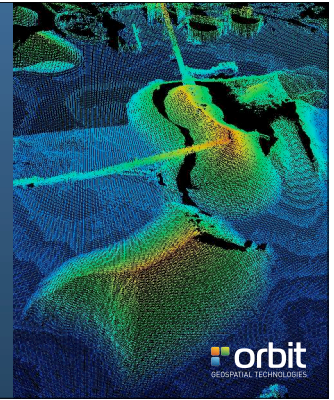


Orbit Mobile Mapping Version 11 Portfolio

September 2014



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

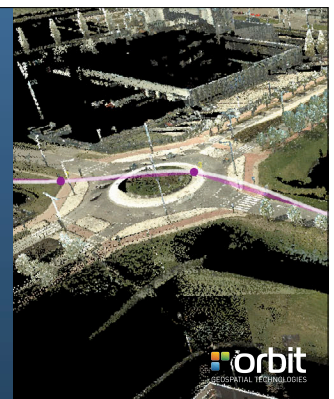


Who does what ?



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

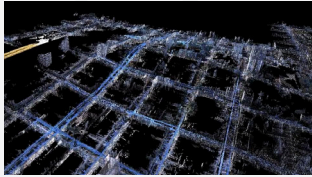
A COUPLE OF CHALLENGES COVERED BY ALL ORBIT MM PRODUCTS



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



© Orbit GT www.orbitgt.com, 2014 Orbit Mobile Mapping v11 - Confidential 7

Performance

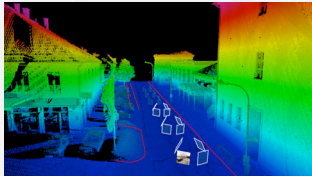
Just to give a general idea

- 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)

© Orbit GT www.orbitgt.com, 2014 Orbit Mobile Mapping v11 - Confidential 8

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,
 - Vector superimposition on image, LiDAR



© Orbit GT www.orbitgt.com, 2014 Orbit Mobile Mapping v11 - Confidential 9


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

© Orbit GT www.orbitgt.com, 2014 Orbit Mobile Mapping v11 - Confidential 10


CONTENT MANAGER

FOR MOBILE MAPPING DATA COLLECTORS



© Orbit GT www.orbitgt.com, 2014

The Life of Mobile Mapping data



```

graph LR
    A[COLLECT / PRODUCE  
-> CONTENT MANAGER] --> B[EXTRACT / PROCESS  
-> FEATURE EXTRACTION]
    B --> C[SHARE / DELIVER  
-> PUBLISHER]
  
```

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

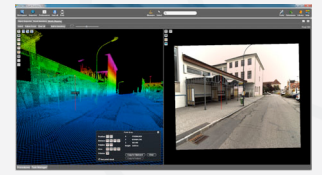


Content Manager - Import



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

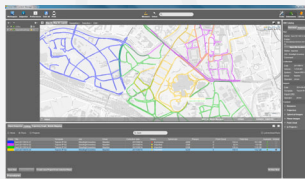


Content Manager - Organize



Keep track of your data

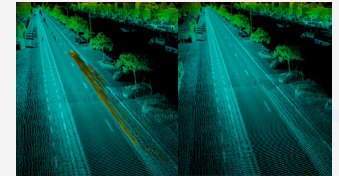
- Catalog of Runs
 - ▶ Select and Inspect
 - ▶ Status
 - ▶ Open for editing
 - ▶ Find and remove multiple passes
 - ▶ Manage Metadata
 - ▶ Archive
- Combine to Projects
- Search
- Overview Map Display



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

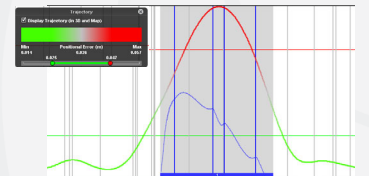


Content Manager - Trajectory Adjustment



Correct Positional Accuracy

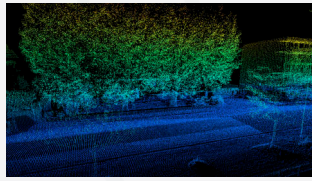
- Interpretation & Judgement
 - ▶ Display GPS Error over time
 - ▶ Graph representation
 - ▶ Measure and Display Constraints
- Adjust or Remove Trajectory
 - ▶ Select part to Adjust or Remove
 - ▶ Preview and Process Adjustment
 - ▶ Do Multiple Stretches
 - ▶ Remove Multiple Passes



Content Manager - Consolidate

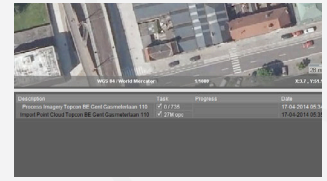
Get ready for next phase, feature extraction

- 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



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



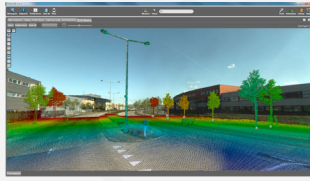
This product is the upgrade to the v10.5 "Manager" product

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



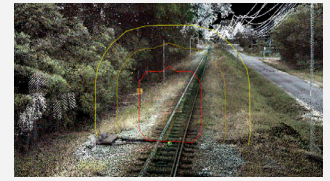
This is an Extension which requires 'Feature Extraction - Basic' to operate. Also available in bundles - see further.

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



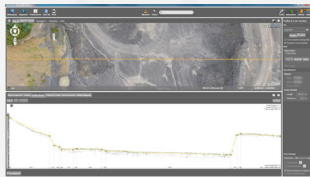
This is an Extension which requires 'Feature Extraction - Basic' to operate. Also available in bundle - see further.

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



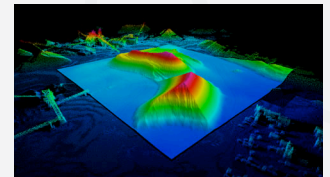
This is an Extension which requires 'Feature Extraction - Basic' to operate. Also available in bundle - see further.

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



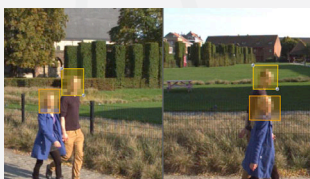
This is an Extension which requires 'Feature Extraction - Basic' to operate. Also available in bundle - see further.

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

- | | |
|--|---|
| <ul style="list-style-type: none"> ■ Stand-Alone <ul style="list-style-type: none"> ▶ All Extensions available ▶ Manual Mgmt of data | <ul style="list-style-type: none"> ■ Client-Server <ul style="list-style-type: none"> ▶ All Extensions available ▶ Central Management of <ul style="list-style-type: none"> 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 "AIMS" 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



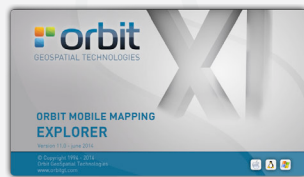
Orbit MM Explorer

Desktop Content Viewer tool



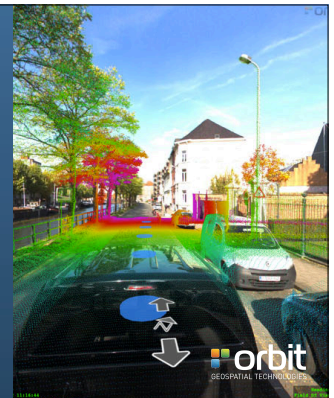
- Views all imported MM data
- Same engine and GUI
 - Easy to use
 - All visualization options
 - All measure tools
- No registration / extraction / editing
- Tool to ship with **prepared** content

- Single Desktop product, available in stand-alone only

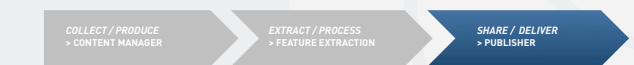


PUBLISHER

FOR SHARING OF MOBILE MAPPING DATA



The Life of Mobile Mapping data



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 2014
 - Integrage GeoMedia 2014
 - Bentley MicroStation
 - SmallWorld



Mobile Mapping Publisher

Publisher Features

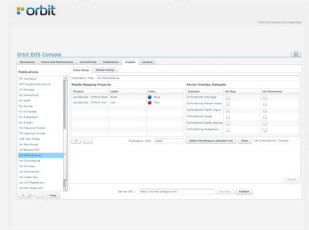
- Main Features :
 - Unlimited Image & LiDAR data
 - Manage Projects & Publications
 - Manage Users & Permissions
 - Real-Time Blurring
 - Include basemaps and vector data
- Publish Mobile Mapping data to :
 - Browser
 - Mobile Device
 - SDK
 - Integrated Solutions



Mobile Mapping Publisher

Manage Projects and Publications

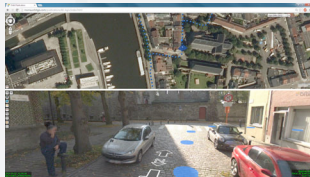
- Console and Administrator Tools
 - Includes Desktop Catalog tool
- Setup Publications
 - Streetlevel content
 - Basemap content
 - Extracted features
 - User Credentials & Permissions
 - Logging
- Client Authorization



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

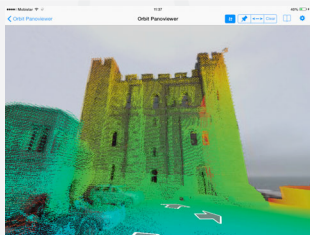
- Spherical Imagery as primary User Interface content
- Various Web Page Templates
- Open using URL by XY, Photo name
- Configurable Search
- User Credentials, Permissions
- Use Log



Publish to : Mobile Devices

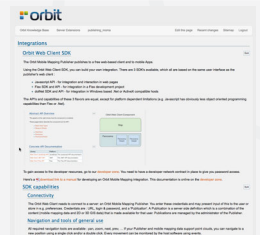
free iOS App

- 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

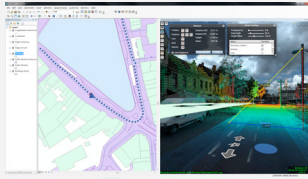
- 1 SDK, 3 API's
 - JavaScript
 - Flex
 - dotNet
- Online Documentation
 - password protected
- Developer Services
 - Dev/Test server
 - Translations
 - Product & Sales Authorization



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
© Orbit GT, 2014

