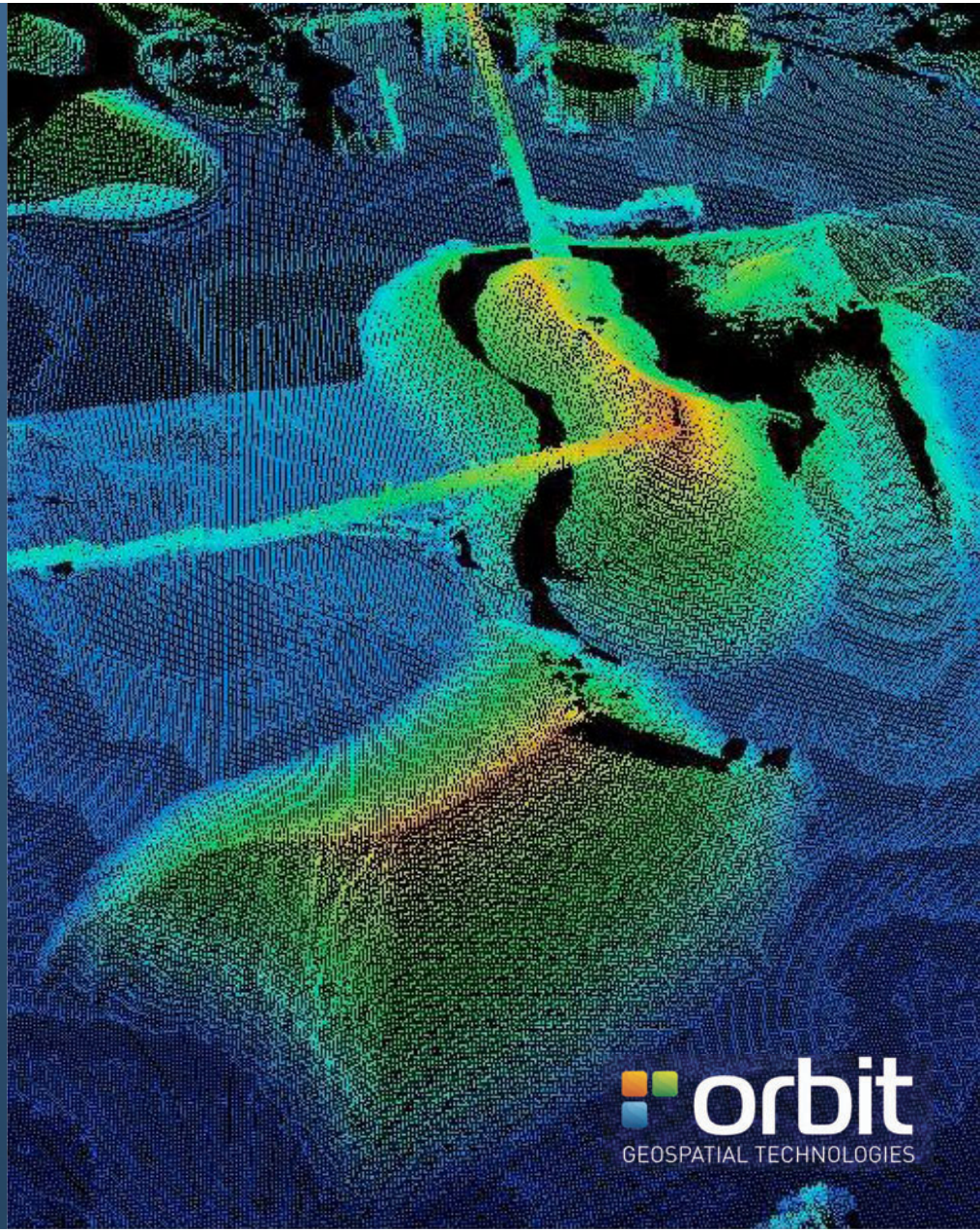
Orbit Mobile Mapping
Version 11.2 Portfolio

November 2015

orbit
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

orbit GEOSPATIAL TECHNOLOGIES

COLLECT / PRODUCE
> CONTENT MANAGER

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

EXTRACT / PROCESS
> FEATURE EXTRACTION

- Extract Features
- Asset Inventory
- Clash Detection
- Profiles & Cross Sections
- Volumes
- Face & Plate detection
- Blurring QC
- Deliver Features

SHARE / DELIVER
> PUBLISHER

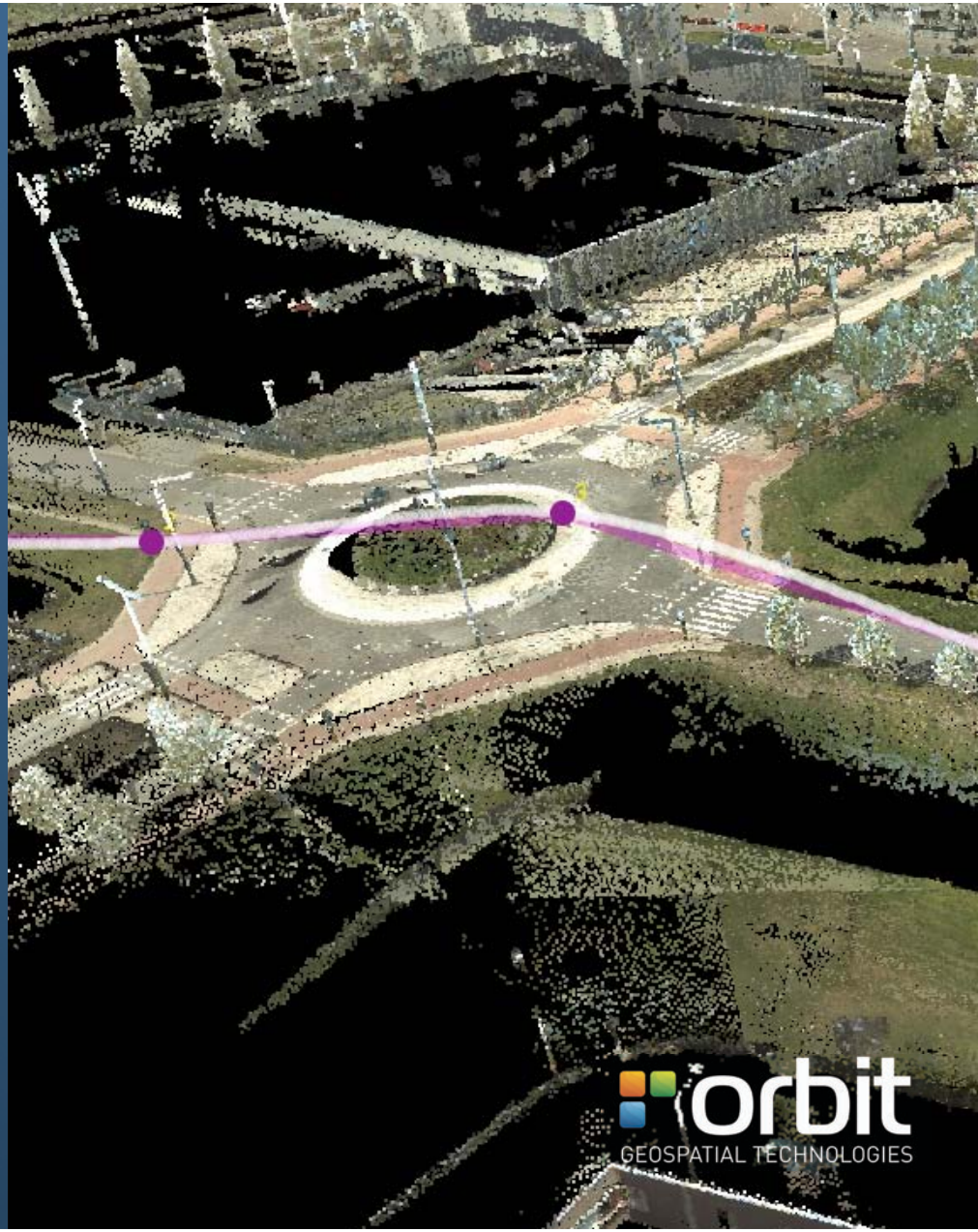
- Consume via Web
- Consume via App
- Consume via SDK
- Plugins / Integrations
- Embed in Workflow
- Find Resources

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

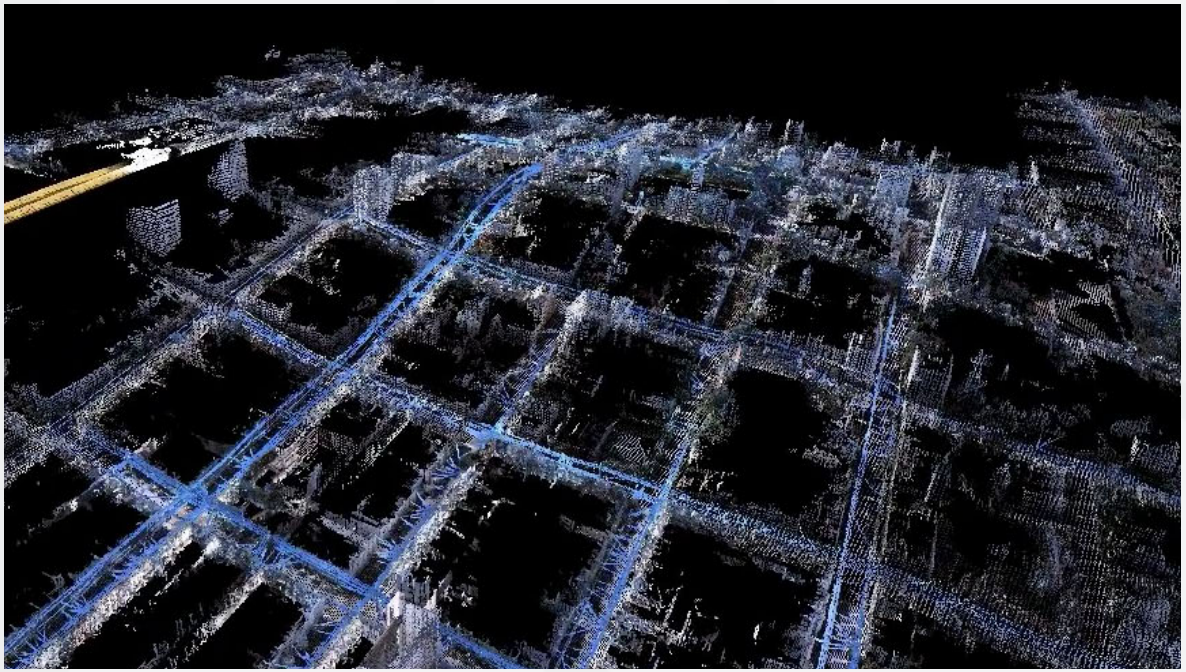
COVERED BY ALL ORBIT MM PRODUCTS



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

Imagery

- Spherical
- Planar
- Any resolution, multiresolution

Point Cloud

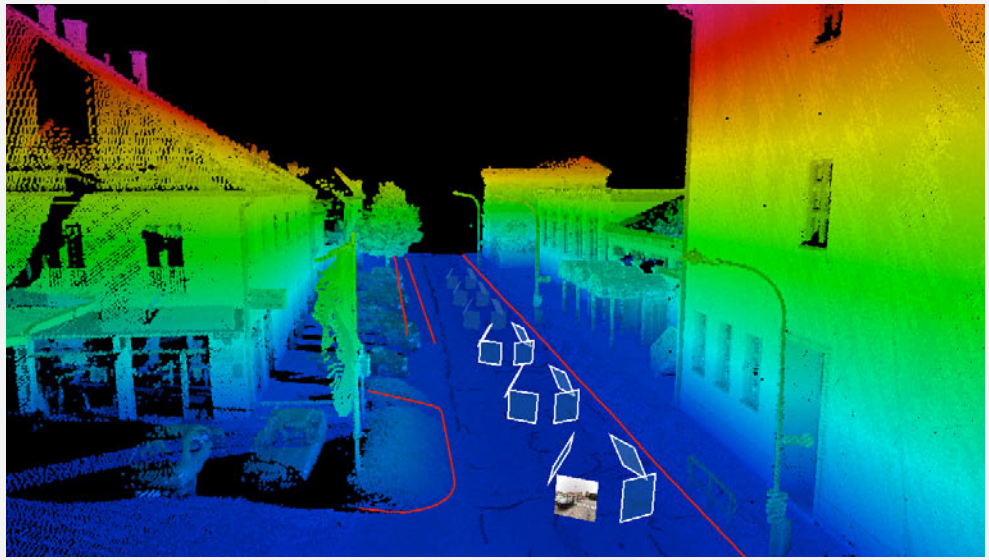
- any density
- Clip / Select / Extract
- TIN / DEM

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



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

Content Manager product

Overview

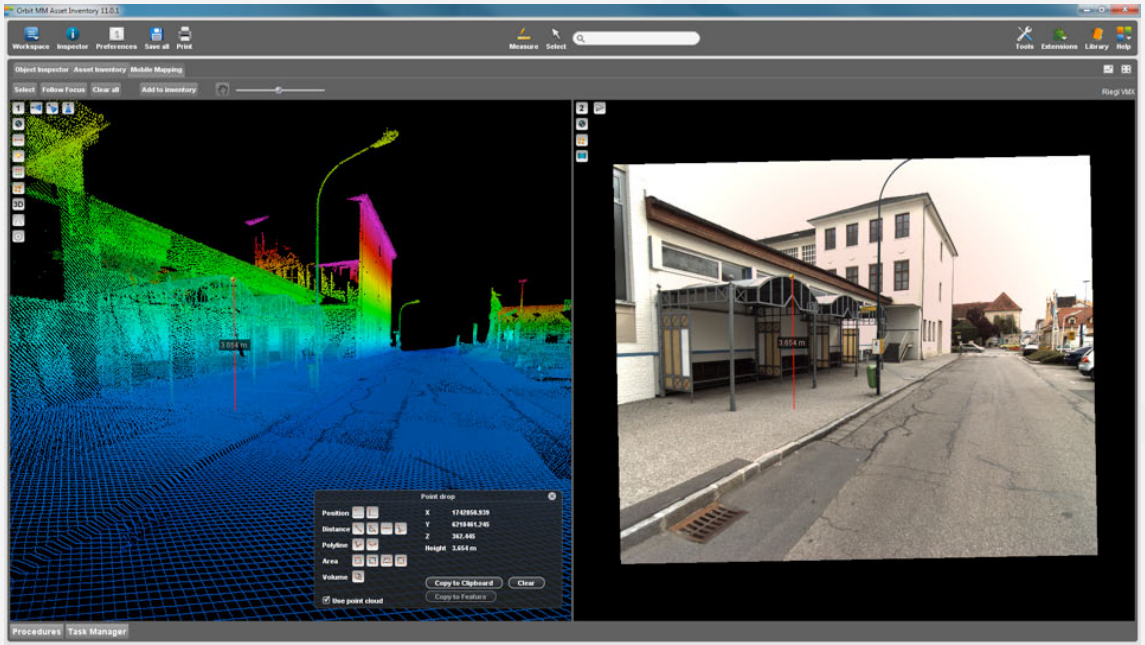
- Import
- Catalog
- Clean Point Cloud
- Check GCPoints
- Trajectory Adjustment
- Remove multiple passes
- Consolidate and Deliver

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

Content Manager - Import

Manage the Massive Volumes

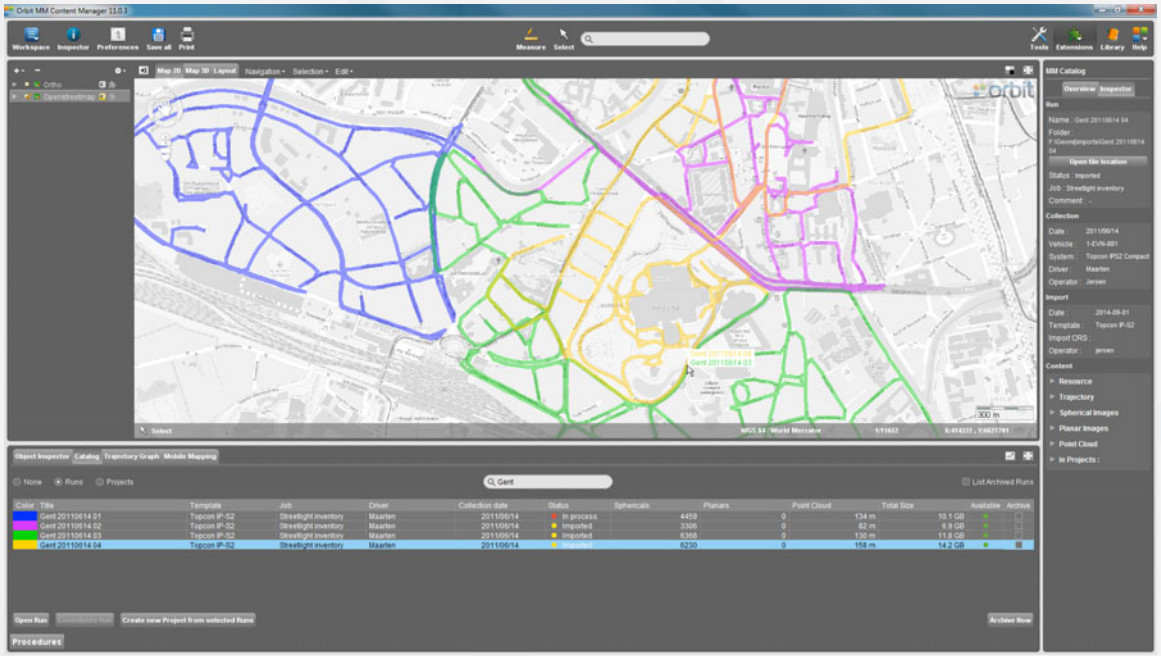
- Import
  - Vehicle-based configuration template
  - Optimization & indexing
  - Spherical & Planar Imagery
  - Any Pointcloud size
  - Camera Calibration
- All hardware setups supported
- Collect Metadata
  - Timestamped Trajectory
  - Coverage / Envelope



Content Manager - Organize

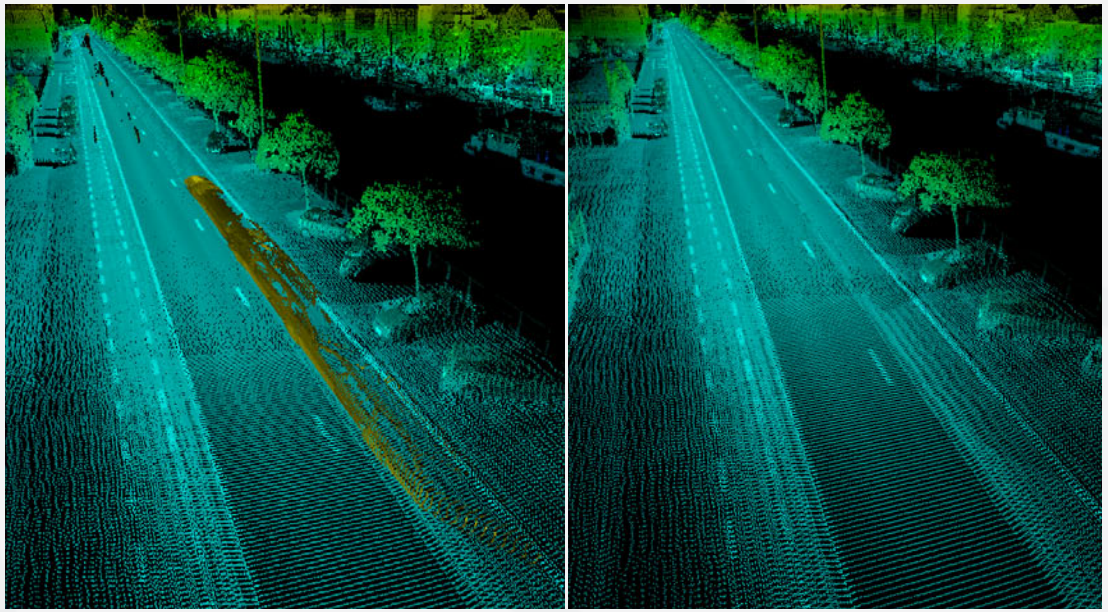
Keep track of your data

- 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

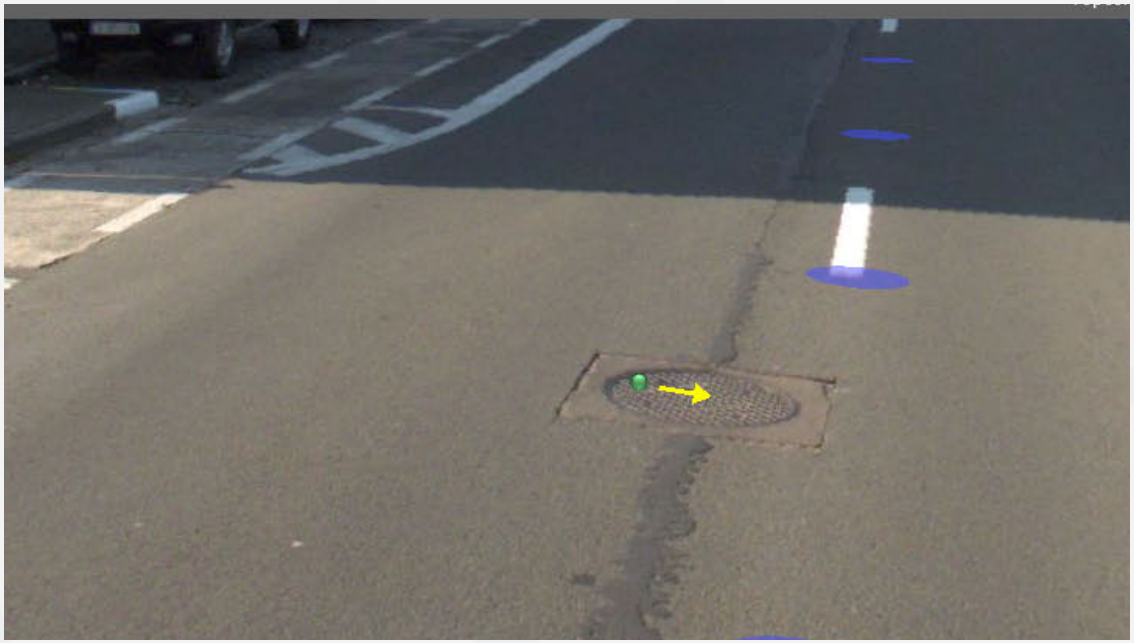
- Eliminate unwanted portions of points, due to e.g. moving objects
- Fast Selection tools
  - merge
  - subtract
  - auto-remove ground
- Highlight / Dim / Hide
- Dynamic Deletion of Selections
- Huge Volumes, 1 file.



Content Manager - Positional Accuracy

Check and set Constraints

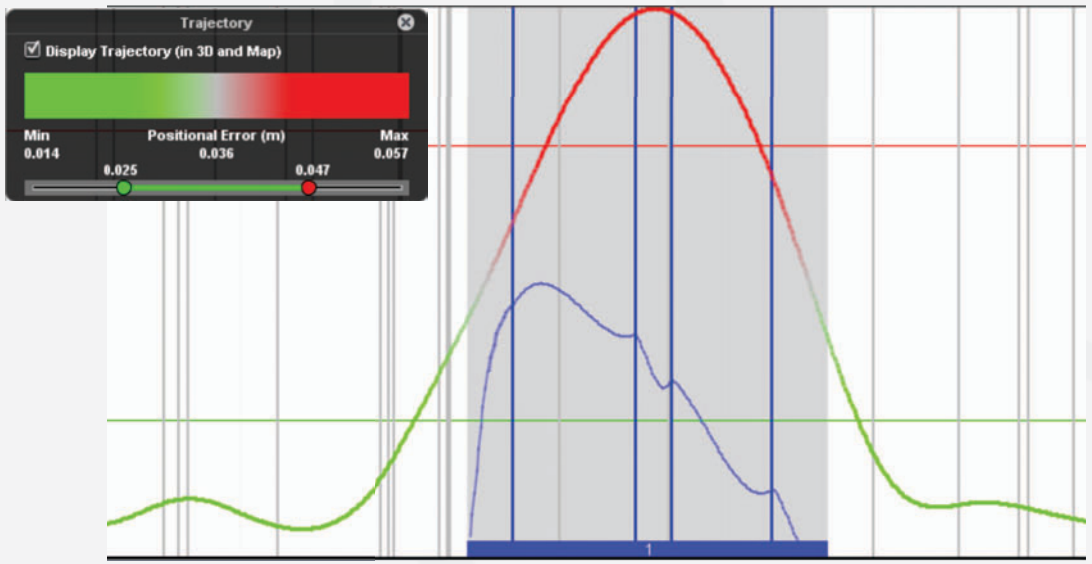
- Load & List GCPoints
- Visualize
  - on map
  - on imagery
  - in pointcloud
- Measure differences
  - in any view
  - accept as constraints
- Check with any reference and MM data
- Report



Content Manager - Trajectory Adjustment

Correct Positional Accuracy

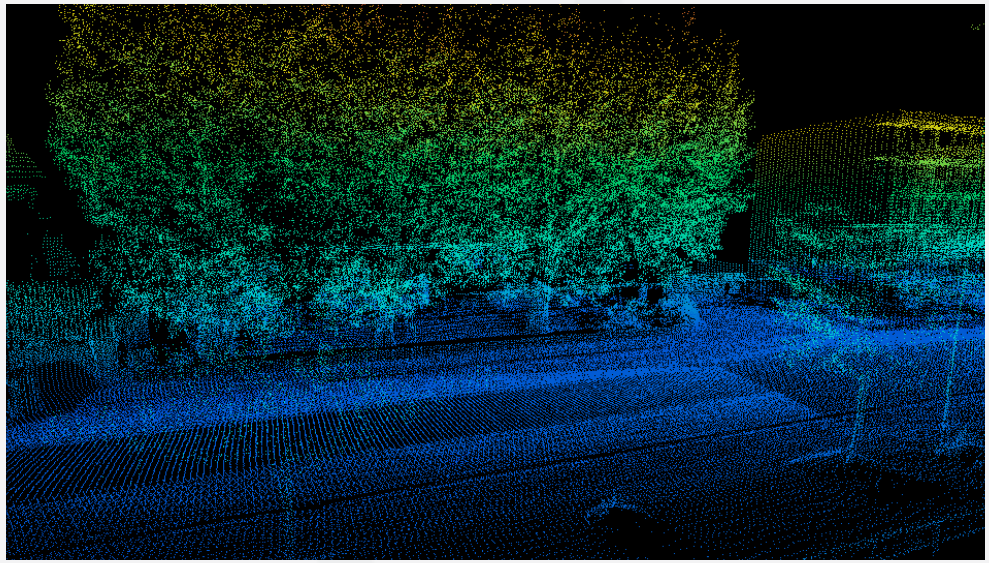
- Interpretation & Judgement
  - Display GPS Error over time
  - Graph representation
  - Measure and Display Constraints
- Adjust or Remove Trajectory
  - Select part to Adjust or Remove
  - Preview and Process Adjustment
  - Do Multiple Stretches
  - Remove Multiple Passes



Content Manager - Consolidate

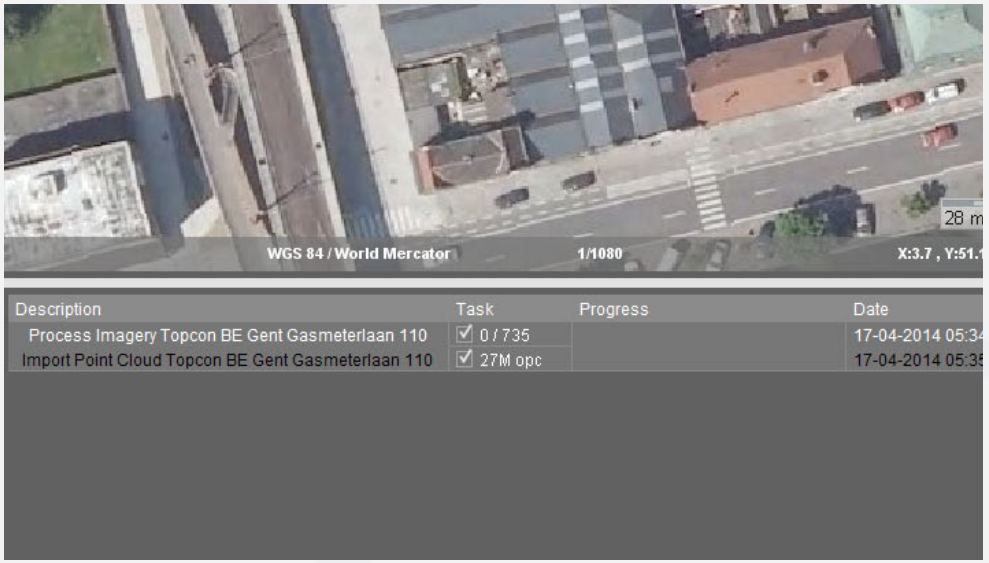
Get ready for next phase, feature extraction

- 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, OPERATIONAL WORKFLOWS

The Life of Mobile Mapping data

Feature Extraction products

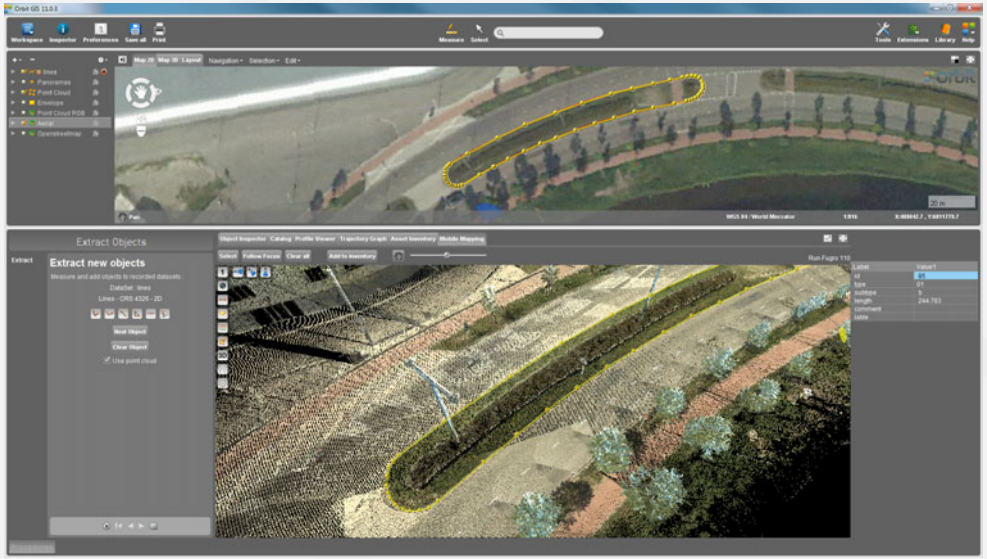
Overview

- Feature Extraction Basic
- Asset Inventory Bundle
  - adds Asset Inventory workflows
- Feature Extraction Bundle
  - adds Clash Detection,
    Profiles & Cross Sections,
    Volumetric Analysis
- Blur & Erase
- *Desktop products, available in*
  - stand-alone (all)
  - client-server (Asset Inventory Bundle only)

Feature Extraction - Basic Edition

Entry level - manual extraction - get started

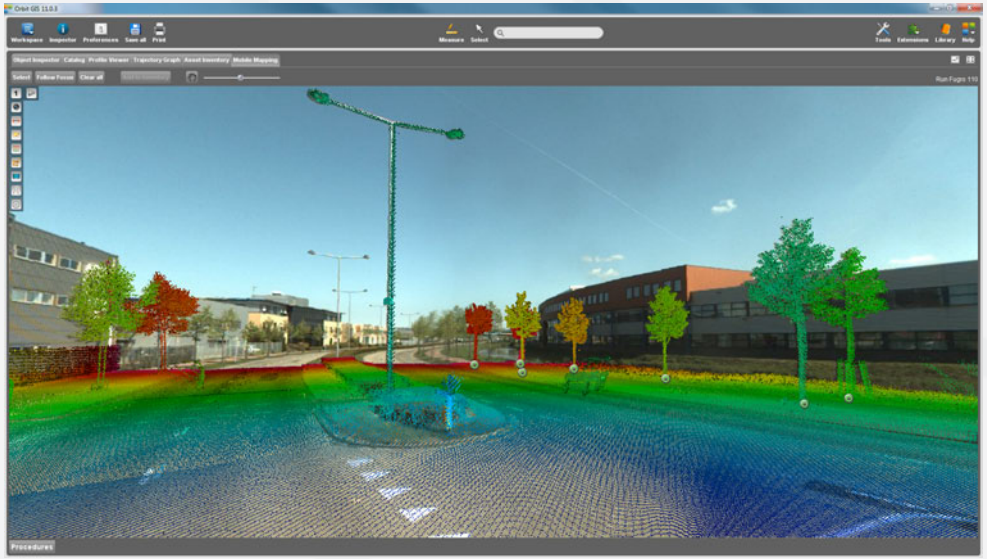
- Entry Level
- Open Runs & Projects
- Simple Measurement Procedures
- Measure in Image, Point Cloud
- Measure Point, Line, Area
  - Display in CRS, WGS84, Lat/Lon
  - Display Slope, Height, ...
- Manual Attribution to any dataset



Feature Extraction - Asset Inventory

Advanced Workflow Asset Extraction & Storage

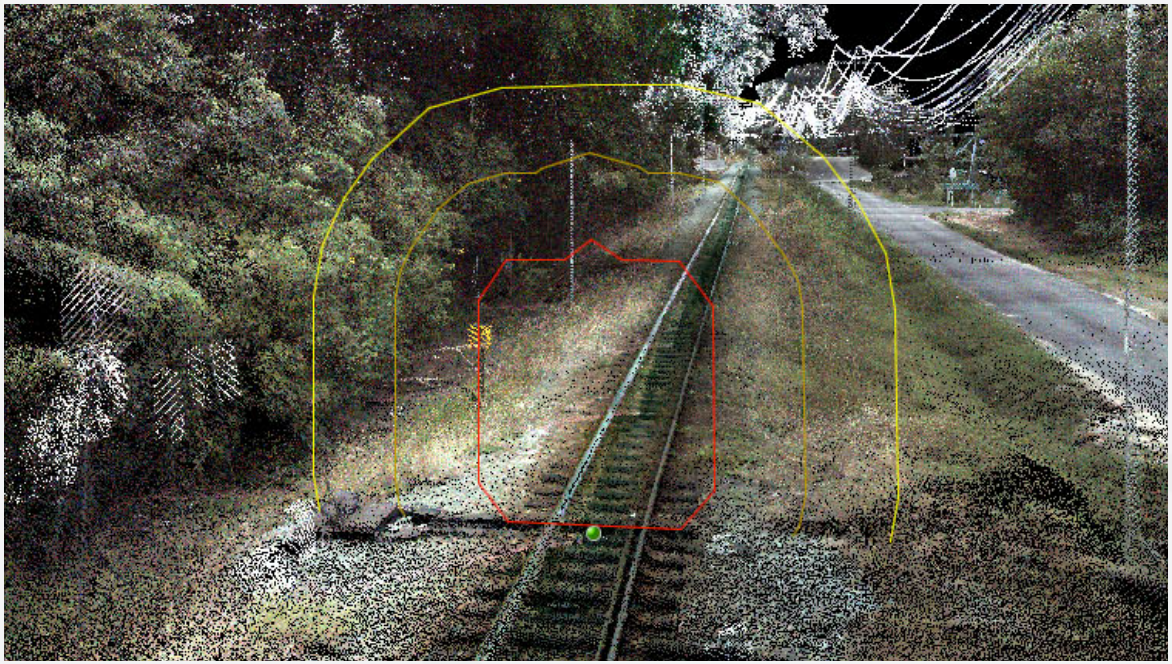
- Use Workflows
- Design Themes
- Share data
- Store in Database
- Add Snapshots, documents, attributes
- Additional Measurement functions



Feature Extraction - Clash Detection

Clash Detection & Clearance Measurements

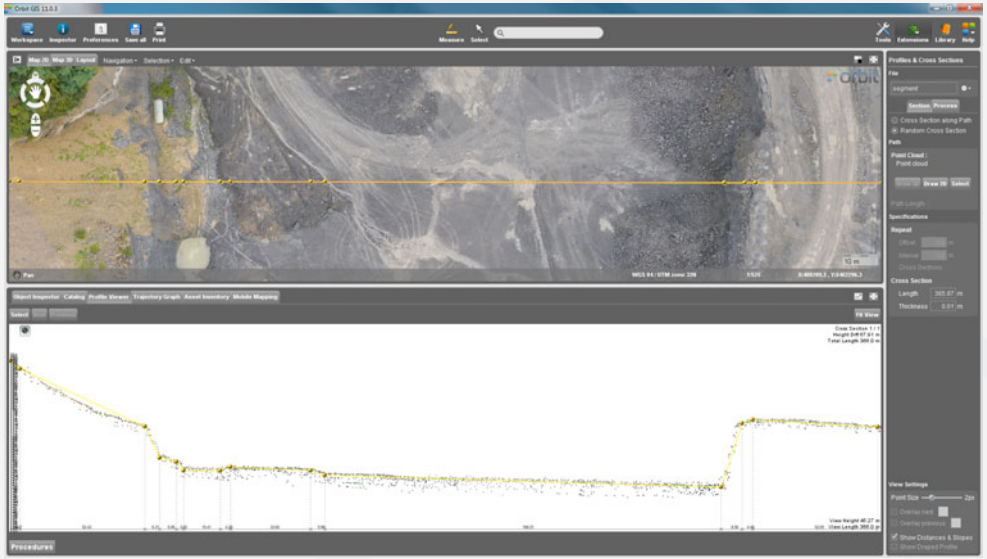
- Any 3D Path
  - supports railroad slant
- Any Form
- Autodetect Hits
  - register Near-Hits, Watch list
- Report
- Judge & Act



Feature Extraction - Profiles

Automated Cross Sections & Reusable Profiles

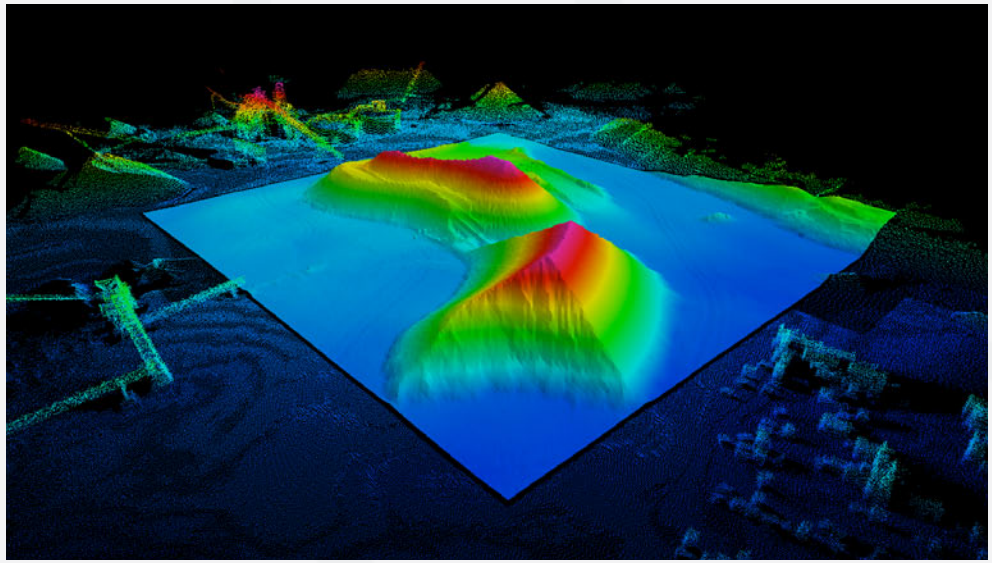
- Various Profiles
  - Path with Cross Sections
  - Single Profile
  - Set Profile length & width
- Isometric View
- Register Themes
  - Integrated with Asset Inventory
- Register Tech Profile
- Delivery



Feature Extraction - Volumetric Analysis

Any Volume and Volume Comparison

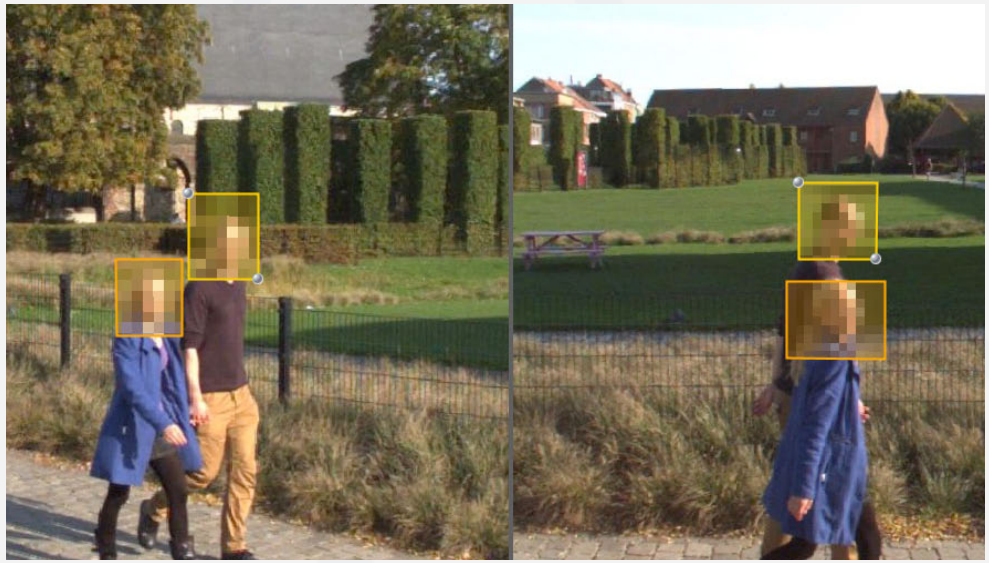
- Use any 3D Datasource
- Set Fence as perimeter
- Use Reference Data
  - To Compare
- Calculate Cut & Fill
- Delivery
  - Creates DEM / TIN
  - Creates Shape files, attributes
  - Creates Contour Lines



Blur & Erase

QA and QC Blur & Erase areas, update & deliver

- Detection Service
  - Faces & Plates detection
  - registers areas of interest in Metadata
- Blur & Erase Editor
  - Simulate
  - Process Imagery
  - Deliver



Production teams

Maximize production with central data storage in Client-Server setup

Stand-Alone

- All products available
- Manual Mgmt of data

Client-Server

- Only Asset Inventory Bundle
- Central Management of
  - Mobile Mapping data
  - Users & Permissions
  - Workspaces
  - Asset Inventory Database

Bundled products

Asset Inventory and Feature Extraction bundles

- Asset Inventory bundle

  includes :

  - Feature Extraction basic
  - Asset Inventory

- Feature Extraction bundle

  includes:

  - Feature Extraction basic
  - Asset Inventory
  - Clash Detection
  - Profiles
  - Volumes, Contour Lines

Bundled products (2)

Full Office bundle

- Full Office bundle

  includes :

  - Content Manager
  - Feature Extraction bundle

Orbit MM Explorer

Desktop Content Viewer tool

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

- Single Desktop product, available in
  stand-alone only

Orbit MM Blur & Erase

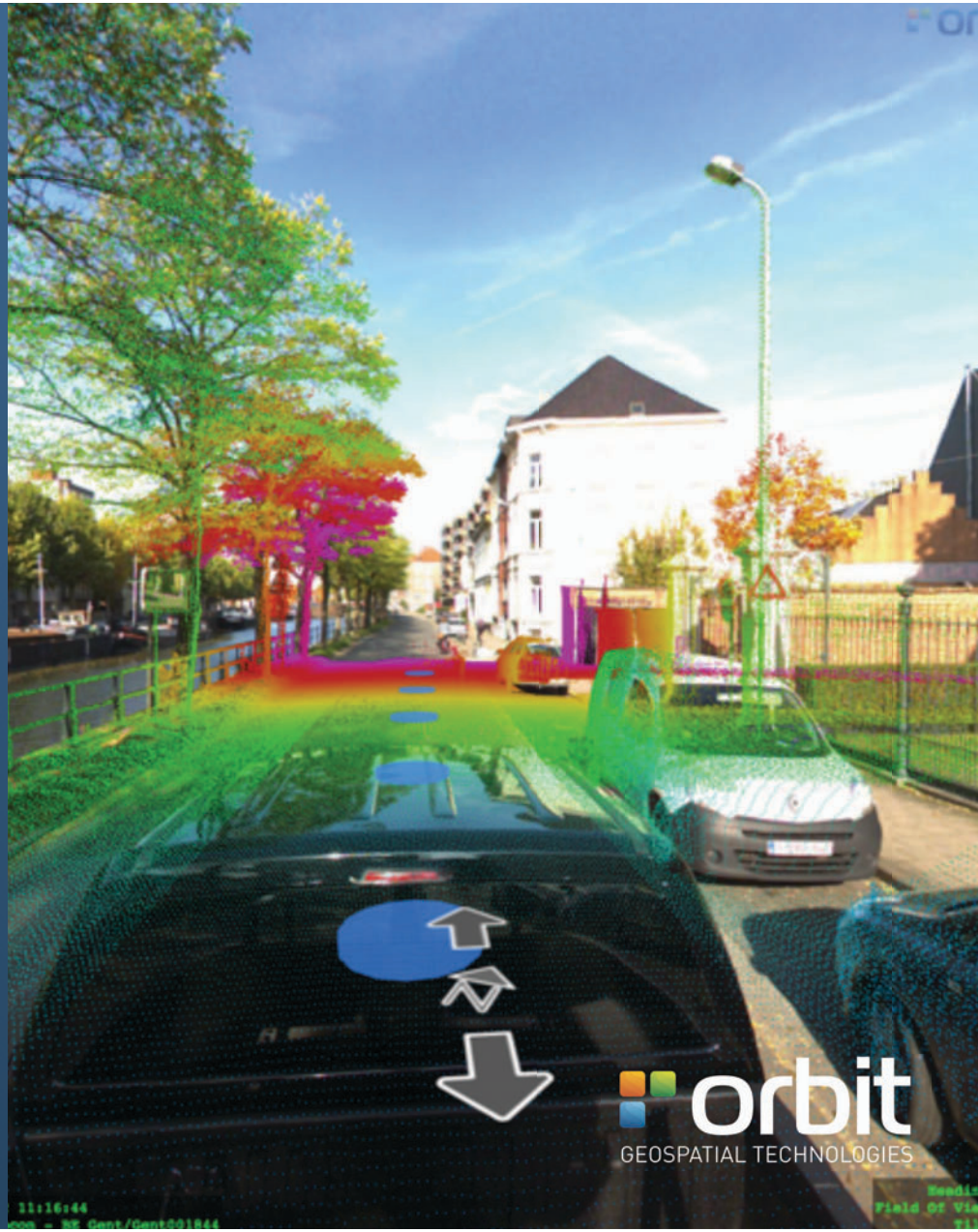
Desktop Editing, QC and Processing

- Accesses all data
- Allows to identify areas of interest
- Update and Process Imagery

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

PUBLISHER

FOR
SHARING OF MOBILE MAPPING DATA



The Life of Mobile Mapping data

Publisher products

Overview

- 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*
  - *Integraph GeoMedia*
  - *Bentley MicroStation*
  - *QGIS, ...*

Mobile Mapping Publisher

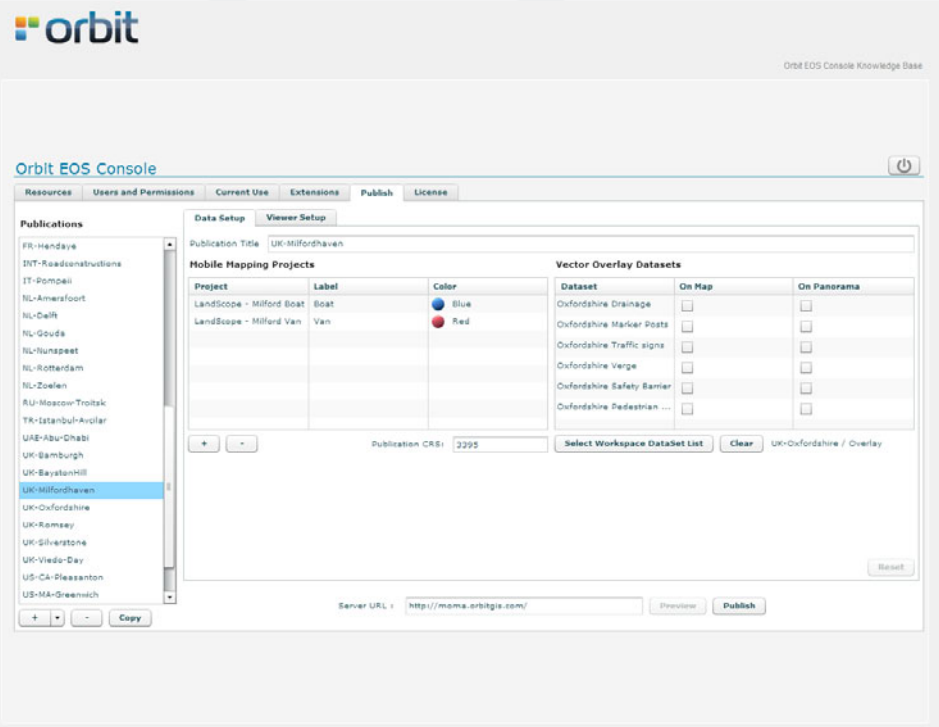
Publisher Features

- 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

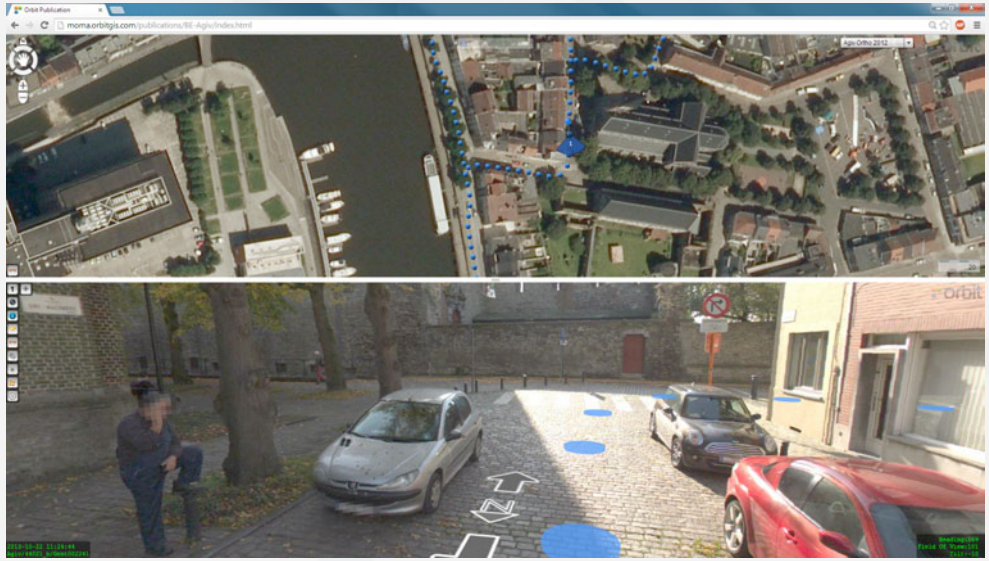


Mobile Mapping Publisher - Blurring

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

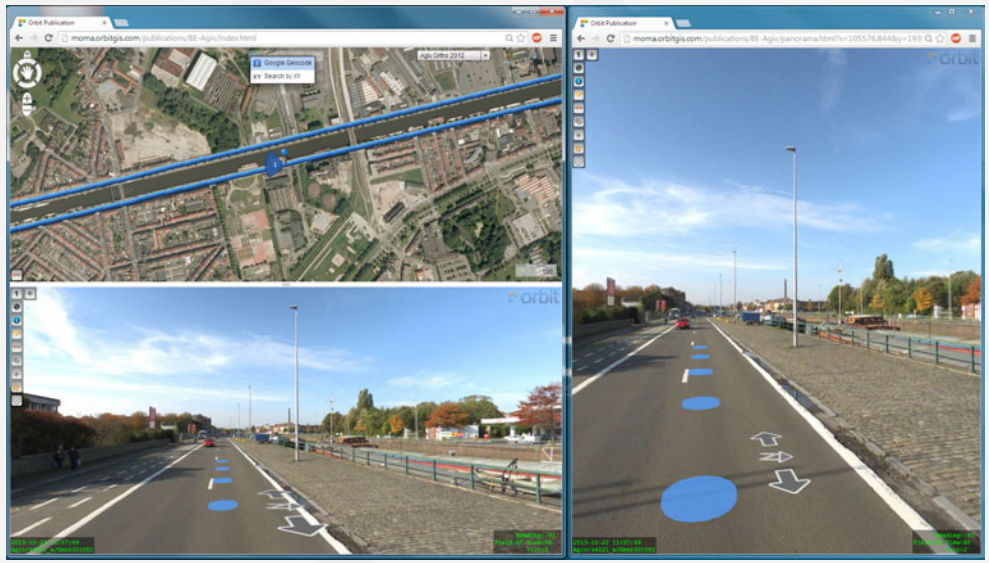
  areas to be blurred must be defined using the Blur & Erase desktop tool



Publish to : Browser

Browser solution Features

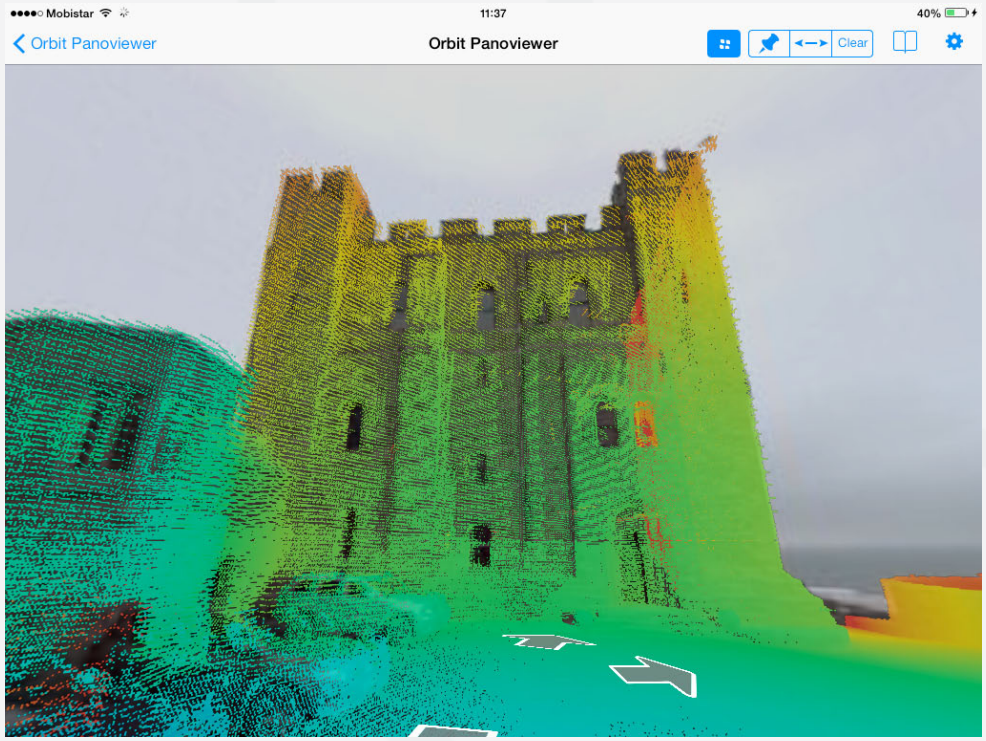
- Spherical Imagery as primary User Interface content
- Various Web Page Templates
- Open using URL by XY, Photo name
- Configurable Search
- Measure, Save Measurements
- Load WMS, WFS services
- View Categories, Object Properties
- User Credentials, Permissions
- Use Log



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

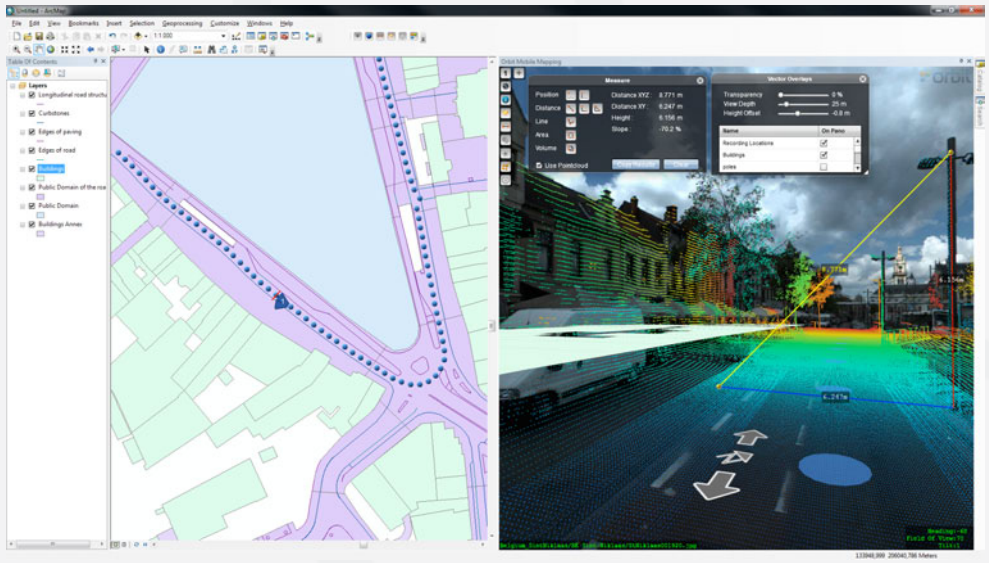


Publish to : SDK & Developer tools

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

Publish to : Integrated products

- Available:
  - ArcGIS 10.x
  - ArcGIS for Server 10.x
    - using Latitude GeoCortex
  - ArcGIS Online
- In development:
  - AutoCAD Map 2015
  - MicroStation 2016
  - QGIS, 2015
  - GeoMedia 2015



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 a Publisher intended to host MM data for 3rd parties, customers
  - Volume based pricing
- 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 current customers
  - There are customers you haven't met yet looking for data

Publisher - Cloud Hosting Solutions

- What ?
  - Orbit GT cloud based hosting
  - Prepaid monthly service, with all cloud advantages
- Who ?
  - Anyone who has MM data to share or to sell
  - Anyone who wants to help out the customer on IT challenges
  - Anyone who doesn't want to take care of IT & hosting.
- Why ?
  - It's efficient, monthly payments
  - Data always online, automatic scaling of server capacity
  - Orbit GT upload service

Thank you

More info : www.orbitgt.com

© Orbit GT, 2015

orbit
GEOSPATIAL TECHNOLOGIES