Orbit Mobile Mapping
Version 11 Portfolio

September 2014

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GEOSPATIAL TECHNOLOGIES

INTRODUCTION
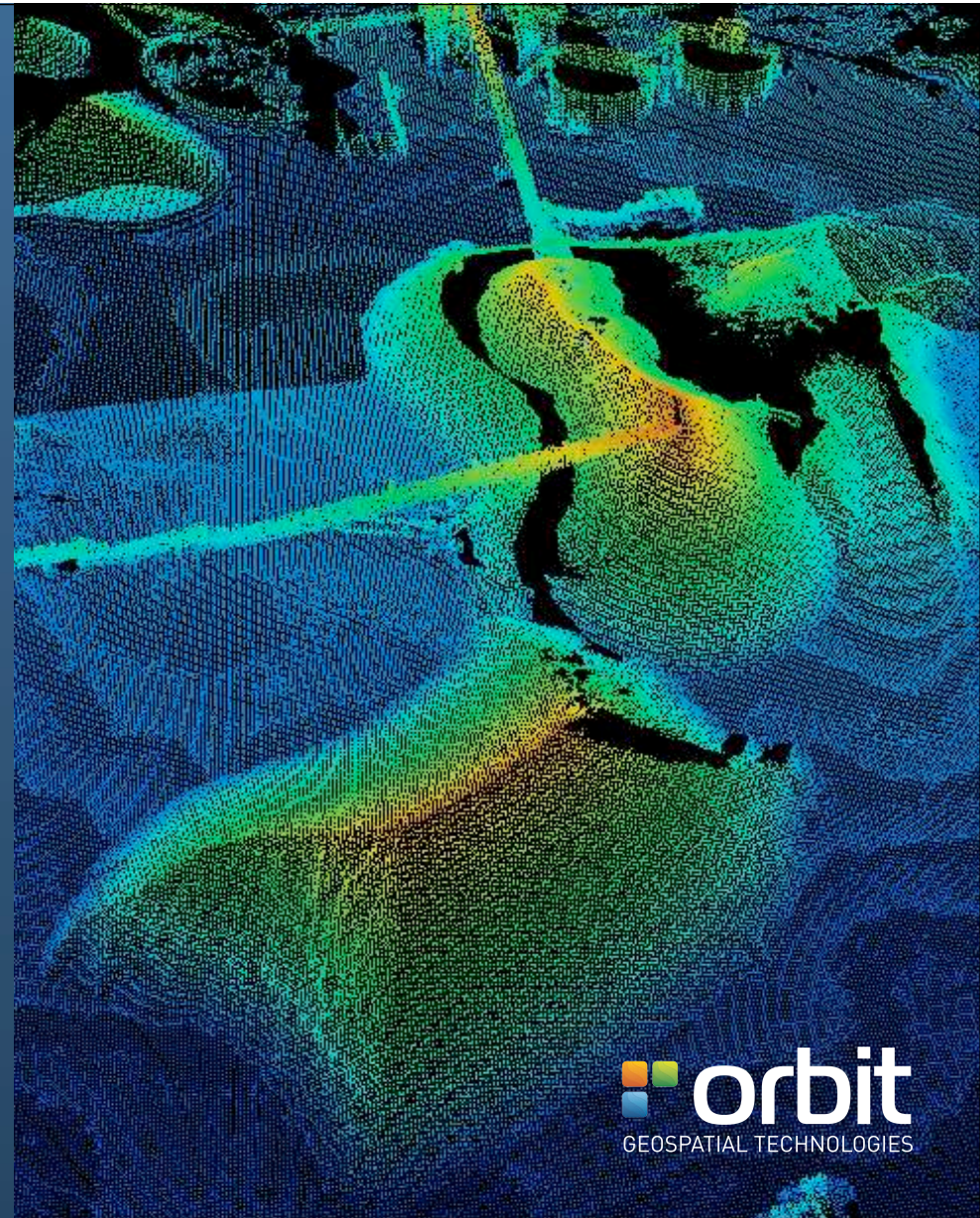
Version 11 Portfolio

3 Main Product Offerings

Content Manager
- ▸ single desktop product

tool for data collectors, system owners

manipulates imagery, pointcloud

Feature Extraction
- ▸ series of desktop products

tool to extract points, lines, areas

clash detection, profile, volume, blur

Publisher
- ▸ web, mobile and integrated

tool to share online & integrate

The Life of Mobile Mapping data

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GEOSPATIAL TECHNOLOGIES

COLLECT / PRODUCE
> CONTENT MANAGER

EXTRACT / PROCESS
> FEATURE EXTRACTION

SHARE / DELIVER
> PUBLISHER

- **Plan**
- **Collect**
- **PostProcess with HW Vendor Tools**
- **Orbit MM Content Manager**
- **Organize**
- **Clean**
- **Correct**
- **Deliver MM Content**

- **Extract Features**
- **Asset Inventory**
- **Clearance / Collisions / Clash**
- **Profiles & Cross Sections**
- **Volumes**
- **Face & Plate detection**
- **Blurring QC**
- **Deliver Features**

- **Consume via Web**
- **Consume via App**
- **Consume via SDK**
- **Plugins / Integrations**
- **Embed in Workflow**
- **Find Resources**

Who does what ?

|	COLLECT / PRODUCE > CONTENT MANAGER	EXTRACT / PROCESS > FEATURE EXTRACTION	SHARE / DELIVER > PUBLISHER
MM SYSTEM OWNER	✓	✓	
SERVICE PROVIDER		✓	✓
END USER		✓	✓

A COUPLE OF CHALLENGES

COVERED BY ALL ORBIT MM PRODUCTS

Huge Volumes

Just a small example

- Imagery
  - LB5 - 30Mpx - 6MB / im
- Point Cloud
  - 500K p/sec - 10B / pt
- Single collection, 1 hour
  - 40 mi @ 40 mph
  - 1800 bil. points - 18 GB
  - 12.8 K images - 76.8 GB
- Makes 94 GB per hour, about 0.75 TB a day
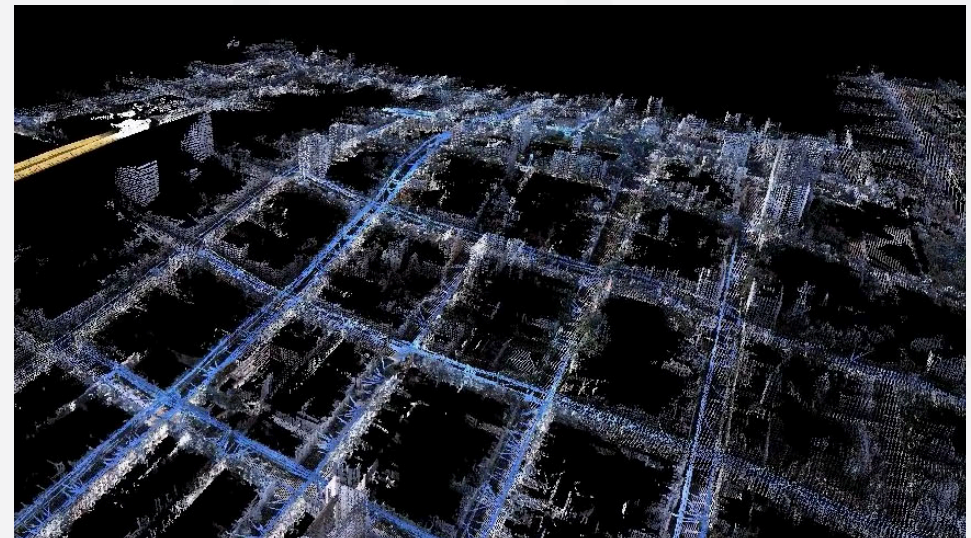
Performance

Just to give a general idea

- Imagery
  - 30Mpx images, in memory = 240 MB RAM

- Point Cloud
  - 100 m stretch = about 28 MB RAM

- Network
  - 100 Mbit/sec

- Makes Loading time = 2.72 sec
  - (excluding disc performance)

Visualization & Navigation

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- **Imagery**
  - Spherical
  - Planar
  - Any resolution, multiresolution

- **Point Cloud**
  - any density
  - Clip / Select / Extract
  - TIN / DEM

- **Navigation**
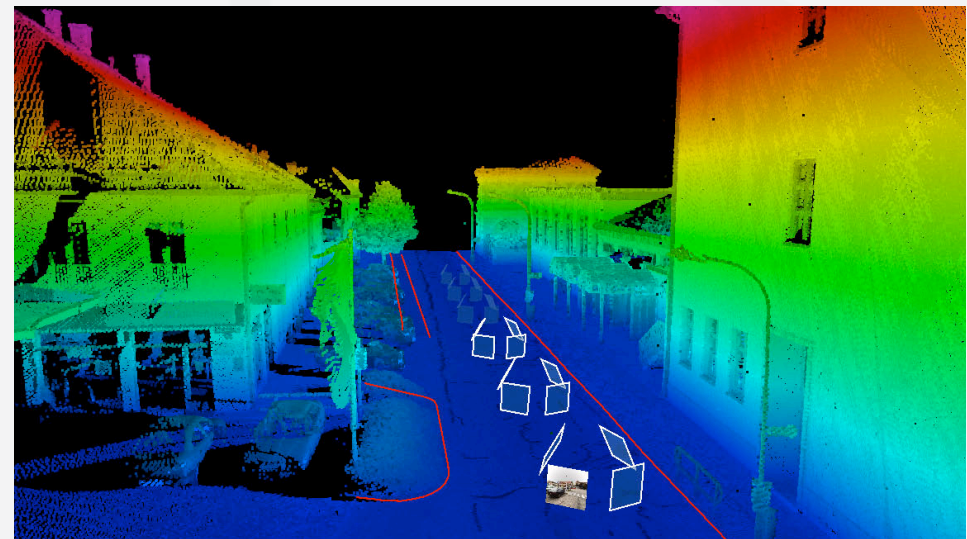 - all movements with single mouse fn
  - streamed loading of points with LOD

- **Visualization**
  - Colored by RGB, Intensity, Height, Depth or Combined views
  - LiDAR-over-Image,
  - Vector suporimposition on image, LiDAR

Orbit Solutions

- Optimized Storage
  - Minimum Server-Side processing required

- High Bandwidth solutions
  - Stand-Alone desktop
  - Client-Server desktop

- Low Bandwidth solutions
  - Publisher

- Single Storage, maximum use

CONTENT MANAGER

FOR
MOBILE MAPPING DATA COLLECTORS

The Life of Mobile Mapping data

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Content Manager product

Overview

- Import
- Catalog
- Clean Point Cloud
- Check GCPoints
- Trajectory Adjustment
- Remove multiple passes
- Consolidate and Deliver

- Single Desktop product, available in
 - ▸ stand-alone only

Content Manager – Import

Manage the Massive Volumes

- Import
    - Vehicle-based configuration template
    - Optimization & indexing
    - Spherical & Planar Imagery
    - Any Pointcloud size
    - Camera Calibration
- All hardware setups supported
- Collect Metadata
    - Timestamped Trajectory
    - Coverage / Envelope
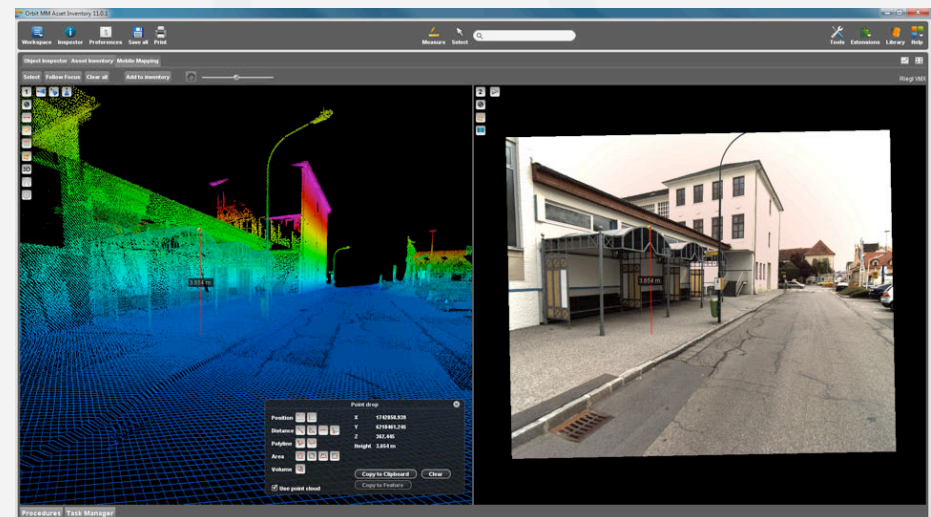
Content Manager – Organize

Keep track of your data

- **Catalog of Runs**
  - Select and Inspect
  - Status
  - Open for editing
  - Find and remove multiple passes
  - Manage Metadata
  - Archive
- **Combine to Projects**
- **Search**
- **Overview Map Display**
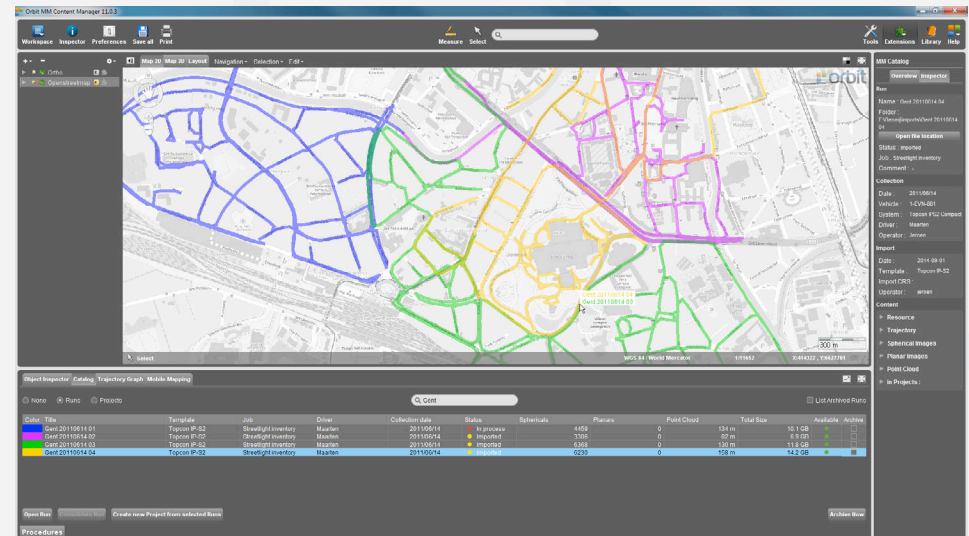
Content Manager – Point Cloud Cleaning

- Eliminate unwanted portions of points, due to e.g. moving objects
- Fast Selection tools
    - merge
    - subtract
    - auto-remove ground
- Highlight / Dim / Hide
- Dynamic Deletion of Selections
- Huge Volumes, 1 file.
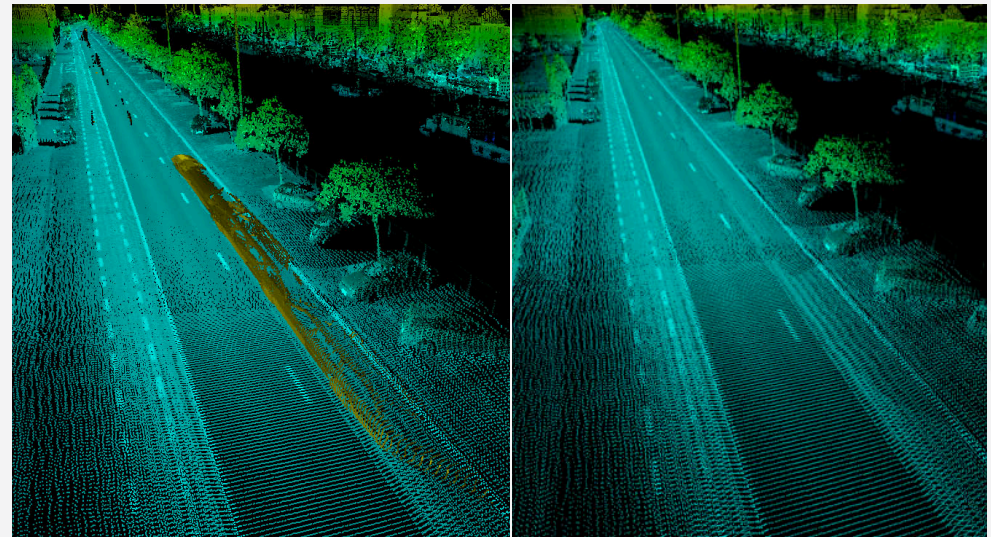
Content Manager – Positional Accuracy

Check and set Constraints

- **Load & List GCPoints**
- **Visualize**
  - on map
  - on imagery
  - in pointcloud
- **Measure differences**
  - in any view
  - accept as constraints
- **Check with any reference and MM data**
- **Report**
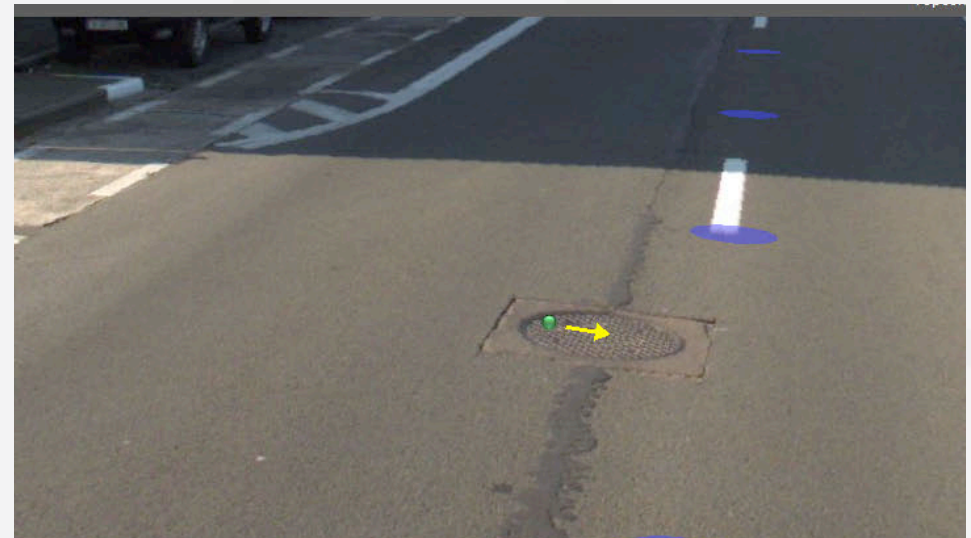
Content Manager – Trajectory Adjustment

Correct Positional Accuracy

- **Interpretation & Judgement**
  - ▸ Display GPS Error over time
  - ▸ Graph representation
  - ▸ Measure and Display Constraints

- **Adjust or Remove Trajectory**
  - ▸ Select part to Adjust or Remove
  - ▸ Preview and Process Adjustment
  - ▸ Do Multiple Stretches
  - ▸ Remove Multiple Passes
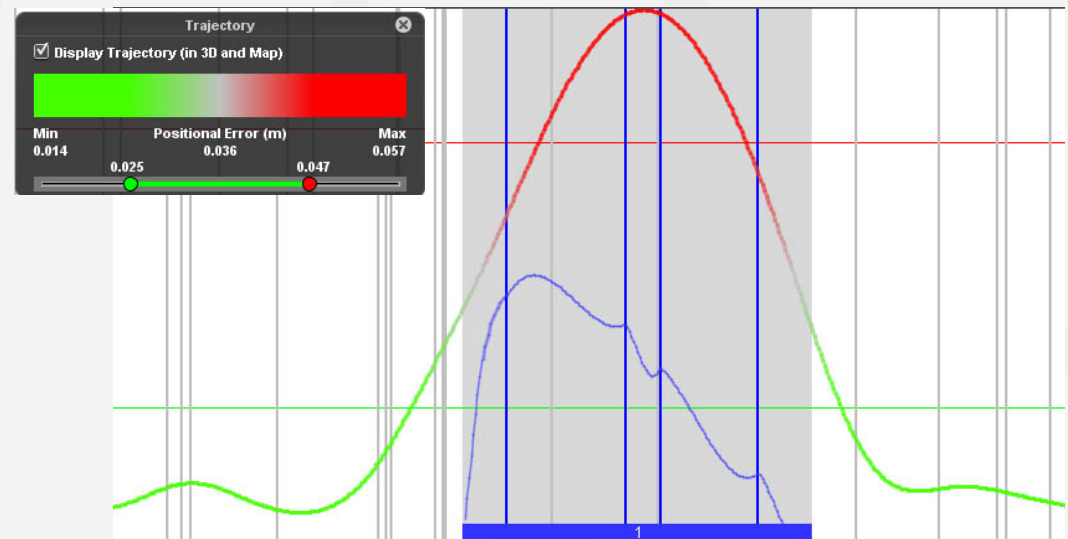
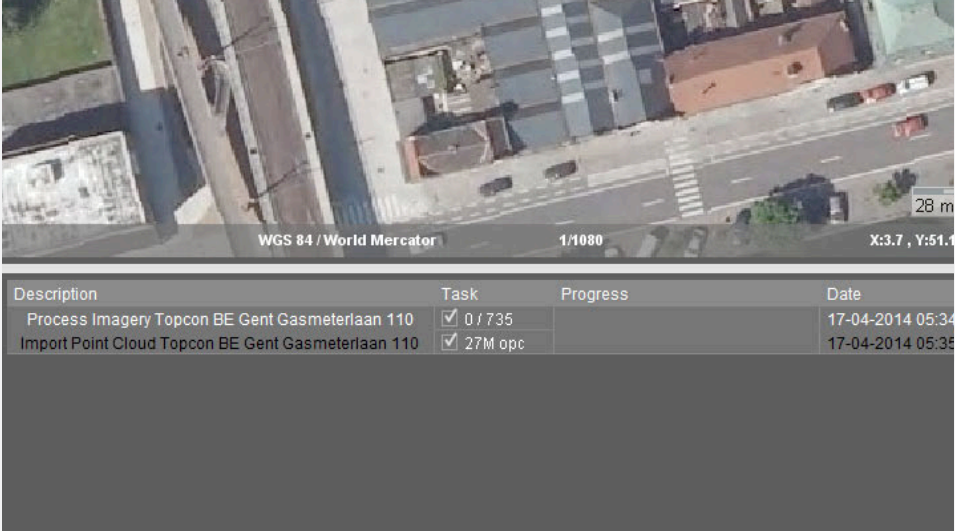# Content Manager - Consolidate

Get ready for next phase, feature extraction

- **Reprocess Runs & Projects**
  - cleaned pointcloud
  - corrected trajectory
  - removed multiple passes
- **Stores as clean and new run**
- **Delivery :**
  - Combine (portions of) runs / project into a single "delivery run"
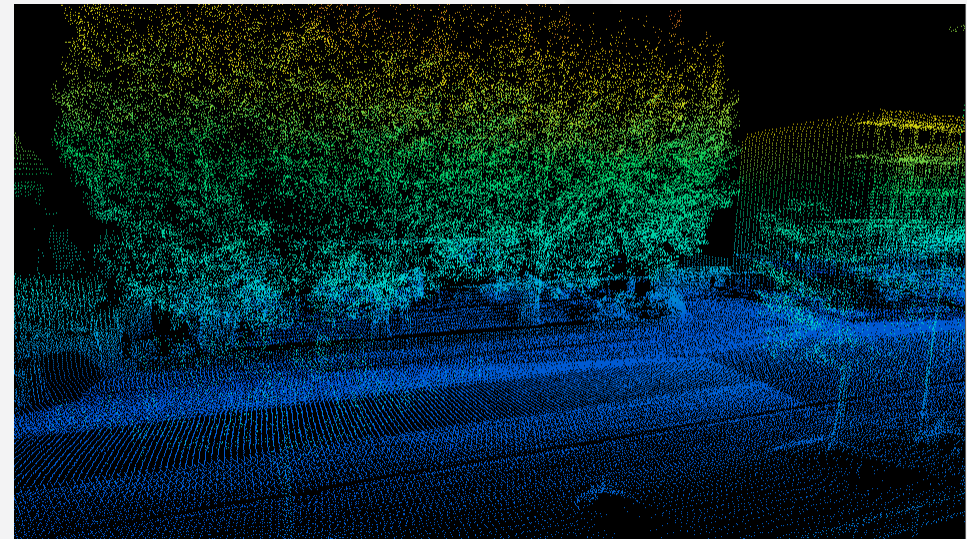
Content Manager - Extra Tools

- **Task Manager Utility**
  - ▶ List Jobs To Do
  - ▶ Select and Process at night
  - ▶ Review
- **Export**
- **Movie Maker**

FEATURE EXTRACTION

**FOR
DATA PRODUCTION, ANALYSIS**

The Life of Mobile Mapping data

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Feature Extraction products

Overview

- Basic Edition
- Extensions to Basic Edition:
  - ▶ Asset Inventory
  - ▶ Clearance, Collision, Clash
  - ▶ Profiles & Cross Sections
  - ▶ Volumetric Analysis
 - ▶ Face & Plate detection
  - ▶ Blur & Erase QC

- Desktop products, available in
  - ▶ stand-alone
    client-server

Feature Extraction - Basic Edition

Entry level - manual extraction - get started

- Entry Level
- Open Runs & Projects
- Simple Measurement Procedures
- Measure in Image, Point Cloud
- Measure Point, Line, Area
  - ▸ Display in CRS, WGS84, Lat/Lon
  - ▸ Display Slope, Height, ...
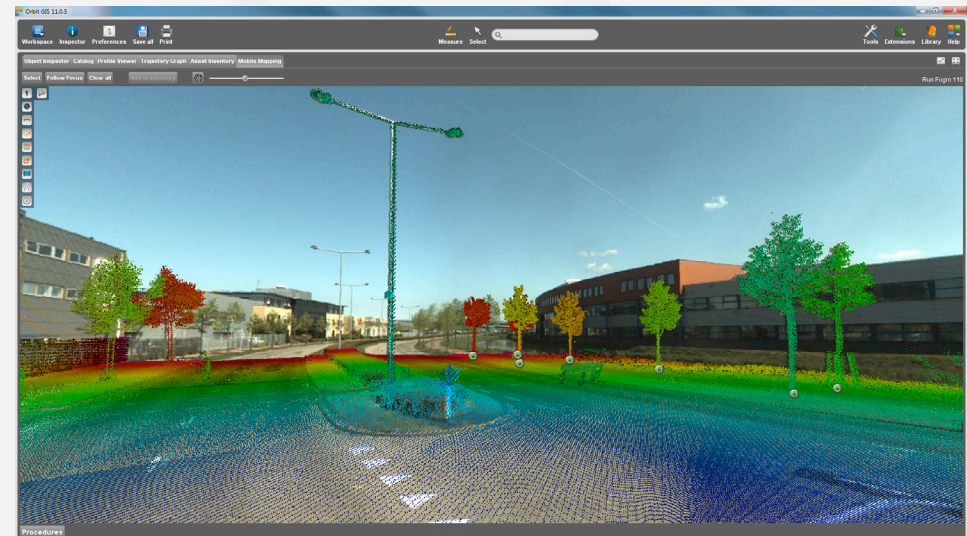- Manual Attribution to any dataset
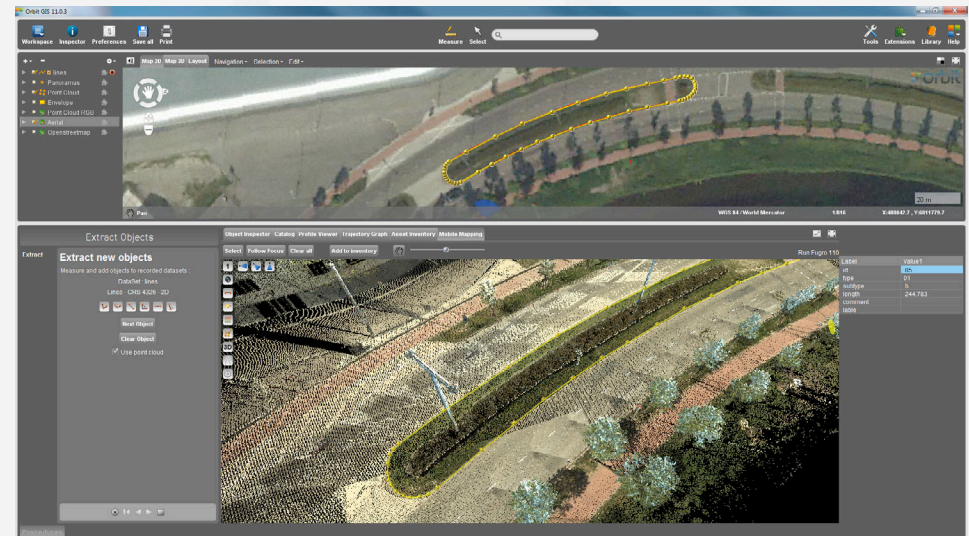
This product is the upgrade to the v10.5 "Manager" product

Feature Extraction - Asset Inventory

Advanced Workflow Asset Extraction & Storage

- Use Workflows
- Design Themes
- Share data
- Store in Database
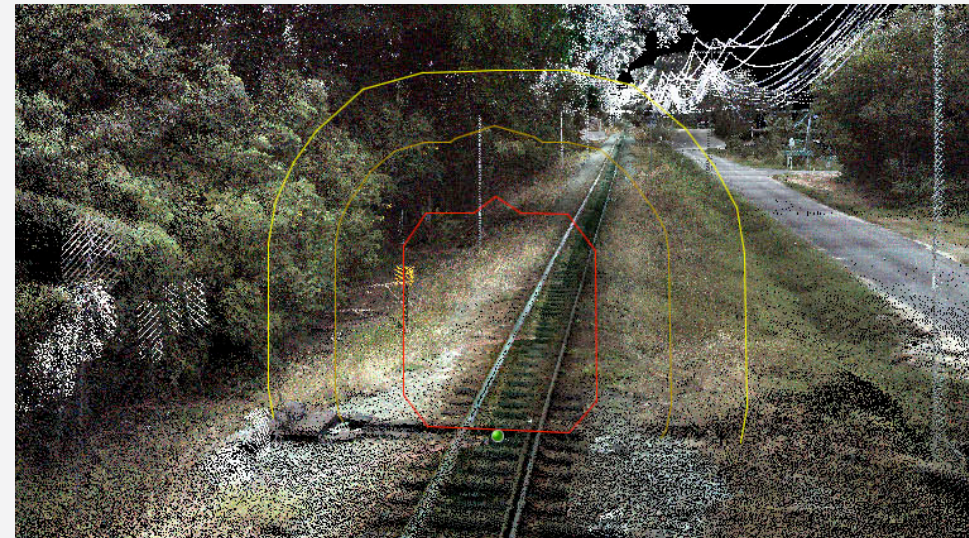- Add Snapshots, documents, attributes
- Additional Measurement functions

This is an Extension which requires 'Feature Extraction - Basic' to operate. Also available in bundles - see further.

Feature Extraction - Collisions & Clearance

Clash Detection & Clearance Measurements

- Any 3D Path
    - supports railroad slant
- Any Form
- Autodetect Hits
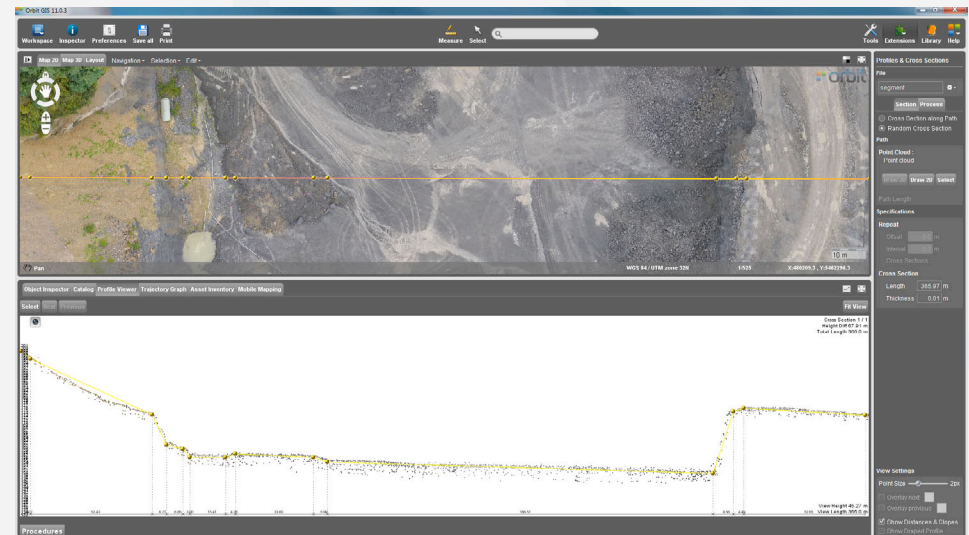   - register Near-Hits, Watch list
- Report
- Judge & Act

This is an Extension which requires 'Feature Extraction - Basic' to operate. Also available in bundle - see further.

Feature Extraction - Profiles

Automated Cross Sections & Reusable Profiles

- **Various Profiles**
  - ▸ Path with Cross Sections
  - ▸ Single Profile
  - ▸ Set Profile length & width
- **Isometric View**
- **Register Themes**
  - ▸ Integrated with Asset Inventory
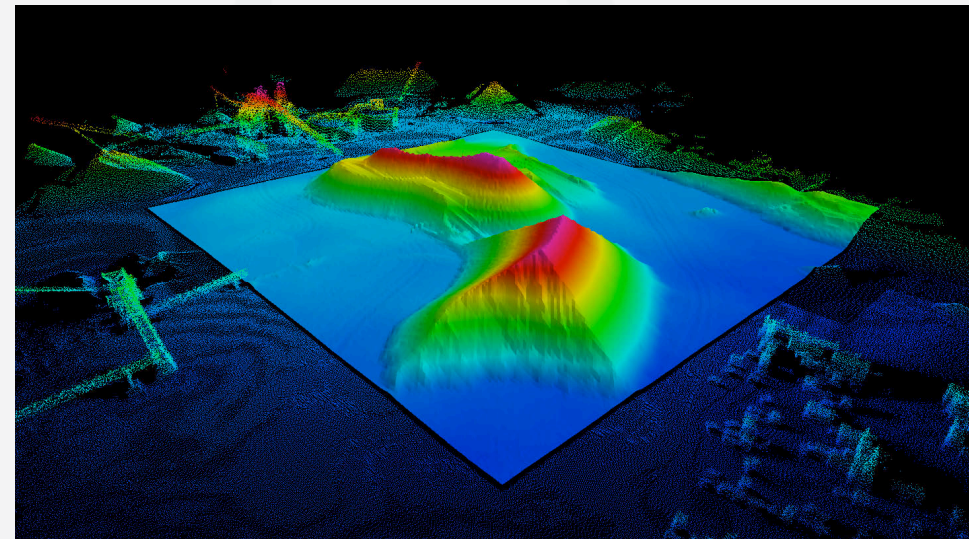- **Register Tech Profile**
- **Delivery**

This is an Extension which requires 'Feature Extraction - Basic' to operate. Also available in bundle - see further.

Feature Extraction - Volumetric Analysis

Any Volume and Volume Comparison

- Use any 3D Datasource
- Set Fence as perimeter
- Use Reference Data
  - To Compare
- Calculate Cut & Fill
- Delivery
  - Creates DEM / TIN
  - Creates Contour Lines

This is an Extension which requires 'Feature Extraction - Basic' to operate. Also available in bundle - see further.

Feature Extraction - Detection & Blurring

Autodetect, QA and QC Blur & Erase areas, update & deliver

- **Automated Detection**
  - ▸ Face detection engine
  - ▸ Plate detection engine
- **Metadata**
- **Blur & Erase Editor**
  - ▸ Simulate
  - ▸ Process Imagery
  - ▸ Deliver

This are two Extensions which require 'Feature Extraction - Basic' to operate. Also available in bundle - see further.

Feature Production teams

Maximize production with central data storage in Client-Server setup

Stand-Alone

▸ All Extensions available

▸ Manual Mgmt of data

Client-Server

▸ All Extensions available

▸ Central Management of

   Mobile Mapping data

   Users & Permissions

   Workspaces

   Asset Inventory Database

   excludes Face & Plate detection

Bundled products

Asset Inventory and Feature Extraction bundles

- **Asset Inventory bundle**
  includes :
  - ▶ Feature Extraction (base)
  - ▶ Asset Inventory (extension)

- **Feature Extraction bundle**
  includes:
  - ▶ Feature Extraction (base)
  - ▶ Asset Inventory (extension)
  - ▶ Clearance (extension)
  - ▶ Profiles (extension)
  - ▶ Volumes (extension)
  - ▶ Blur & Erase QC (extension)

This product is the upgrade to the v10.5 "AIM3" product

does not include Face & Plate detection

Bundled products

Full Office bundle

- Full Office bundle
  - *includes :*
    - ▸ Content Manager
    - ▸ Feature Extraction bundle

    does not include Face & Plate detection

Orbit MM Explorer

Desktop Content Viewer tool

- Views all imported MM data
- Same engine and GUI
  - ▸ Easy to use
  - ▸ All visualization options
  - ▸ All measure tools
- No registration / extraction / editing
- Tool to ship with **prepared** content

- Single Desktop product, available in
  stand-alone only

PUBLISHER

FOR
SHARING OF MOBILE MAPPING DATA

The Life of Mobile Mapping data

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Publisher products

- Mobile Mapping Publisher

  includes Browser Publishing

- iOS App

- SDK with 3 API's

- Plugins for

  Esri ArcGIS for Desktop

  Esri ArcServer using GeoCortex

  Esri ArcOnline (App)

  AutoDesk AutoCAD Map 2014

  Integraph GeoMedia 2014

  Bentley MicroStation

  SmallWorld

Mobile Mapping Publisher

Publisher Features

- Main Features :
    - Unlimited Image & LiDAR data
    - Manage Projects & Publications
    - Manage Users & Permissions
    - Real-Time Blurring
    - Include basemaps and vector data
- Publish Mobile Mapping data to :
    - Browser
    - Mobile Device
    - SDK
    - Integrated Solutions

Mobile Mapping Publisher

Manage Projects and Publications

- **Console and Administrator Tools**
  - Includes Desktop Catalog tool

- **Setup Publications**
  - Streetlevel content
  - Basemap content
  - Extracted features
  - User Credentials & Permissions
  - Logging

- **Client Authorization**
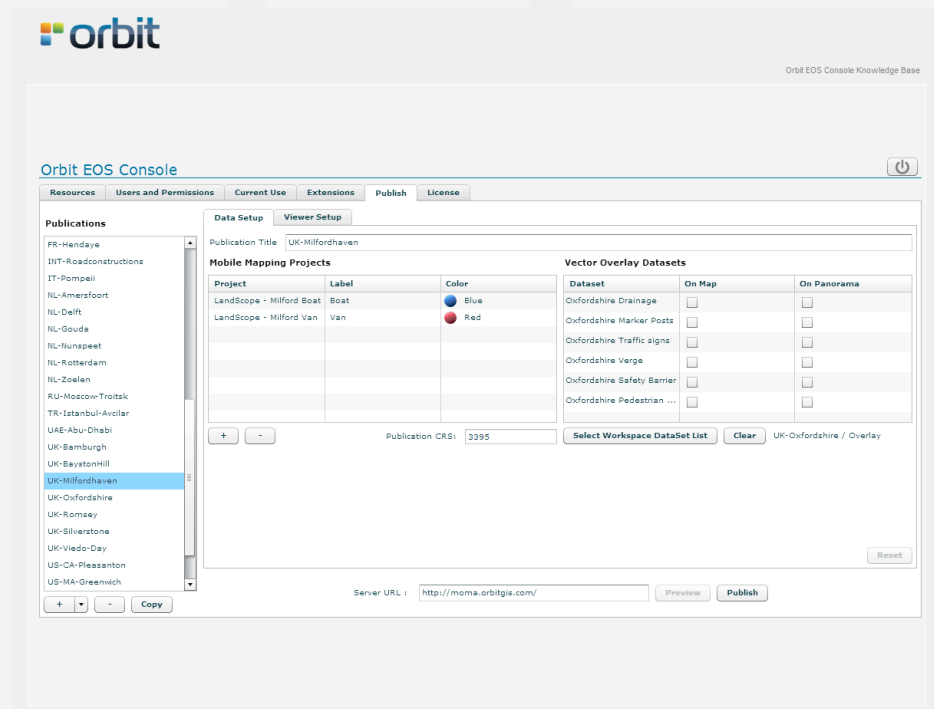
Mobile Mapping Publisher - Blurring

Comply with Privacy Legislation

- Publish Blurred and/or Original images

- Blur on-the-fly
  - to save disc space for imagery

- Includes Privacy Issue Reporting tool
  - with citizen feedback to Blurring QC tool

  - *portions to be blurred must be defined using the Feature Extraction blurring tools*
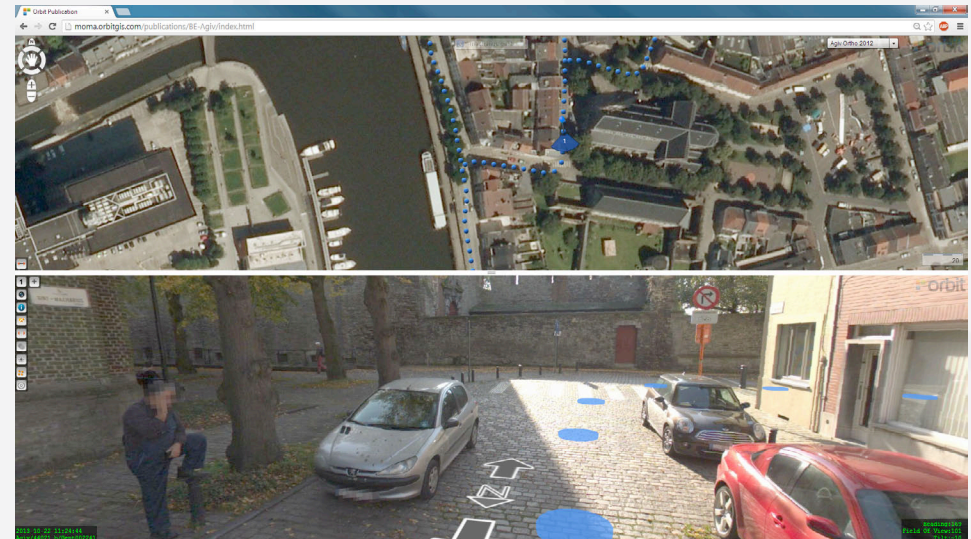
Publish to : Browser

Browser solution Features

- Spherical Imagery as primary User Interface content
- Various Web Page Templates
- Open using URL by XY, Photo name
- Configurable Search
- User Credentials, Permissions
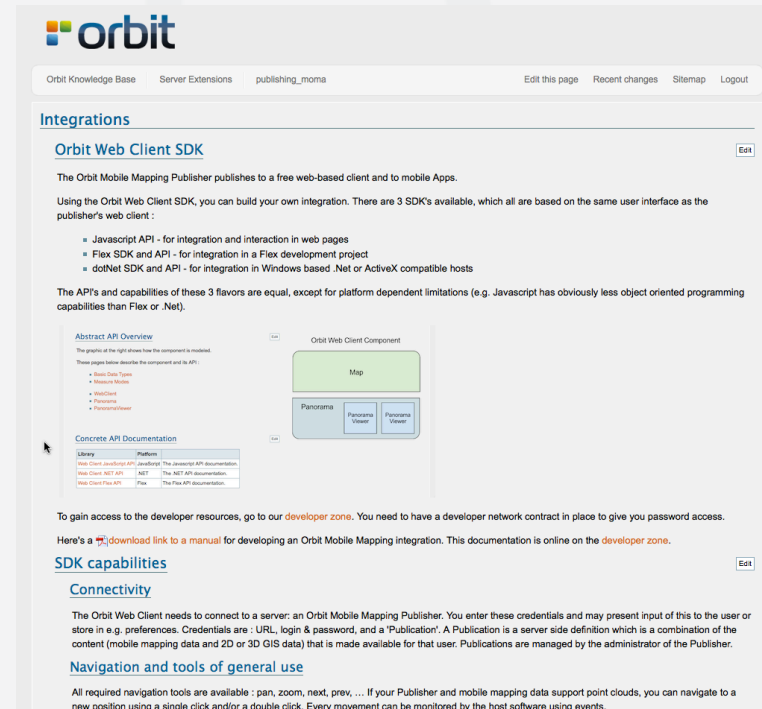- Use Log
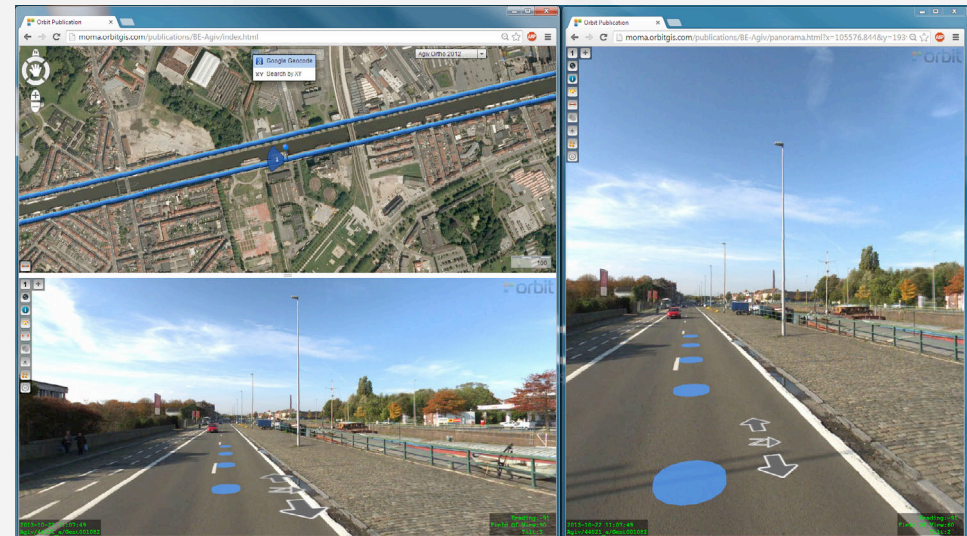
Publish to : Mobile Devices

free iOS App

- App Store "PanoViewer"
- Connect to any Publisher
    - Store login credentials
    - Native support for earthmine, Cyclomedia
- Search or Point on map
    - Photo recording positions overlay on map
- Open Spherical image
    - Natural Pan & Zoom
- On Image :
    - Point & Distance Measurement
   - LiDAR overlay
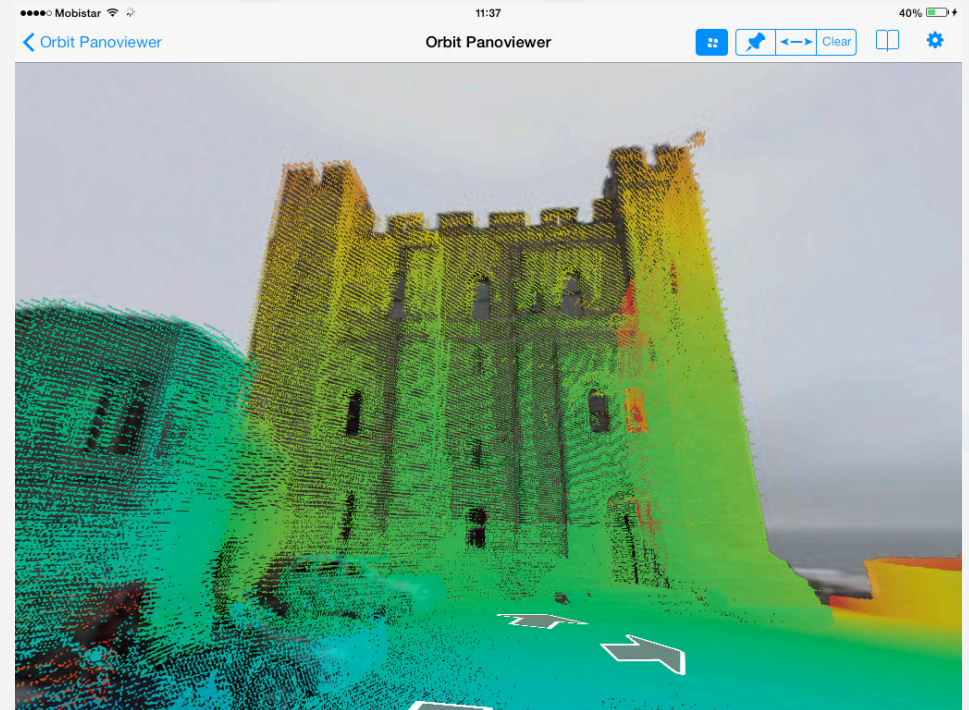
Publish to : SDK & Developer tools

- **1 SDK, 3 API's**
  - JavaScript
  - Flex
  - dotNet
- **Online Documentation**
  - password protected
- **Developer Services**
  - Dev/Test server
  - Translations
  - Product & Sales Authorization

Publish to : Integration products

- Available (sept 2014) :
  - ArcGIS 10.x
  - ArcGIS for Server 10.x
    - using Latitude GeoCortex
  - ArcGIS Online
- In development (sept 2014) :
  - AutoCAD Map 2014
  - MicroStation 2014
  - GeoMedia 2014
  - Smallworld
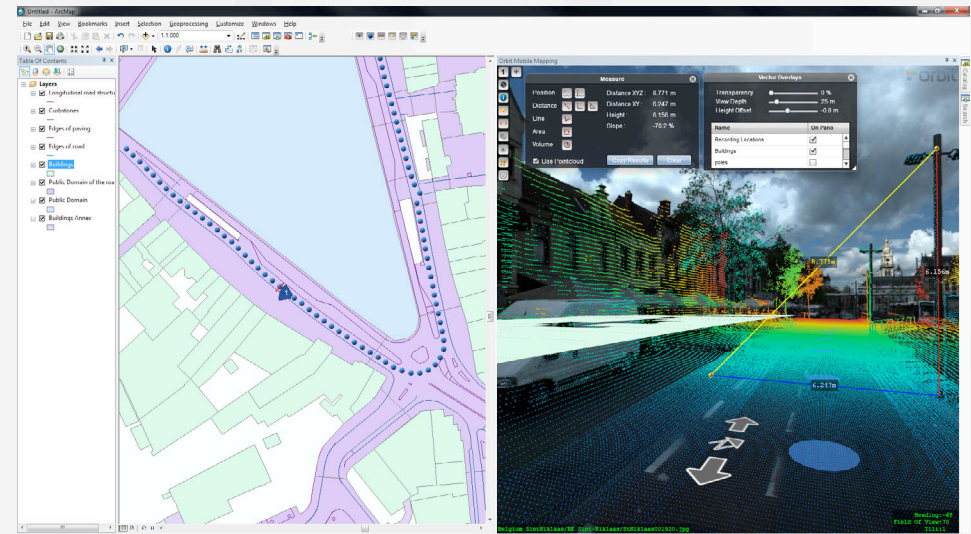
Publisher - Product Variations

- Functionality
  - ▶ Publish Imagery Only
    - upgrade possible
  - ▶ Publish for Intranet Only
    - upgrade possible
- Server options
  - ▶ Additional Server Cores
    - starts from 4-core server
  - ▶ Load Balancing (extra servers)
  - ▶ Backup/Recovery Server
  - ▶ Testing Server

Publisher - Hosting Solutions

- **What ?**
  - Setup your own Publisher to host MM data for your customers
  - or Use Orbit GT's hosting service to get started
- **Who ?**
  - Service and Data providers
  - Anyone who has MM data to share or to sell
  - Anyone who wants to help out the customer on IT challenges
- **Why ?**
  - It's efficient for your current customers
  - There are customers you haven't met yet looking for your data

Thank you

More info : www.orbitgt.com
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