

# Advancing Point Clouds for VR and Beyond

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Elysium Inc.

## GLOBAL PRODUCT DATA INTEROPERABILITY SUMMIT 2018



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Parker Aerospace

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# Presenter Background

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## Danielle (Williams) Perelli Customer Engagement Lead - Elysium Inc.

- Manage customer engagements to address Data Migration, Multi-CAD Interoperability/Collaboration, Data Quality Management, Data Optimization, and Validation
- Manage Sales Team at Elysium US
- Collaborate with technical team members, development, and Elysium offices globally on product enhancement, global marketing, and to support customer engagements

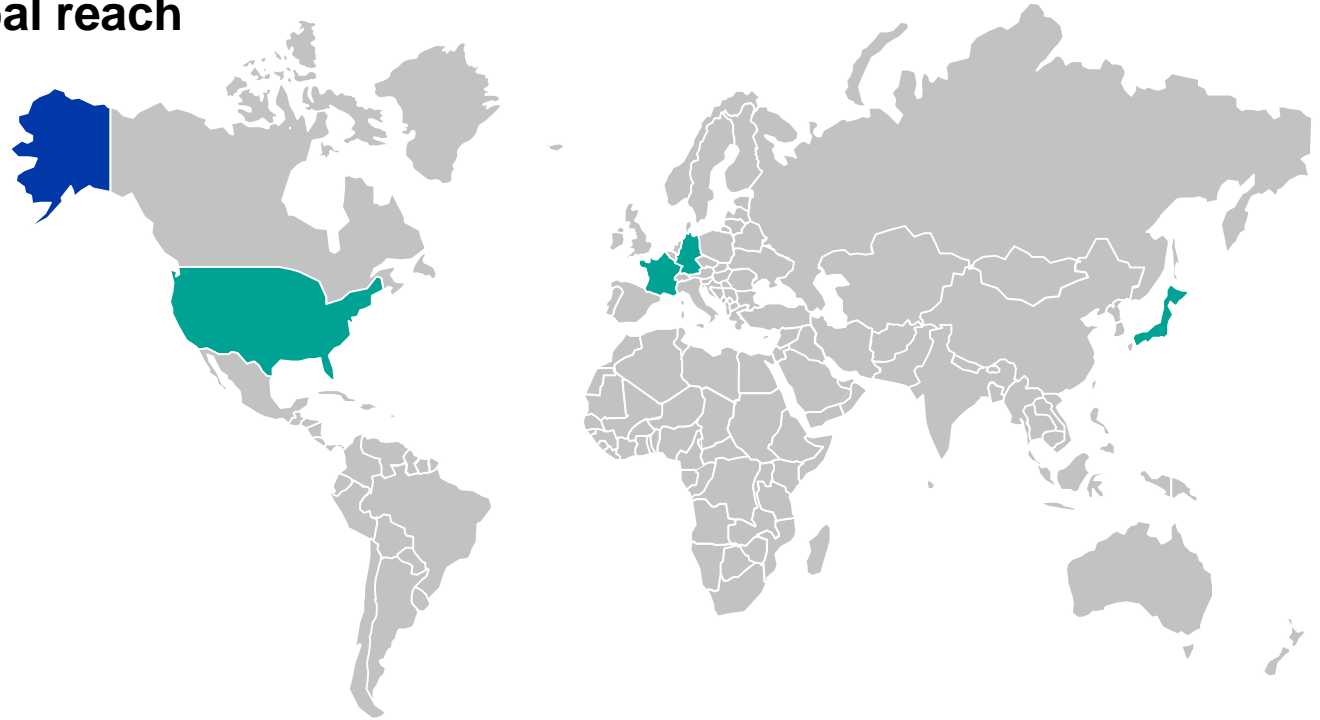


# Elysium Global

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## Specialized + dedicated technologies with a global reach

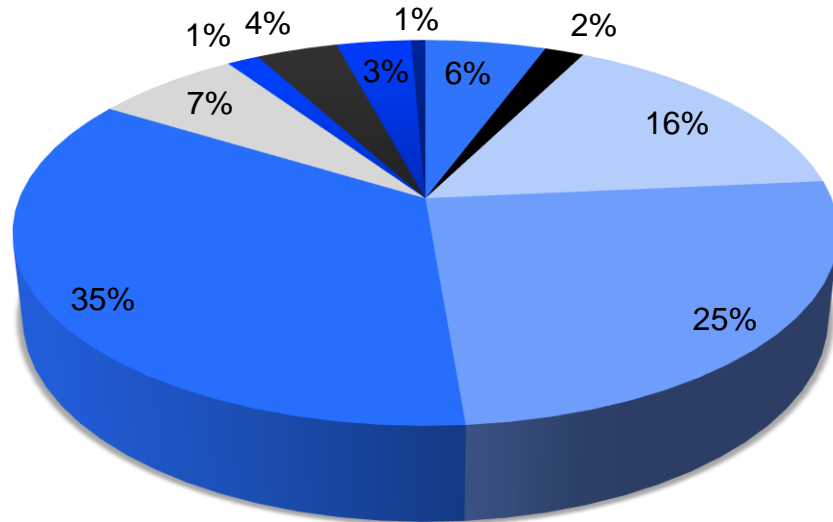
- Over 30 years of CAD Expertise
- Strong partnerships with CAD Vendors
- 3D Data Expertise
  - Translation
  - Geometry Healing
  - Quality Management
  - Validation
  - Simplification
  - Reverse Engineering/ Point Cloud Rendering
- “Off-the-Shelf” Software, Development Projects & Migration Services



# Industries Served

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ELYSIUM has over 2800 customers around the world with a strong position in the manufacturing industry.



- Aerospace & Military
- Automotive OEM
- Automotive Supplier (Tier-x)
- Energy | Oil & Gas
- Engineering Services
- Architecture & Construction
- Automotive Supplier (Tier-1)
- Consumer Electronics & Products
- Heavy Industry
- Shipbuilding

NORTHROP GRUMMAN

GENERAL DYNAMICS

LOCKHEED MARTIN

BOEING

AIRBUS  
DEFENCE & SPACE

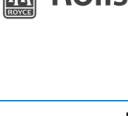
BAE SYSTEMS



Rockwell  
Collins

Honeywell

ADIENT



# What is InfiPoints?

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- A large scale point cloud handling tool developed by Elysium for various industries/fields

Shipbuilding



Plant



Manufacturing



Construction



Architecture



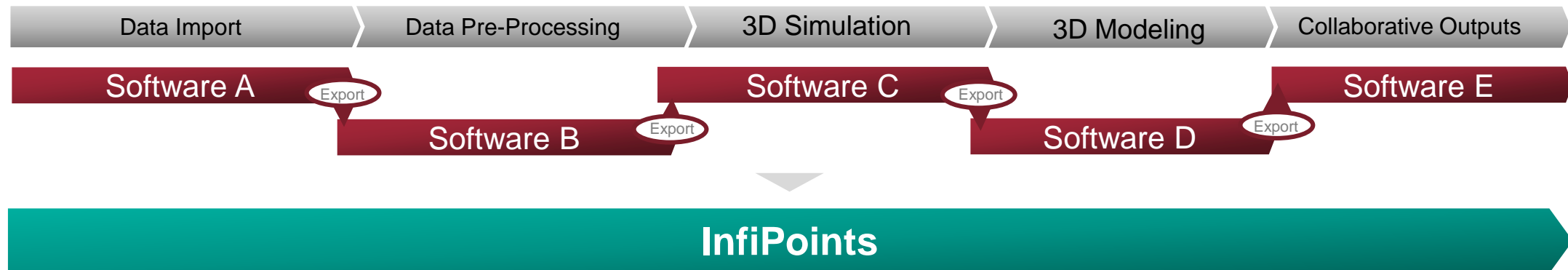
Aerospace



Automotive



- Comprehensive Software to Facilitate the **Entire Process of Point Cloud Utilization**





# InfiPoints Concept-Easier Utilization of Point Cloud

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- **Reducing Time for Data Preparation**
  - Dramatically reduce time and labor to prepare data for utilization by easily register multiple scans from a laser scanner and performing powerful noise reduction
- **Smoothly Work in a Large Scale Environment**
  - Billions of points will not stop you from smoothly handling your point clouds
  - Dramatically reduce time and labor of modeling by using plane/cylinder automatic extraction and tools
- **Average of 50% time reduction for InfiPoints customers**

# Functions – 5 Processes

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**InfiPoints supports your one-stop point cloud utilization in the following 5 processes**



Data Import



Data Pre-processing



Modeling



Analysis



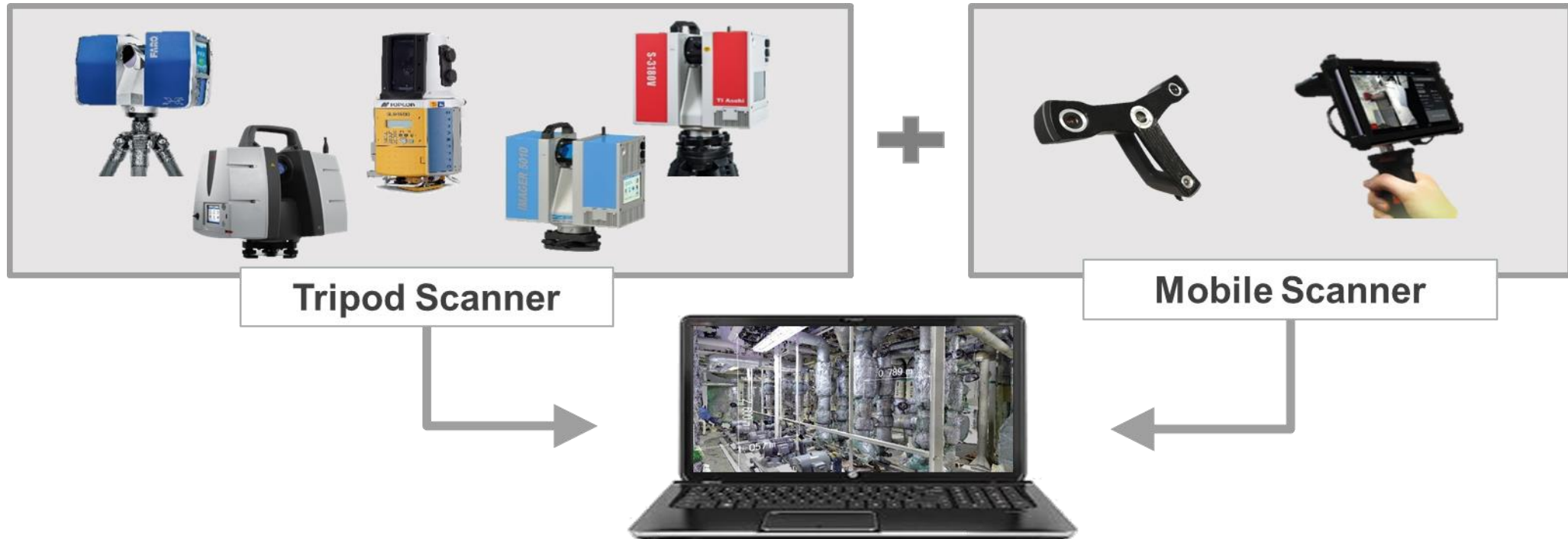
Collaborative  
Outputs

# Data Import

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- Import multiple scan data formats including native scanner data
- Viewing of large scale point clouds (billions of points)





# Data Pre-processing

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- Markerless Automatic Registration
  - XML Report
- Target Recognition, Coordinate Transformation
- GeoReferencing
- Automatic Noise Reduction

Overlapping Noise

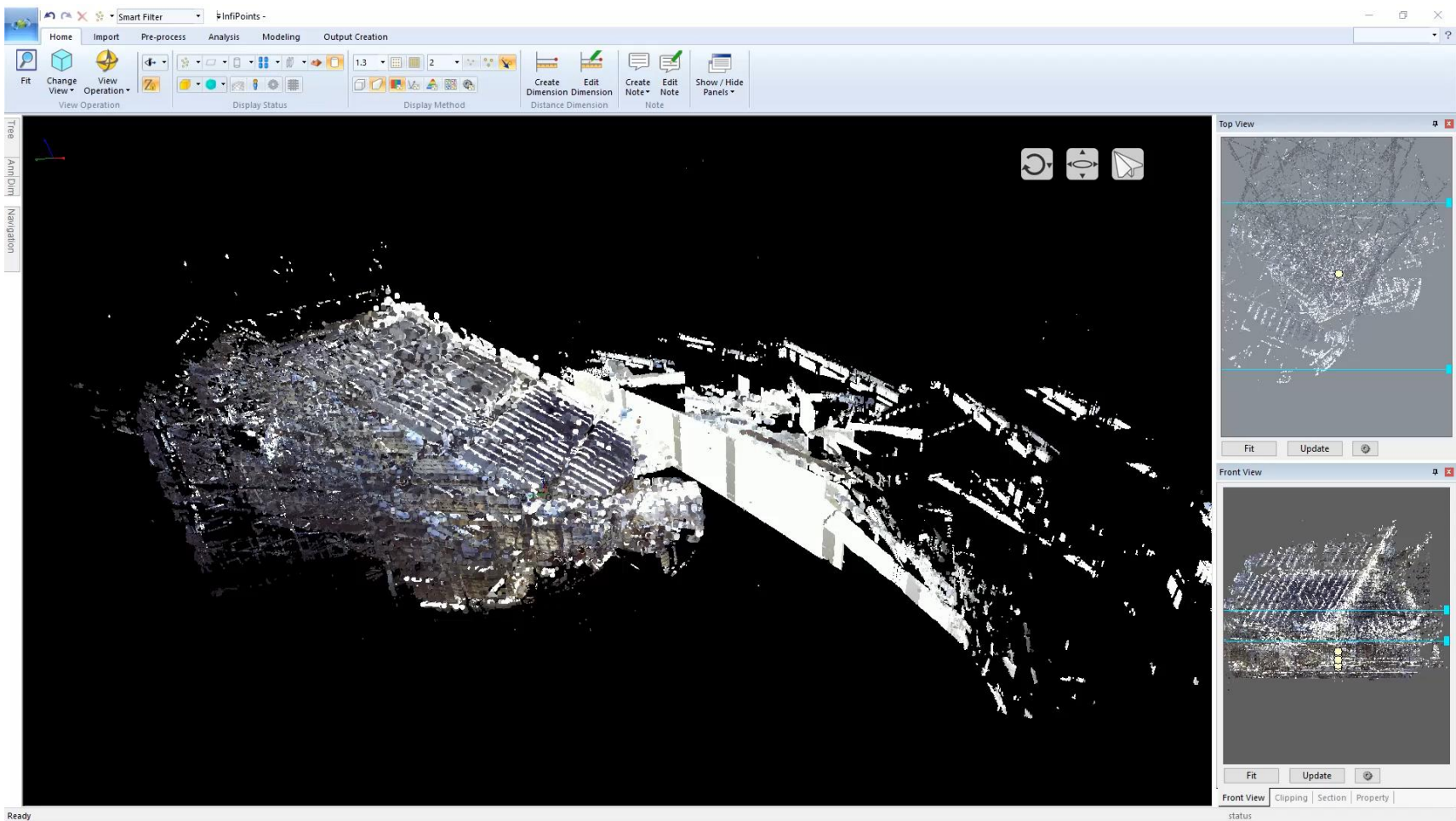


Removing Kinetic Noise



# Automatic Markerless Registration

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# Modeling

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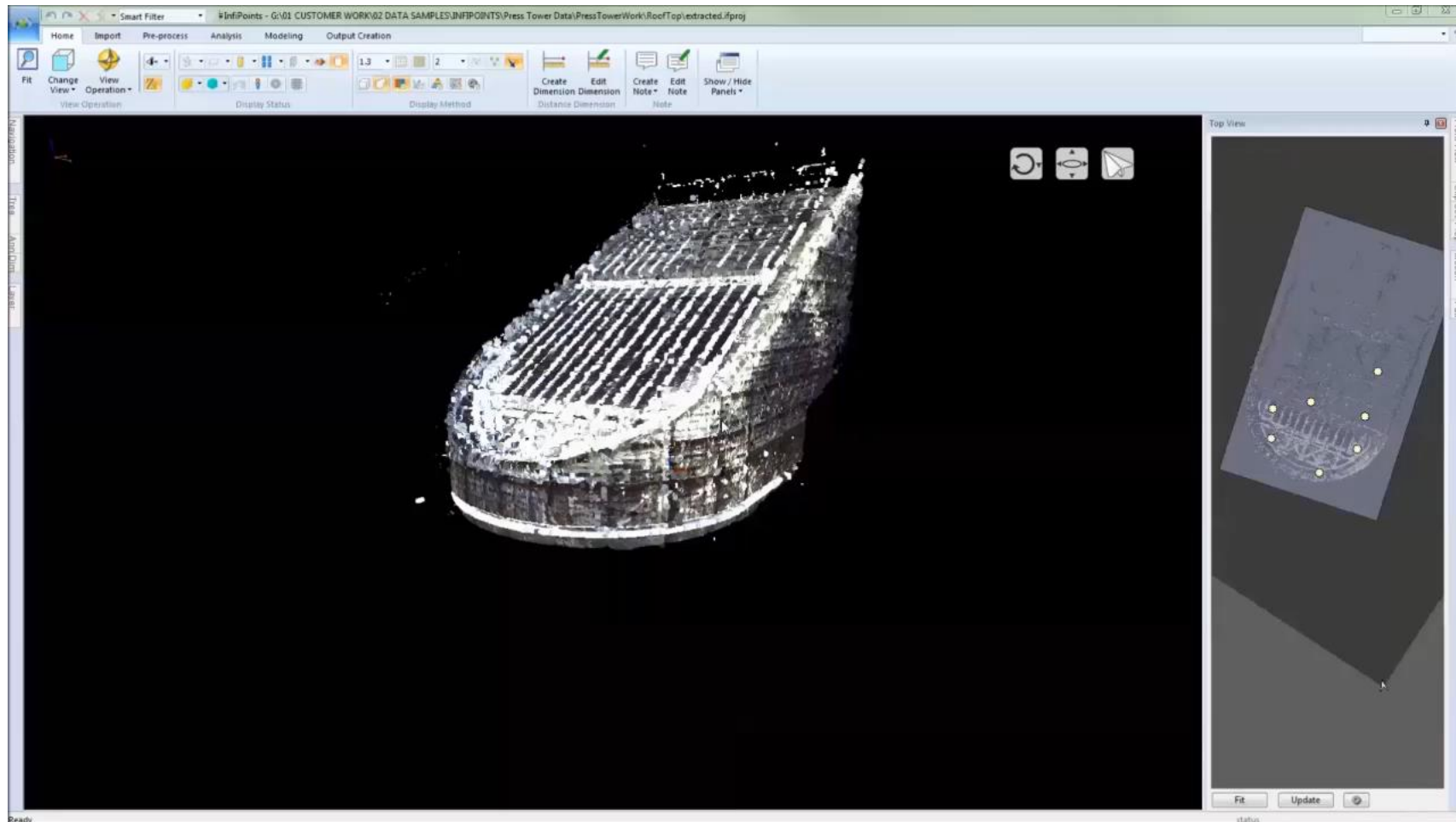
- Pipes
- Equipment
- Steel Structures
- Duct Modeling
- Mesh Creation





# Pipe Modeling

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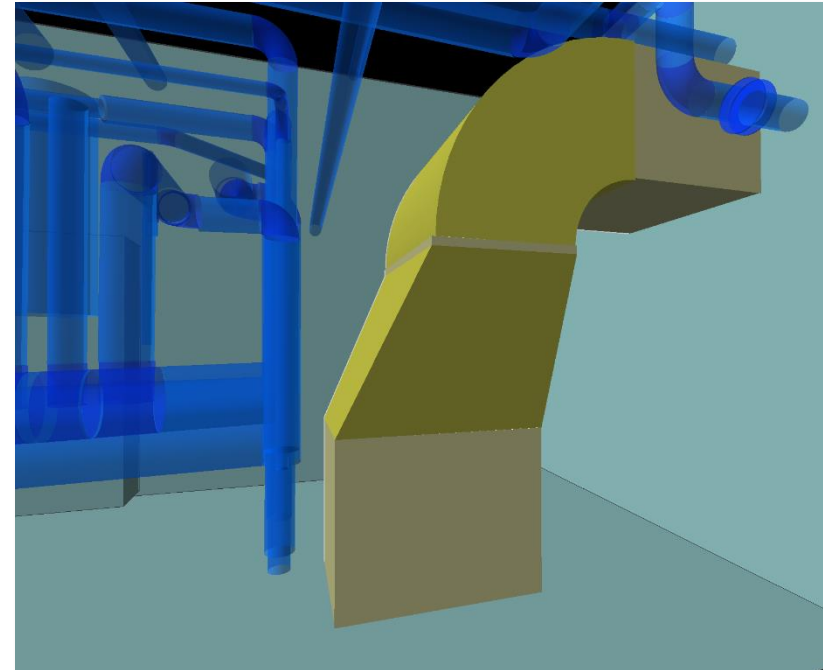


# Duct Modeling

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- Added duct exclusive modeling function utilizing automatically extracted planes



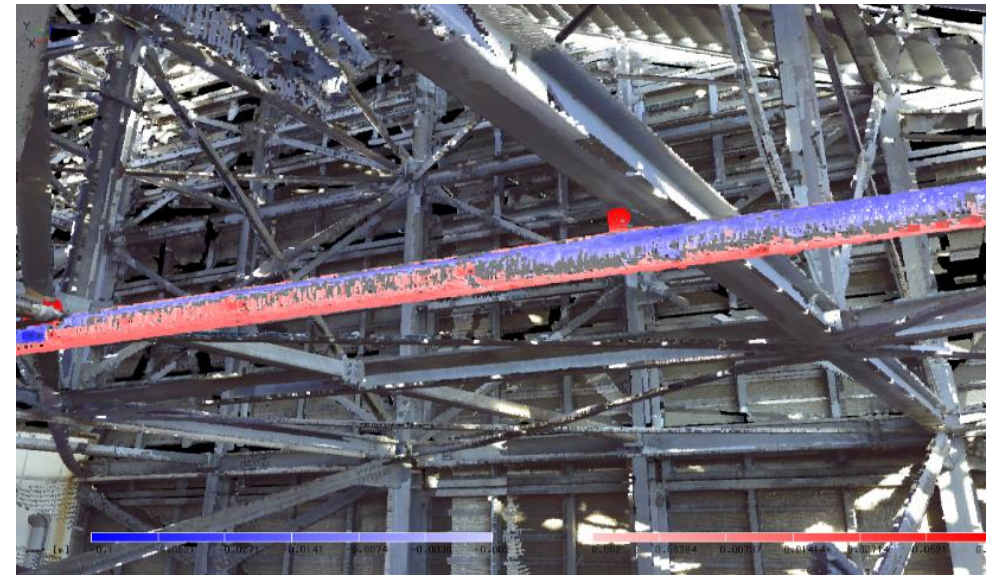


# Analysis

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- Measurements using extracted planes/cylinders
- Real-time interference check along path and with interaction
- Comparison between CAD and Point Cloud



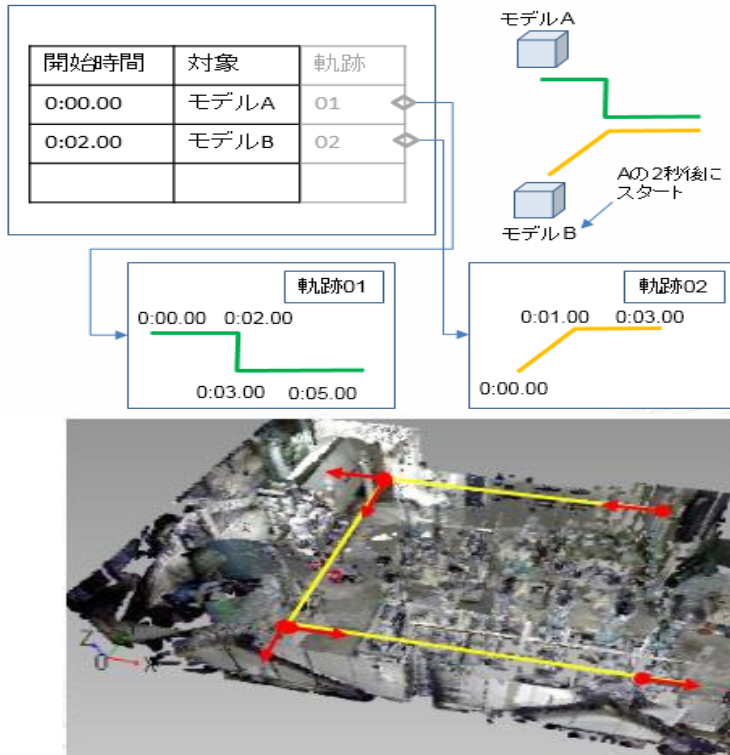


# Real-time Interference Check

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- Path creation, movement of CAD model along the path and performance of real-time interference checking
- Save your CAD model path movement as a movie as well



# Collaborative Outputs

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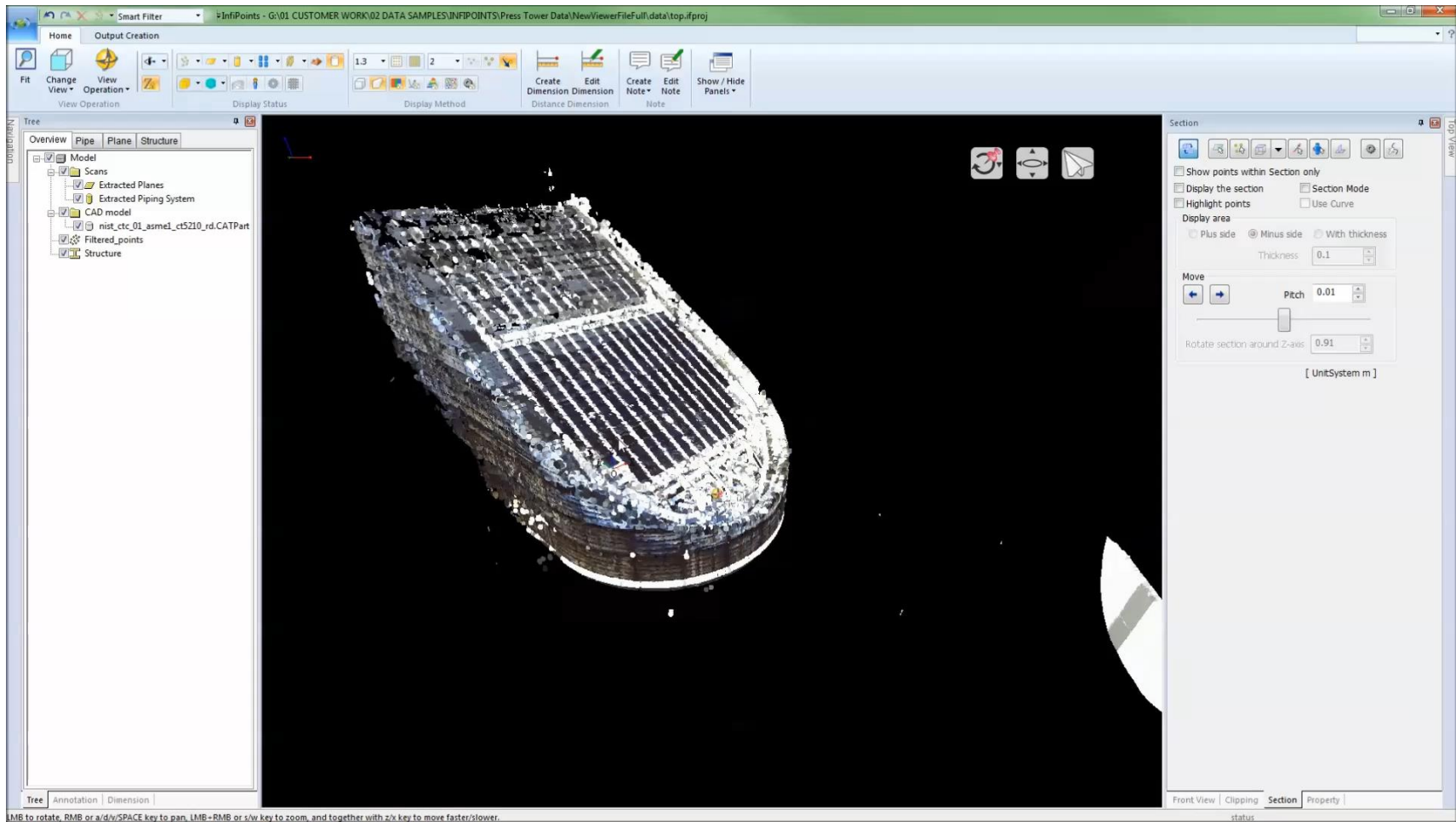
- Fly-through Movie
- Export Ortho Images
- Export Viewer File
- External Links



InfiPoints

# Viewer File

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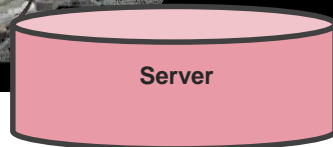
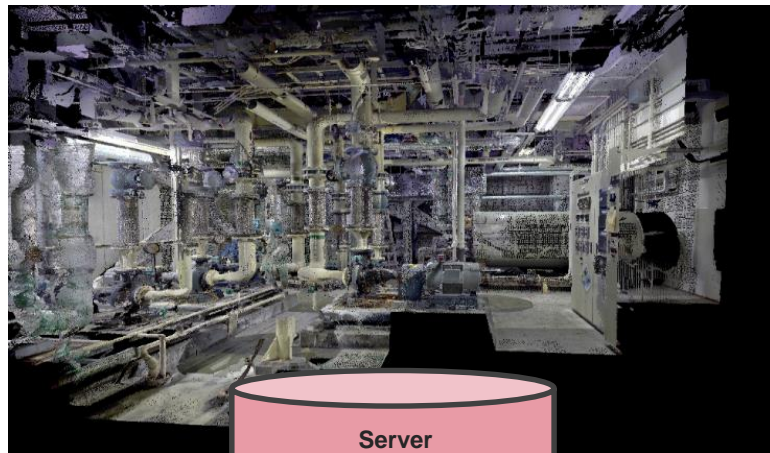
LMB to rotate, RMB or a/d/v/SPACE key to pan, LMB-RMB or s/w key to zoom, and together with z/x key to move faster/slower.



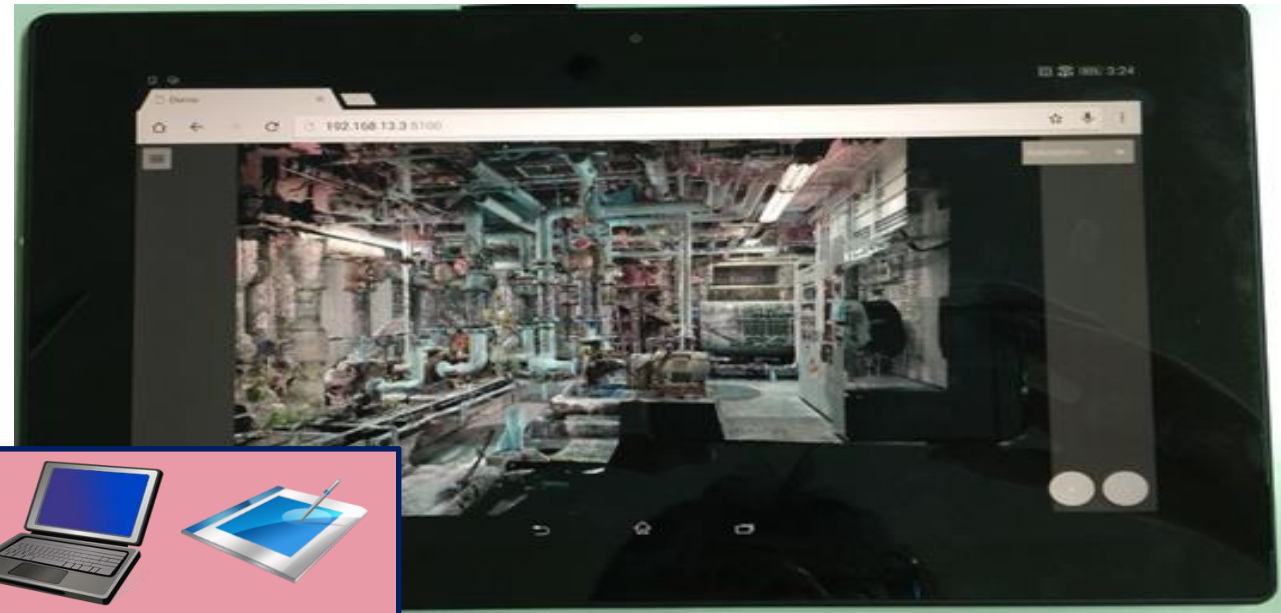
# Point Cloud Web Viewer

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Access the server from the client (PC, tablet, smartphone, etc.) and lightly view your point cloud data



- Access an URL in a web browser to view your point cloud
- Software installation is unnecessary on the client side



# Customer Case Studies

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- **BC Engineering and Design**



BC Engineering and Design

- Engineering services case
- Model creation from 400 hours down to 19 minutes with auto-extraction

- **Tonets Corporation**



- BIM case
- Utilizing automatic feature extraction, Rebro connection, and IFC export option to other BIM software
  - 2 month process down to 14 days

- **Matsue College**

- Silver mine investigation
- Utilized automatic noise reduction and ground extraction

# Customer Case Studies

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- **Shinko Plantech**



- Avoid rework by virtually checking for interferences for construction maintenance
- Utilizing automatic feature extraction, polygons, and collision detection, were able to avoid 30 areas that would have caused interference

- **JFE Plant Engineering**



- Looking at the inclination of their plants after earthquakes for maintenance
- Utilizing automatic noise reduction, measurement capabilities, and CAD to Point Cloud validation
  - Saved time, reduced human danger, increased measurement capabilities



# Oculus Rift Support

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# InfiPoints Demo

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## Oculus Rift

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- 248-436-1308

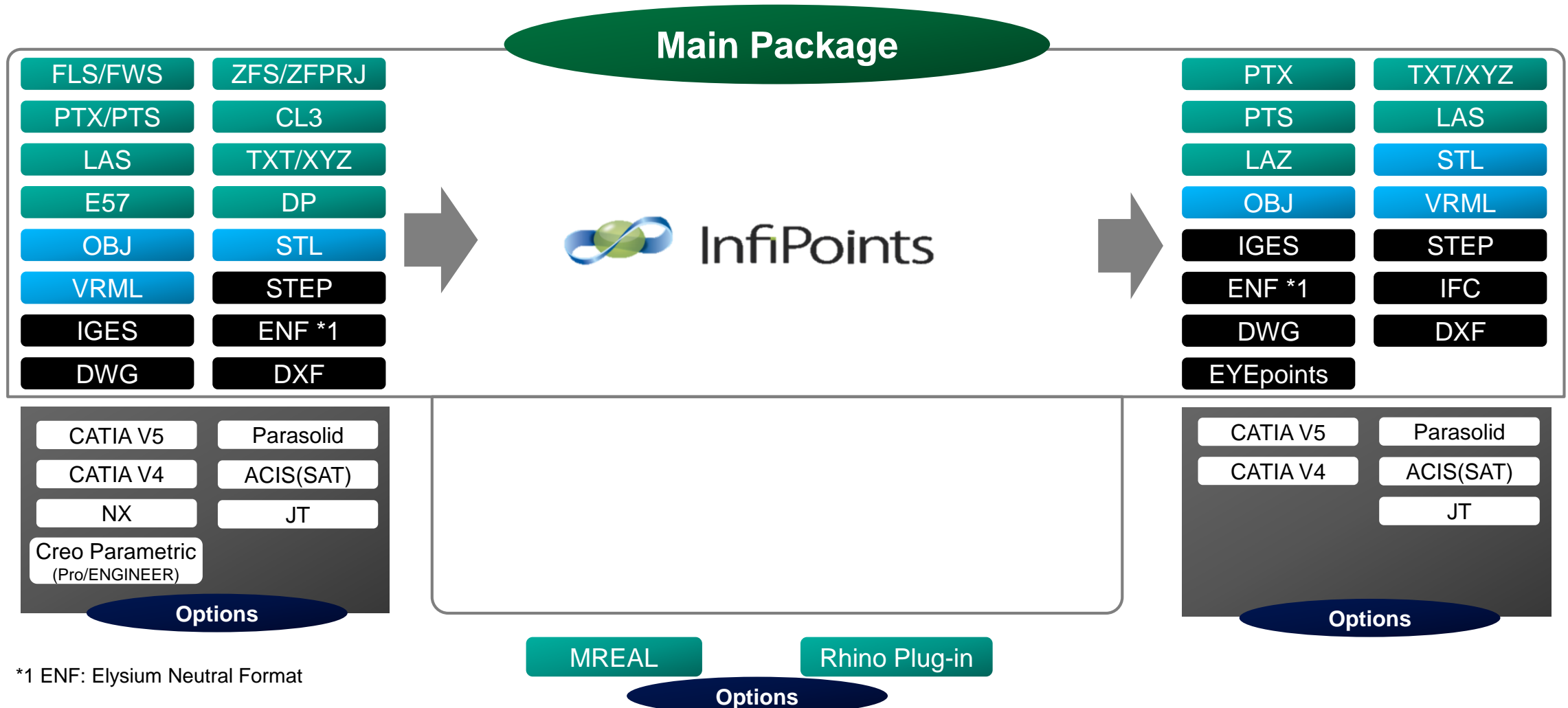
# Thank You!

# Appendix

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# Supporting Formats

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\*1 ENF: Elysium Neutral Format