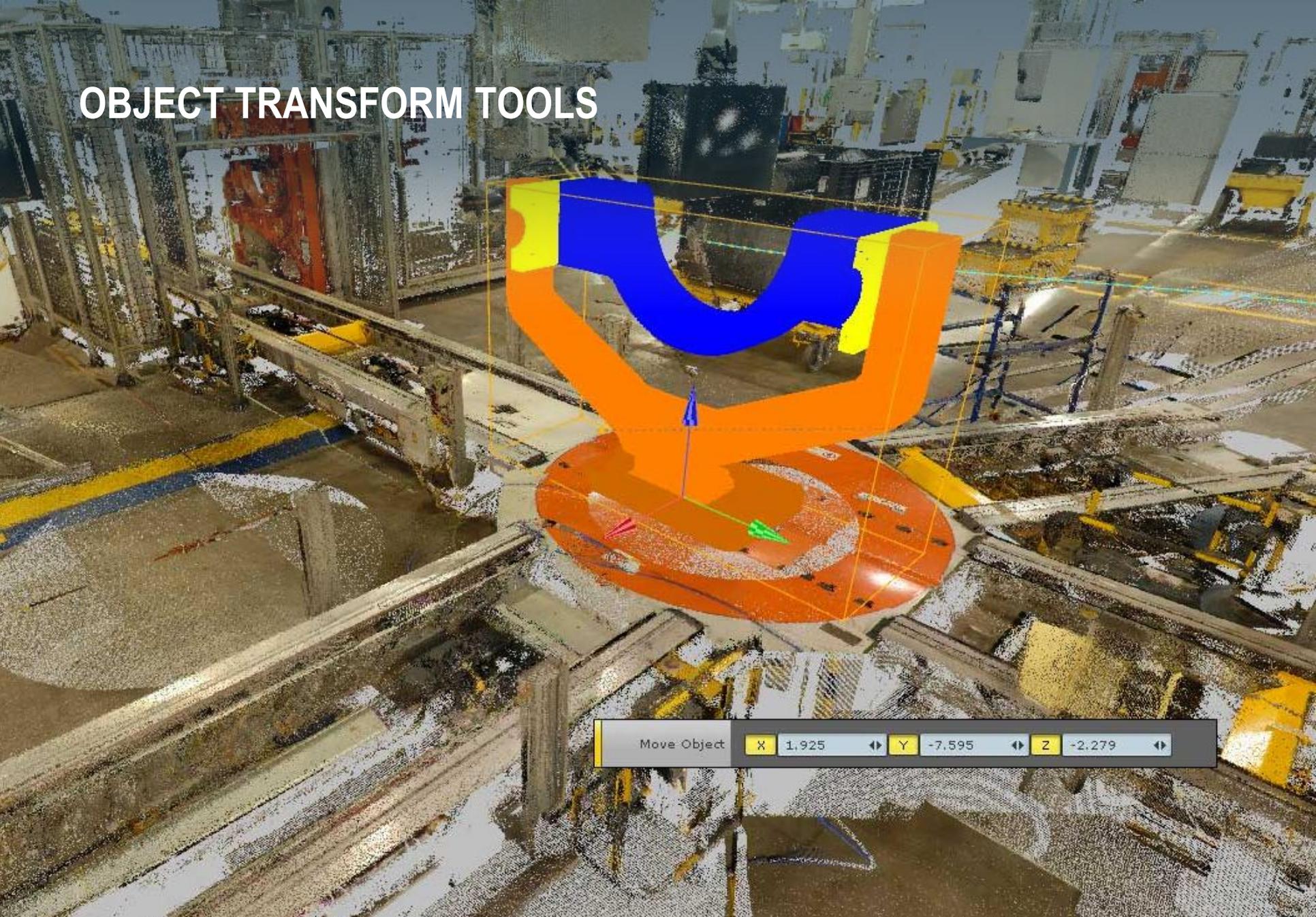


OBJECT TRANSFORM TOOLS



Rotate Object X 0.000 Y 0.000 Z 90

OBJECT TRANSFORM TOOLS



OBJECT TRANSFORM TOOLS



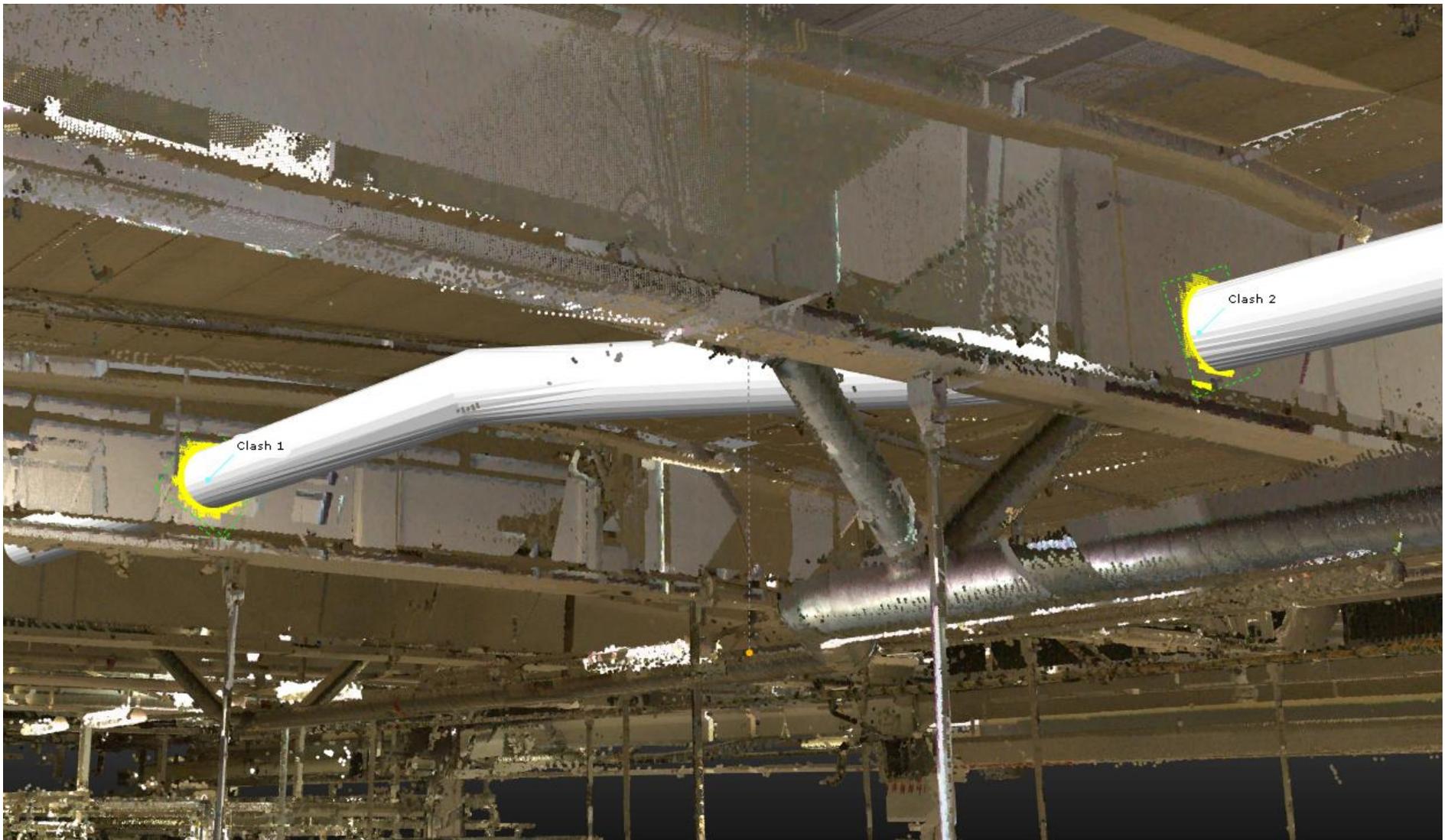
Bentley® Pointools™ V8i

for *Users*

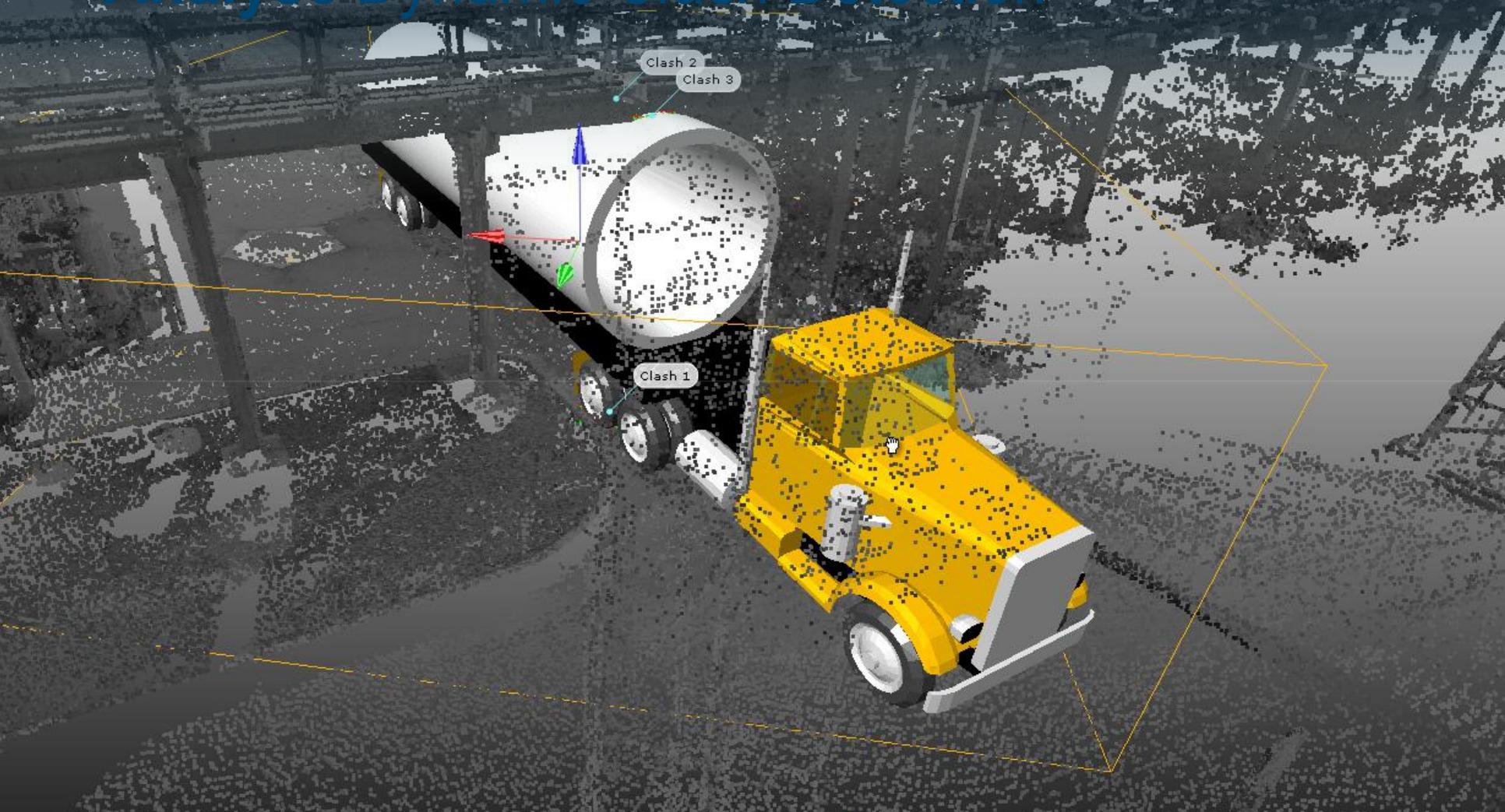
ANALYZE

- Static Clash Detection
- Dynamic Clash Detection
- Path based Clash Detection
- Differencing

ANALYZE STATIC CLASH DETECTION



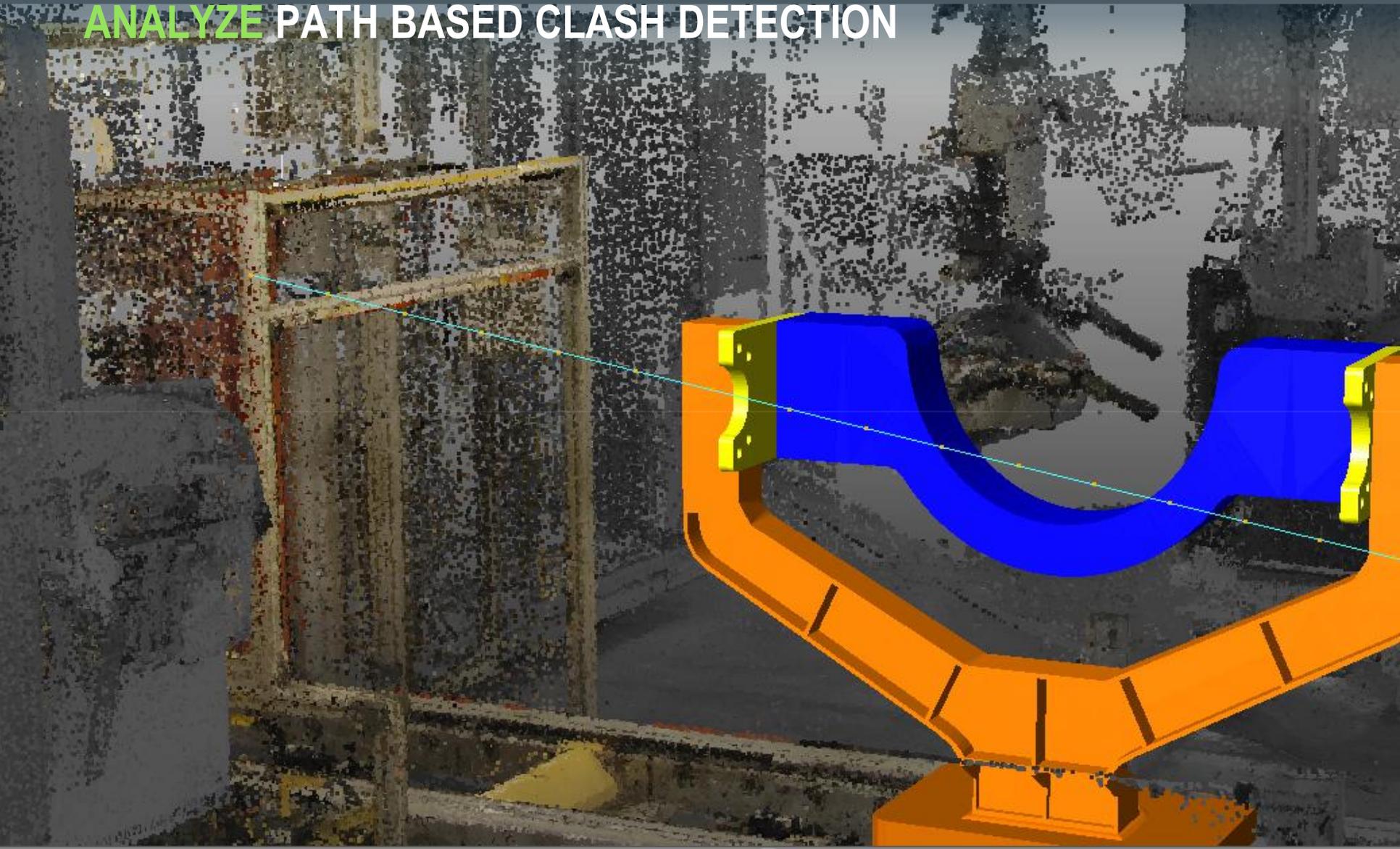
ANALYZE DYNAMIC CLASH DETECTION



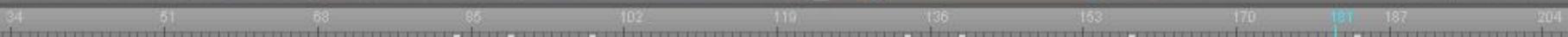
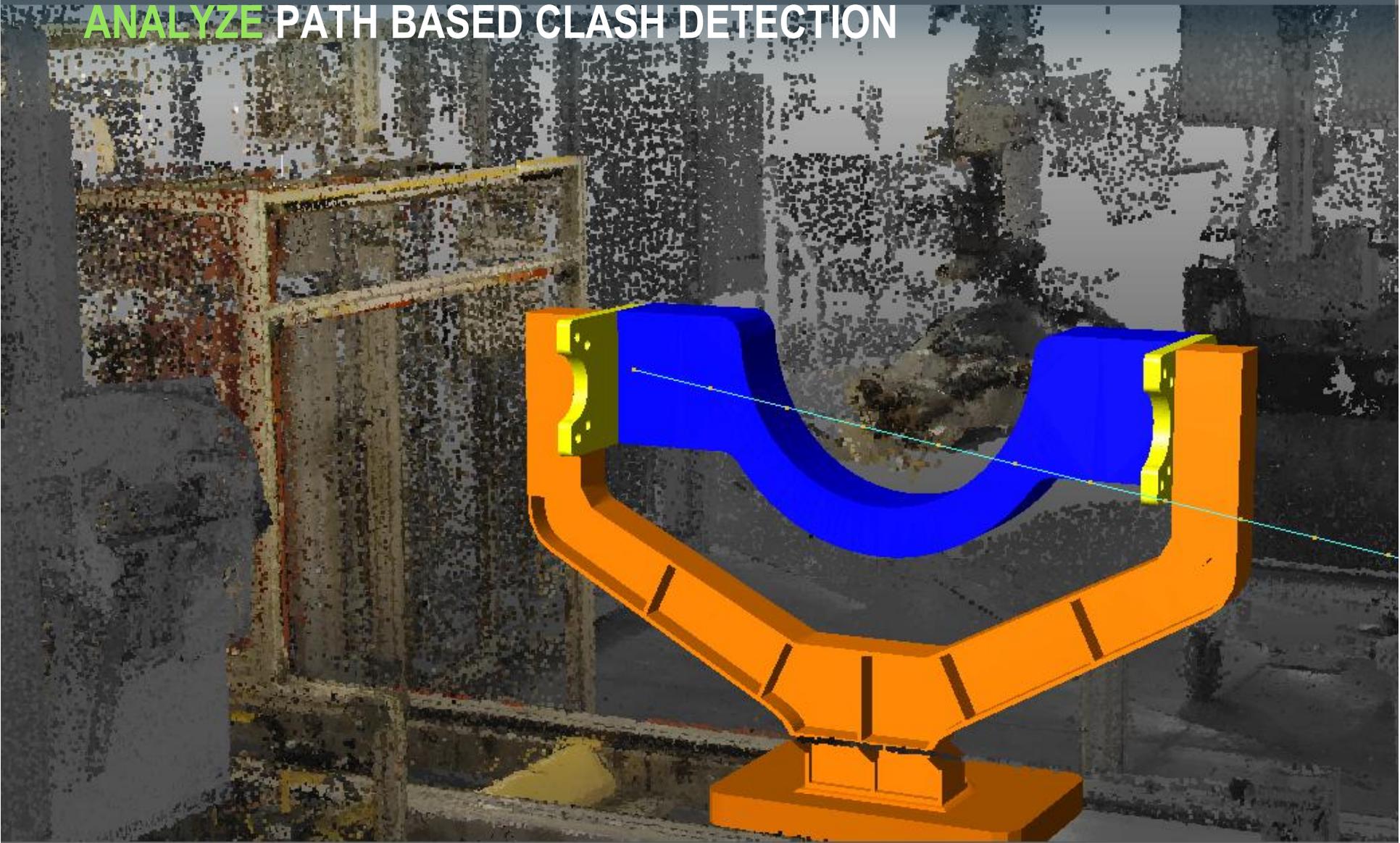
Move Object

X	14.822	Y	68.373	Z	-14.294
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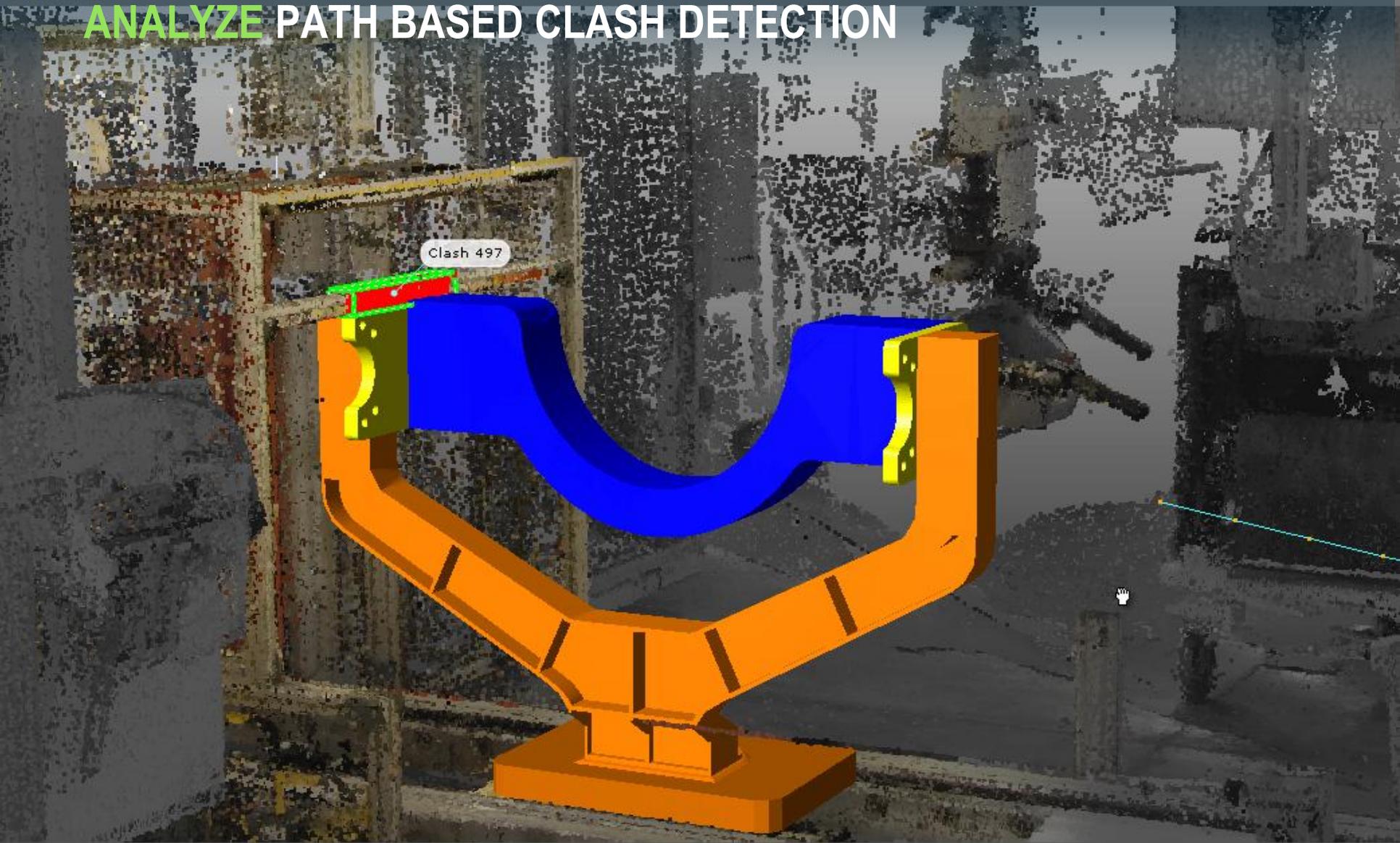
ANALYZE PATH BASED CLASH DETECTION



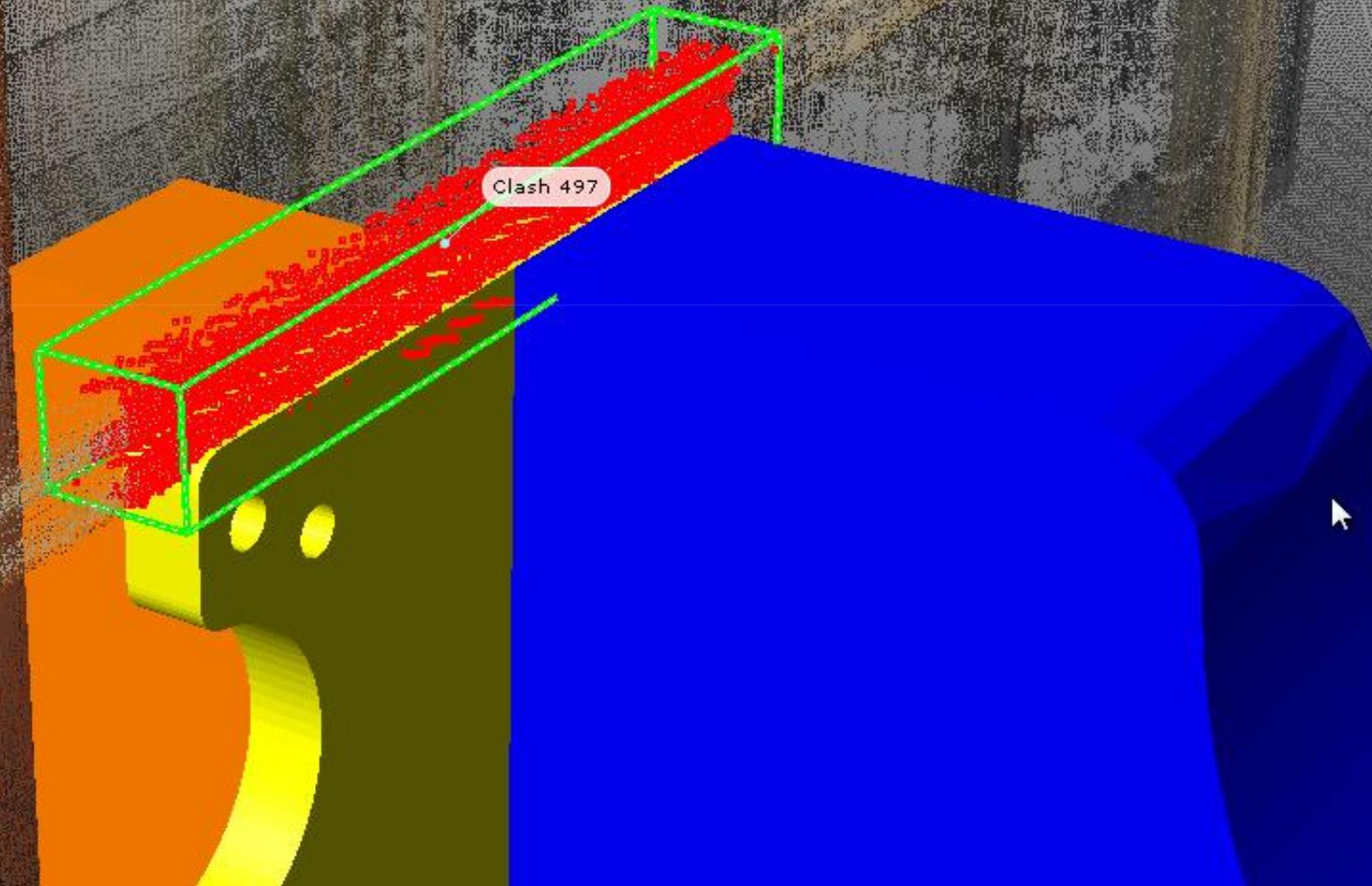
ANALYZE PATH BASED CLASH DETECTION



ANALYZE PATH BASED CLASH DETECTION



ANALYZE PATH BASED CLASH DETECTION



Bentley® Pointools™ V8i

for *Users*



ANALYZE DIFFERENCING

Bentley® Pointools™ V8i

for *Users*

ANALYZE

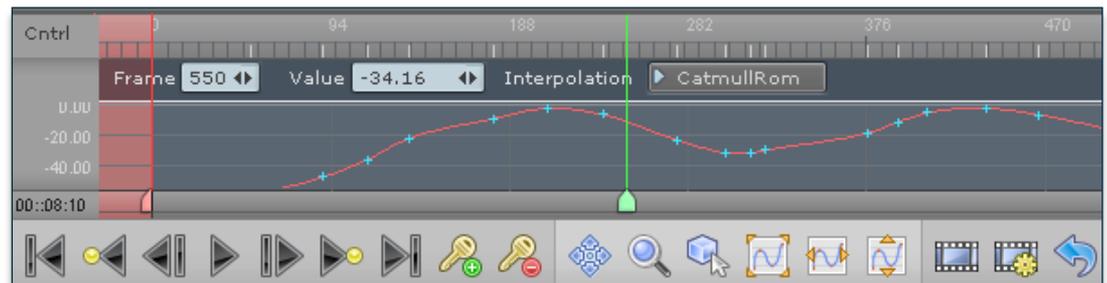
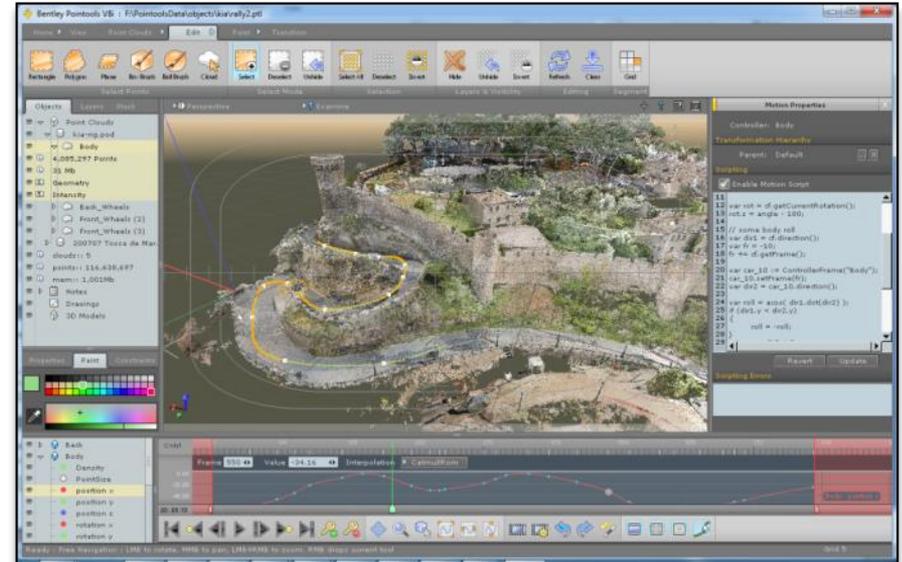
- Export results to point cloud
- Clash region boxes
- Generate Note objects from clash labels

Bentley® Pointools™ V8i

for *Users*

EASY YET POWERFUL MOVIE PRODUCTION

- Quick movie setup with wizard
- Easy timeline editing
- Fine-grained control using graph editor
- Object and camera animation
- Scriptable motion
- Object parenting



LEARN MORE: ANIMATION

YouTube GB

Search

Upload

Faraz Ravi 0

Bentley Pointools by PointoolsDRC

5/7

Bentley Pointools V8i Preview - Object Animation

PointoolsDRC - 62 videos

731 views

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Bentley Pointools V8i Preview - Interface

Bentley Pointools V8i Preview - Layers

Bentley Pointools V8i Preview - Object Animation

Product Tour Bentley Pointools V8i

Bentley Pointools V8i - Clash Detection and Dif...

Aerial data animated fly through - data from Open by Dan Cutler 215

ZONA INDIE PROGRAMA 9

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Bentley® Pointools™ V8i

BROAD HORIZONTAL APPLICATION

Users in a diverse range of industries including:

Art & Entertainment

Mining

Bridges

Power Generation

Buildings

Process Manufacturing

Factories

Rail & Transit

Forensics

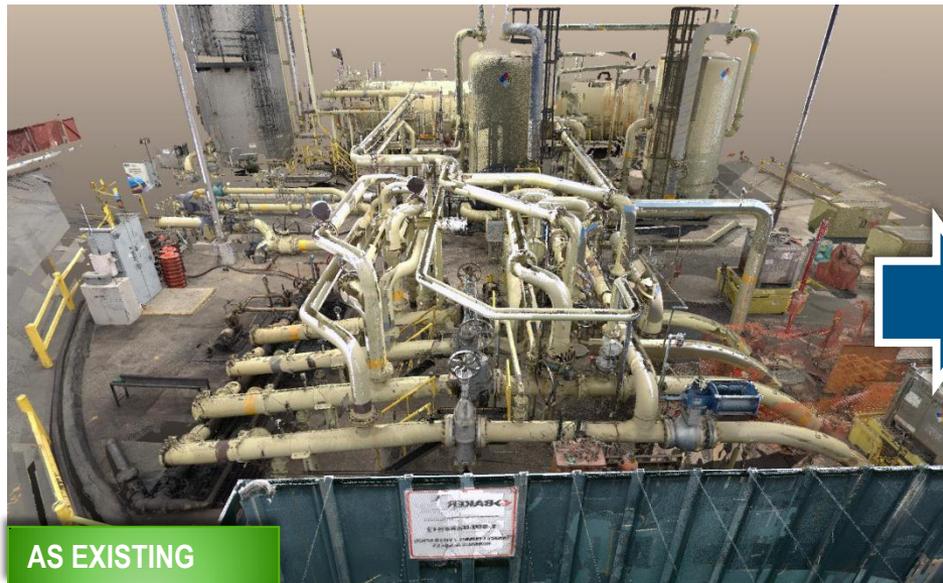
Roads

Heritage

Utilities

Who Uses Bentley Pointools V8i ?

EXAMPLE USE CASE



“Pointools has fundamentally changed the way we work”

Chris Todd, SPEC Services

Who Uses Bentley Pointools V8i ?

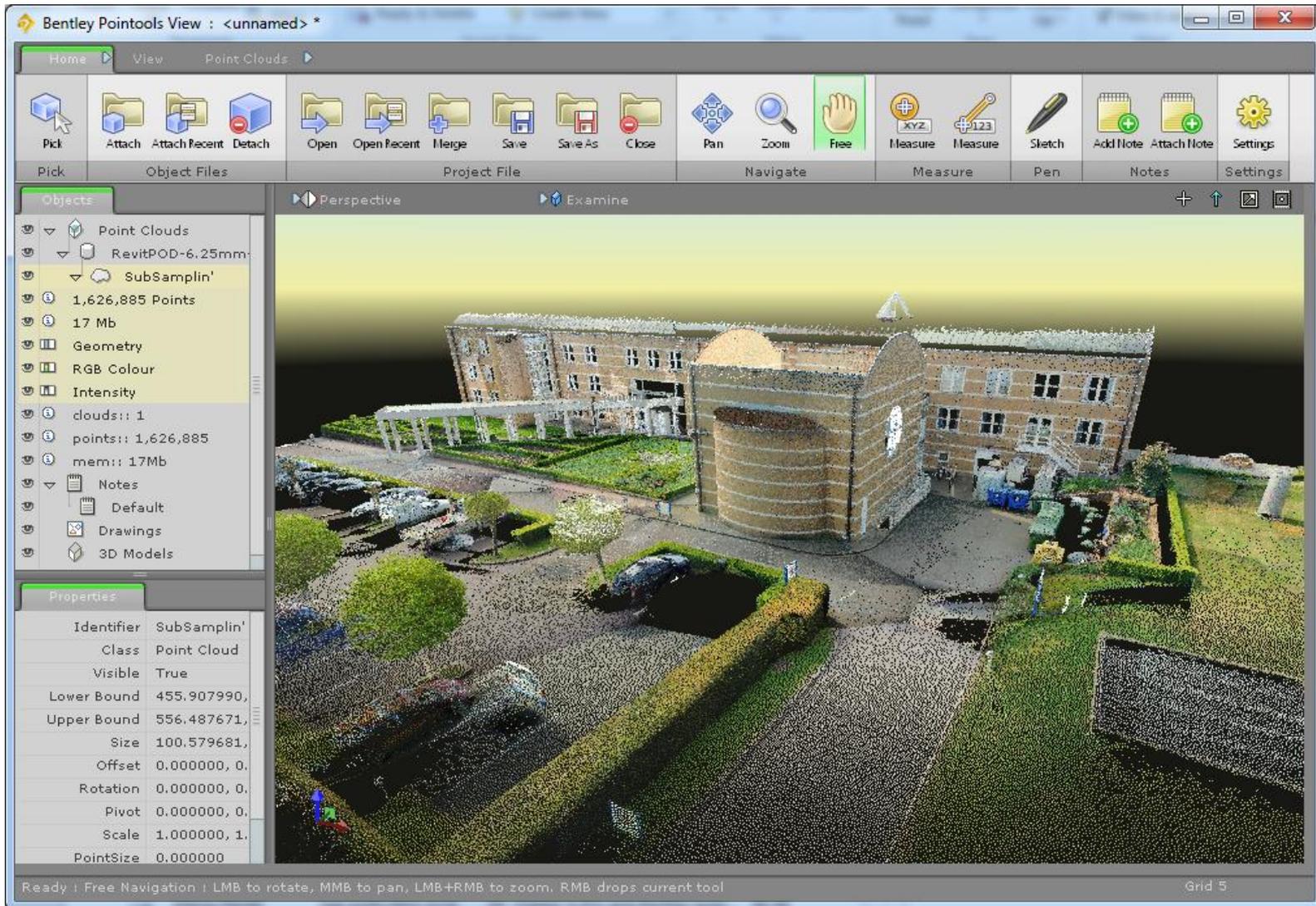
EXAMPLE USE CASE



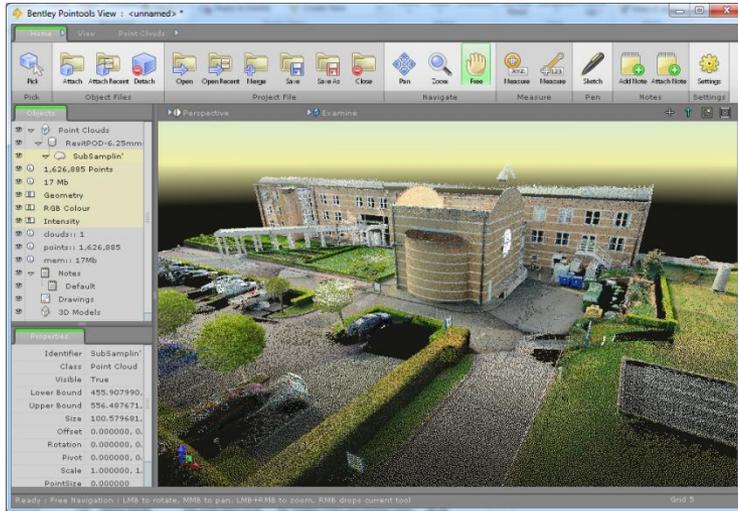
“Pointools has fundamentally changed the way we work”

Chris Todd, SPEC Services

Bentley Pointools View

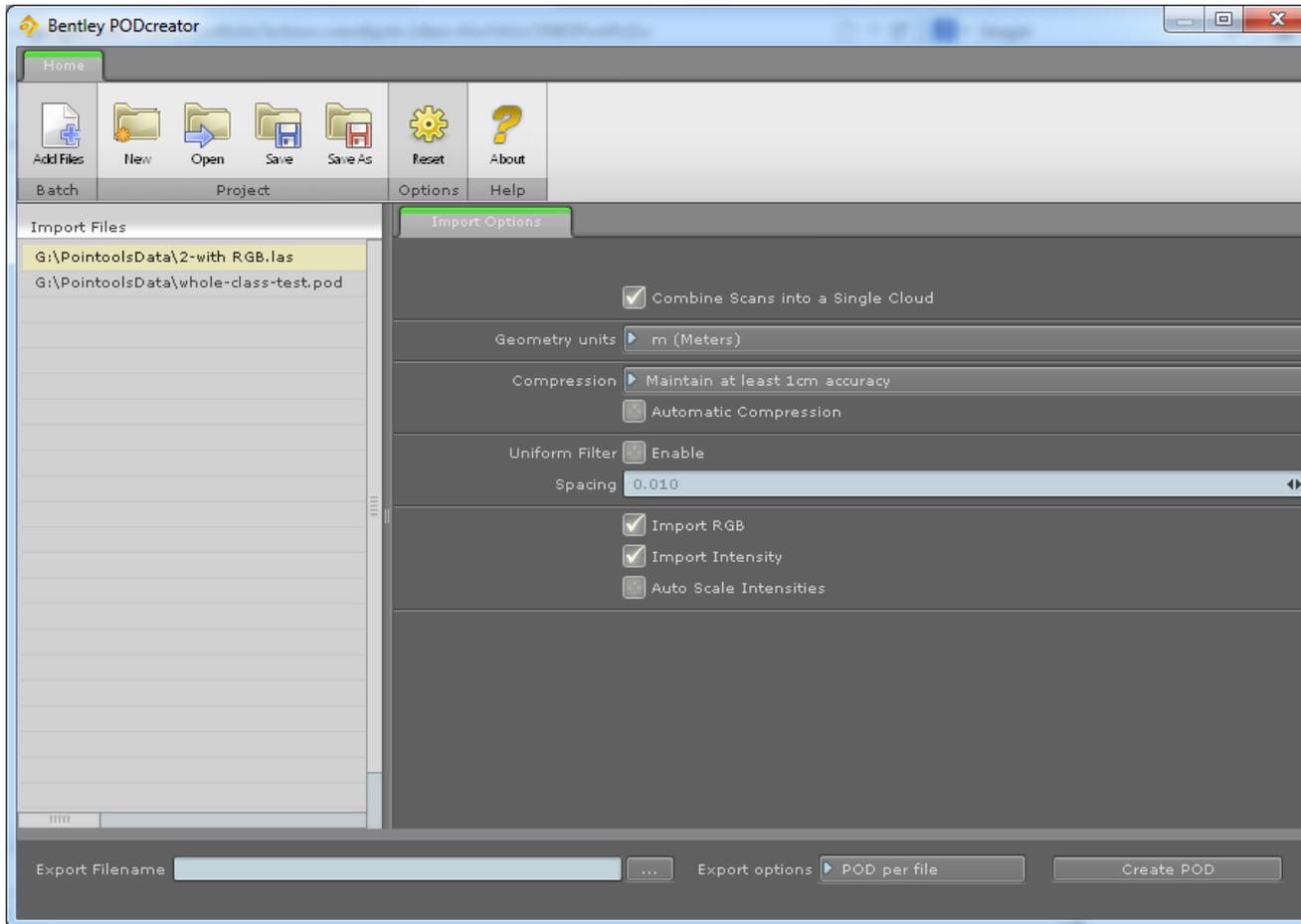


Bentley Pointools View

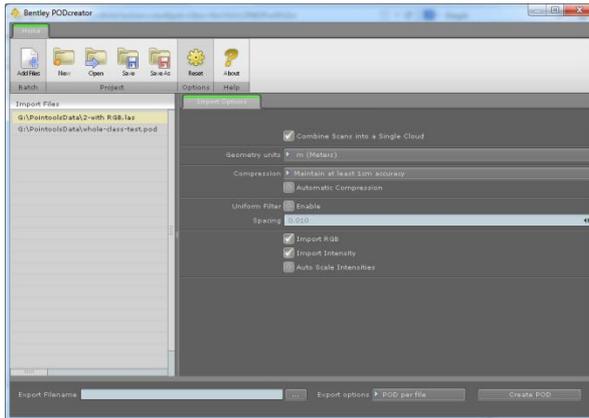


- Focused on High Performance Visualisation
- No authoring / extraction tools
- Attach PODs

Bentley Pointools PODcreator



Bentley Pointools PODcreator



- **Batch conversion of scan files to POD**
- **Convenient, non-graphical interface**
- **Regularly updated to provide new format support**

Summary

- **Point Clouds at Bentley Systems**
- **Bentley Pointools V8i, for:**
 - Producers
 - Users
- **Bentley Pointools PODcreator**
- **Bentley Pointools View**
- **Learn more at www.bentley.com/pointools**
- **See more at www.youtube.com/pointoolsDRC**