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MAGAZINE FOR GEOSPATIAL TECHNOLOGIES



INNOVATION

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SPOTLIGHT

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Orbit GT launches in The Netherlands

TRENDWATCHER

Situational Awareness aided by Mobile Mapping

SOLUTIONS

UAV Surface Mine Mapping

HIGH-SPEED MOBILE MAPPING

IP-S2:
Capture geo-referenced
360 degree images
and point clouds with any
car in your fleet



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EDITORIAL



Dear Reader,

This issue is dedicated to a number of important breakthroughs. Most significant of these is our worldwide collaborative agreement with Topcon, one of the leading companies in surveying and the world leader in mobile mapping solutions. We are extremely honoured that Topcon has made this choice. In particular, the work being carried out on panoramic images continues to attract special attention. The versatility of mobile mapping is extremely great and varied, including its application in countless areas, as well as the ease of combining data, measuring and visualising, and using it from the office or out on site.

Public safety is also – and continues to be – a common theme in our portfolio: optimising crime and traffic analyses, increasing situational awareness, safety in surveying mine sites and a wide range of applications that are examined in greater detail in this magazine with reports on mobile mapping in practice.



We very much hope you enjoy reading Orbit Magazine.

Peter Bonne

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WORLDWIDE COLLABORATION BETWEEN ORBIT GEOSPATIAL TECHNOLOGIES AND TOPCON RESULTS IN UNIQUE TURNKEY MOBILE MAPPING SOLUTION



For many government bodies and private companies mapping and managing geographical information – from roads and utilities to buildings and planted areas – is a labour-intensive and time-consuming business. However, Mobile Mapping technology is opening up groundbreaking prospects for everyone involved in the cataloguing and management of geographical information. Today, Orbit GT and Topcon are pleased to announce a worldwide agreement that will create the only genuine turnkey solution in the marketplace.

Until now, the manual surveying and detailed mapping of buildings, roads, utilities or planted areas has been a

thorn in the side of many companies and government departments.

Today, Mobile Mapping technology enables geographical information to be gathered and interpreted particularly quickly and cost-effectively, ranging from civil infrastructures to complete industrial sites. Now, in just a matter of hours, hundreds of kilometres can be mapped with unprecedented accuracy. Sander Jongeleen, Business Development Manager, Topcon Europe Positioning: “Mobile Mapping optimises the gathering and interpretation of geographical information. On the one hand you have the high-tech measuring tools provided by Topcon, while on the other there is the specialised software from Orbit GT.”

Accurate to within a few centimetres

The Topcon IP-S2 system, a high-tech mobile mapping gathering system, delivers the extremely fast and accurate recording of geographical environment information – yet at the same time is particularly simple to use. The system combines 360° images with dot measurements using LiDAR laser technology. The result: an extremely detailed geographical information database.

“This is much more than just the images everyone knows from Google Street View. The laser dot measurements enable us to produce

“As a result of the combination between the Topcon IP-S2 system and Orbit AIM software, recording and interpreting geographical information is now up to 10 times faster.”

Sander Jongeleen, Business Development Manager, Topcon Europe Positioning

a genuine geographical information database that is accurate down to a few centimetres,” adds Sander Jongeleen.

Asset Inventory Management within everyone’s reach

In addition to gathering images, interpreting geographical information is an essential part of any Mobile Mapping system. The Orbit AIM Software stands out from the crowd as a powerful, easy-to-use application for interpreting and extracting specific content. The Orbit AIM software enhances the geographical database with the required intelligence. For instance, meta-information can be added to each object: attribution, classification, snapshots and photos, through to entire documents. Also, the client-server architecture makes it possible for large number of users to work with the system at the same time.

As a result, the Orbit AIM software makes the ideal tool for any organisation that wants to be involved actively in ‘Asset Inventory Management’ – from keeping infrastructure records at chemical companies and local authorities up to date, to analysing traffic risks or preparing for interventions by the police or fire brigade.

Secure publishing

The Orbit AIM software includes an online publication capability that makes it possible to send panoramic images as well as geo-information within the same organisation or out to clients: viewing via a Smartphone or Tablet is even possible.

Given the possibly confidential nature or privacy-sensitive content of some data, and to guarantee secure access, the Orbit AIM software features the ability to enter secure access settings at a user level.

Turnkey solution in the Mobile Mapping market

In an economy where globalisation is having an increasingly large impact on large companies and SMEs alike, the agreement between Topcon Europe Positioning and Orbit Geospatial Technologies will also speed up the international Mobile Mapping market.

Sander Jongeleen, Business Development Manager, Topcon Europe Positioning: “We can safely say that the collaboration between Orbit Geospatial Technologies and Topcon Europe Positioning will result in a unique turnkey solution for Mobile Mapping. As a result of the combination between the Topcon IP-S2 system and Orbit AIM software, recording and interpreting geographical information is now up to 10 times faster. We are making Mobile Mapping easily available and accessible for every organization, throughout the world.

About Topcon Europe Positioning

Topcon Corporation, founded in 1932, is a Japanese multinational and a market leader in the manufacture of optical and electronic instruments for medical, surveying, construction and machinery inspection applications. The head office in Europe, Topcon Europe Positioning, was established in 1970 and is located in Capelle aan den IJssel, Netherlands.

VLAS POLICE FORCE (PZ VLAS) USES ORBIT TO STANDARDISE ITS CRIME ANALYSIS, BASED ON THE FEDERAL MODEL



The Annual Crime Analysis Report of PZ Vlas with Orbit graphics

“In Orbit, you can retrieve all of the data you need for each region and within a specific timeframe in a particularly user-friendly way. Which means you don’t need to be a crime analyst to be able to interpret crime figures.”

CP George Maebe, PZ Vlas

A few years ago, the Federal Police’s National Police Statistics Working Group drew up a list featuring the ‘crime figures’. This list contains a highly detailed description of each criminal act (around 35 in total), including the incident code and preconditions. Every offence recorded locally in the ISLP database (Integrated System for Local Police) is then translated at a federal level into a specific crime figure, such as car theft, home-jacking, break-ins, etc. In past years, this standard list has resulted in much more accurate crime figures. From time to time, the federal police pass these analyses on to the local police forces.

Looking at things through the same glasses

Commissioner Maebe from PZ Vlas explains: “The problem is that for many years every police force has been categorising crimes in its own way, so that the figures coming down the chain of command tend to differ from local analyses. For example, here at PZ Vlas, since 2009 we have been working with the Crime Analysis module in Orbit (formerly EDL). And in the same way, each force has its own analysis tool and methods.”

Hilde Wylin, Adviser at PZ Vlas and a member of a broader federal working group on crime figures: “PZ Vlas would like to look at the crime figures through

the same glasses as the federal police and so has given Orbit the task of applying the federal approach to crime figures to its own ISLP data. We’ve been doing it this way since the end of 2010 and it is providing us with even more detailed data.”

Orbit for everyone

PZ Vlas uses the Crime Analysis module in Orbit on a regular basis. “The advantage of having a map is that you can identify connections by street or area, which would otherwise not be visible from a list of streets,” says Hilde Wylin. “For example, we regularly request an overview of all car thefts to see which neighbourhoods are affected the most. We also make



Hilde Wylin, Adviser, and CP George Maebe, PZ Vlas

random queries regularly, for example to highlight all trouble happening at a discotheque, ranging from noise nuisance to vandalism or violence. In Orbit, it's easy to retrieve all of the data for each region in a specific time window from ISLP. So you don't need to be a crime analyst to be able to interpret crime figures properly," according to CP Maebe.

A strategic tool in the fight against crime

Just like in the world of business, the police also have to test and adjust their strategy from time to time. Figures for the five types of crime that occur most frequently in PZ Vlas are monitored weekly: car theft, residential burglaries, break-ins into other buildings, robbery with violence and stealing from vehicles. Four of these figures are included in the area safety plan that is drawn up every four years to help fight regional crime. PZ Vlas has also produced an annual crime analysis report since 2010 for the local authorities. All of the figures featured in this report are sourced from Orbit.

"Orbit helps us to identify the risks and fine-tune our strategy," continues Hilde Wylin. "Intervention teams are able to see their suspicions confirmed with us, based on certain neighbourhoods or specific times. Which means they are able to deploy their people at the right place and at the right time. The city prevention service regularly requests figures so that local residents can be advised about at-risk areas. From time to time, criminology students also come and consult our database and are amazed at the capabilities Orbit has to offer."

The future with Orbit

PZ Vlas goes further than other police forces in its use of Orbit. Hilde Wylin is constantly looking for new capabilities or applications within the package and likes to keep other police forces informed of how to use them, including automated periodic queries that also continue when she is on holiday. "The fact that we operate in exactly the same way as the federal police enables us to provide feedback from a local level about compiling crime figures. It

"The fact that we work in exactly the same way as the federal police enables us to provide feedback from a local level about the compilation of crime figures."

Hilde Wylin, Adviser, PZ Vlas

would be handy if all of the local forces, as well as the federal police, were to work with the same package – and Orbit would be particularly suitable."

The Vlas police force covers the boroughs of Kortrijk, Kuurne and Lendeledede, representing almost 94,000 residents. It is an area with a great many short-term visitors, who come to shop, study or relax. Each year, some 8,000 crimes are recorded in PZ Vlas, of which 60% are offences against property (theft and vandalism). PZ Vlas has a police force of 300.

PZ Vlas has been working with Orbit since 2009, using the following modules:

- Orbit GIS
- Orbit Crime Analysis
- Orbit Traffic Analysis
- Orbit Sketches
- Orbit InfoCentre

ORBIT GT LAUNCHES IN THE NETHERLANDS

ORBIT GEOSPATIAL TECHNOLOGIES USES ASSET INVENTORY MANAGEMENT TO FOCUS ON THE LARGE-SCALE AND BULK USE OF GEODATA. WITH EASE OF USE THE MAIN FEATURE, ORBIT GT KEEPS THE SMART TECHNOLOGY RUNNING BEHIND THE SCENES.



These days you can come across survey data everywhere. And with the advent of mobile mapping, laser scanning and surveying in stereo images, the way data is processed in the office is also changing. But the danger is that large quantities of data can start to get backed up and organisations may not be sufficiently aware of the wide range of applications that their investments in geodata can be used for.

Managing publicly owned land

An important audience that has a great deal to gain from using survey data from photos are the managers of

publicly owned land. They need to have up-to-date data that is not available as standard from basic maps and general geodata sets. These managers 'count' trees, traffic signs, street furniture and other items that are subject to constant change. For example, they may be moved, painted or destroyed. Sending 'a man' out on the road to catalogue all of these changes is an expensive business and probably a never-ending task. Peter Bonne, VP Business Development at Orbit GeoSpatial Technologies: "Updating an 'asset inventory' is fundamentally different from software that can extract information from a point cloud

consisting of millions of scanned dots. Yet there is a link between them: all of these dots contain information that the manager is looking for."

Pieter Jongert is country manager for the Dutch market at Orbit GT. He knows that organisations usually already have various datasets in-house: "Panoramas, aerial photos, stereo photos: a whole legacy of data. What local councils and other authorities need is to be able to present this geodata in a straightforward manner so that their investments can be put to the best possible use."

Surveying from the office

In Orbit GT's Asset Inventory Management solution (known in full as Asset Inventory Management from Mobile Mapping), a layman in the office can also carry out measurements, for example from a point cloud obtained from laser scans. Bonne: "That sounds more complicated than it is. What happens is the user clicks on a photograph, which behind the scenes is enhanced with 3D information taken from a scan. Doing a survey with stereo imaging is also highly intuitive." He continues: "The tools are so simple that even a child could use them. What is striking on our viewer is the absence of a menu: we innovate in invisible technology that does the work for you."

Bonne sees great benefit from implementing easy-to-use Geo-ICT tools: "The high-end knowledge that

most employees have is short-lived. It is of little use training fifty people to use a difficult piece of software. To start with, all of these co-workers have to stay in the organisation with the knowledge they have acquired. Keeping that knowledge up to the required level is also a challenge: even after a summer holiday period, much of the knowledge gained has ebbed away or disappeared. So, by keeping the tools simple and self-explanatory, you lower the threshold. This is the key to success for every government organisation.”

Information from a point cloud

Measuring in a point cloud works like this: the screen displays a photo and an underlying point cloud adds intelligence to the picture. Bonne: “What you are measuring comes from point cloud information from the back-office, which itself comes into you via web services. For this technology to work to optimum effect, you need to take the panorama photo and point cloud at the same time, otherwise you get unwanted discrepancies that make the measurement inaccurate and sometimes even impossible.” In practical terms, Orbit GT clients often work with photos and point clouds gathered, for example, using a Topcon IP-S2 system.

This goes way beyond Google StreetView. Bonne sees it from a wider viewpoint: “We not only support all types of panoramic images, but the picture also provides access to the point clouds from laser scanners. But having point clouds is not a condition in itself: CycloMedia, FIS or other makers

of panoramic images are native supported and we can also measure accurately in them, too. The entire Flanders Traffic Sign Database is created using our tools, which means approximately a million objects over a 2-year period.”

Stereo photos

It is also possible to conduct measurements from the office using stereo photos. When a point is selected in the two images, it is possible to determine distance and location. This technology is not entirely new. However, stereo images are often by-products that organisations don't want: they are frequently too complex and too expensive. However, the biggest investment is in purchasing the photosets. Acquiring a tool that can unlock and work with them is a comparatively small investment and has become very affordable and easy to use.

On top of the GIS platform

Bonne explains that Orbit GT can operate ‘on top of’ an existing platform: “There’s a good chance that the GIS data is managed by other packages and our technology is totally non-intrusive.” Although the Asset Inventory Management solution is a broad application to be implemented on top of an existing GIS environment, Bonne believes there is a major difference with a WebGIS solution: “A WebGIS is fantastic for opening up low-threshold things. But beyond that you can't do much with it.” He adds: “Simplifying the working processes will

undoubtedly make the use of geodata more widespread, but our tools are not primarily intended for only a look on a map.”

Independent

Orbit GT offers its own GIS platform and also operates independently and ‘with respect for existing structures’. Bonne: “We go into a local authority, set out our tool and they can get to work. We also help with integrations where they need it or want it and we are open to working with the software vendors already in place.”

Independence can also be seen with the data providers supported in the viewer. Bonne: “We support all types of panoramic images, which of course is of interest for clients who work with mixed data. We didn't start out assuming a particular data type. You start by looking at the processes on the workflow, because in the end it's all about unlocking municipal information and designing an efficient workflow.”



Article by Remco Takken – previously released in GIS Magazine.

UAV SURFACE MINE MAPPING

WHEN MINING RAW MATERIALS, THE AIM IS TO KEEP A CLOSE EYE ON THE VOLUMES ALREADY EXTRACTED AND THOSE THAT ARE STILL AVAILABLE. UP UNTIL THE PRESENT TIME, SPECIALISED SURVEYING TECHNIQUES HAVE BEEN USED. NOW, BASED ON PHOTOGRAMMETRIC TECHNOLOGY, ORBIT GT HAS DEVELOPED A NEW TECHNIQUE THAT MAKES IT STRAIGHTFORWARD TO TAKE THESE MEASUREMENTS, USING A UAV.

It is extremely important for the above-ground mining industry to be able to monitor production closely. It can even be a matter of life or death for the technology or methodology used when operating an above-ground mine to be assessed quantitatively and qualitatively on an ongoing basis. Companies need to keep improving these technologies by deploying increasingly sophisticated bulldozers and other extraction equipment. As a result of their sometimes cutting-edge technological properties, this specialised machinery can have a direct effect on the turnover generated – and this effect should not be underestimated.

calculating volumes, but it also enables us to observe movements in the area on condition that the 3D modelling can be carried out repetitively within a specific period of time. A 3D model is also an important tool for complying with the strict safety requirements so that there are no human victims or other damage caused to the infrastructure of the mine. These days, determining a 3D model of a mine site is usually done using LIDAR laser scanning units, both on the ground and from the air, with the accompanying sky-high costs involved. Orbit GT has developed a technology based on photogrammetry in which aerial photographs are produced using a UAV (Unmanned Aerial Vehicle).

the volume to be calculated each time. Interpreting the different volumes provides a good image of any movements in the ground.

A Real Life Case

In this case we record the arrivals and departures of ore in a port area. Each week terrestrial measurements are carried out to map these arrivals and departures. Sometimes photogrammetry is used based on digital aerial photographs taken from aircraft and possibly also combined with LIDAR. Both methods are expensive to carry out on a repeated basis. The environment is also not



Which is why checking the volume being extracted is important. This is already done during the planning, execution and subsequent checks on a very regular basis, right across the entire mine.

Defining a 3D model of the area of a mine site is not only required for

This device is fitted with a carefully calibrated metric camera and is guided by GPS so that exactly the same flight can be carried out to precision at different times.

This UAV Surface Mapping technology means that a particular site can be mapped repeatedly, thereby enabling

a very healthy one to work in. This means that not only can using a UAV be less expensive, but the health of staff is taken into consideration because the drone is operated by remote control.

The benefits of using a UAV in this case are abundantly clear: lower costs, easy to carry out on a weekly basis

and yet sufficiently accurate to meet requirements.

This case in details.

First task is to setup a flight plan. Based on an outdated but properly georeferenced orthophoto, the target area is circumscribed (blue rectangle). The take-off and landing spot for the UAV is represented by the yellow triangle icon.

The red lines show the calculated flight path. This path is calculated based on

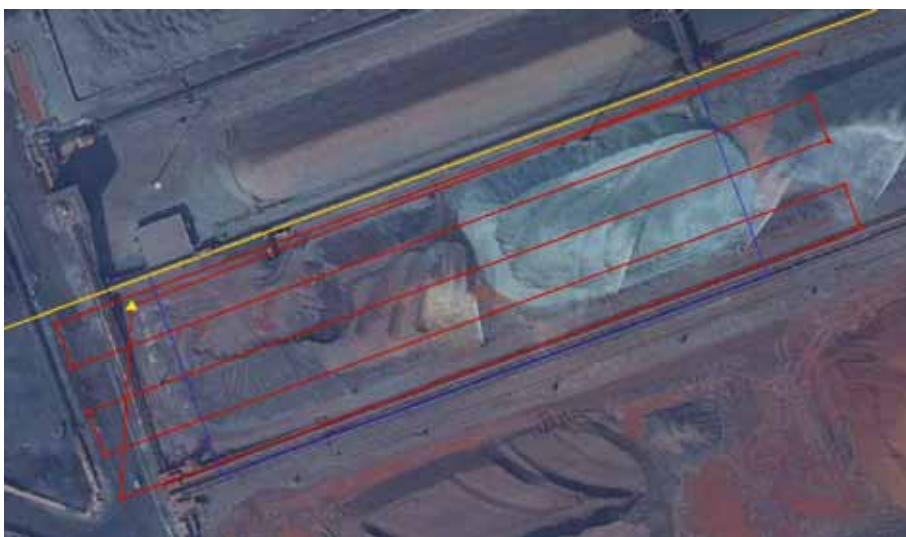
the desired results : an 80/60 overlap %, and a GSD of 1 cm. The GSD or Ground Sample Distance equals the resolution of the resulting orthophoto image.

This flight will be executed using the Microdrone MD4-1000. This UAV can fly autonomously for over 30 minutes and is fully GPS controlled. The exact flight plan is determined using camera and lens specifications. For this case, a flying altitude of 65m is determined covering 6Ha per hour. Flying at 100m altitude with a different camera would

result in a GSD of 2.5 cm covering 17 Ha per hour.

After loading the UAV data in Orbit Strabo and matching it with ground control points, we reach an msqr precision of 0.6cm in XY and 1.7cm in Z !

Orbit Strabo automatically calculates the DTM out of all aerial images. The volume is calculated by intersecting this DTM with a level plane at reference height. This case results in 6509.11 m2



These parameters have been predefined:

- Camera: Canon 550D,
- Focus distance: 28 mm
- Flight Altitude: 65 m
- GSD: 1 cm
- Overlap: 80/60%
- Continuous flight.

Other flight details :

- amount of flights: 1
- amount of strips: 4
- no of images: 84
- time required: 10.12 minutes
- photo base (est.): 10.2 m
- photo scale (est.): 1/2300
- footprint: 1725 m2

Orbit GT UAV Mapping Solutions

Orbit GT has developed a range of software applications dedicated to optimize the process of mapping using a UAV. These tools are extensions to Orbit GT's core system Orbit GIS. The final stage of this process is the Orbit Strabo Photogrammetry package which contains a multitude of functions for measurements, registrations, overlays, procedures and analysis as required for many standard photogrammetric processes.

By integrating UAV mapping with standard photogrammetry, the UAV captations can be directly used for DTM creation, orthophoto creation, volume calculation, comparison.

Orbit GT UAV Mapping Solutions contain the following set of tools : UAV Mapping Planner, flightplan wizard, Google Earth integration, interfacing with UAV hardware tools, and dedicated integration tools within Orbit Strabo.

SITUATIONAL AWARENESS AIDED BY MOBILE MAPPING

We're experiencing a momentum in the quite recent technology of mobile mapping. Panoramic imagery nor lidar scanning are new, but recent technology development has brought together the economic prerequisites to embrace Mobile Mapping as a new mass production technique for the mapping industry. The wide range of applications for this novelty have yet to be discovered in full.

Public Safety matters are not obviously related to the mapping industry, however the advantages coming from Mobile Mapping for these organizations are nothing less than gamechanging. Here's why.

Mobile Mapping content can be used in a variety of situations that are inherent to safety forces. It can help our safety forces to be better prepared, get more insight in analysis tasks, give broader view to decision makers.

Mobile Mapping

Let's first determine what we understand by Mobile Mapping :

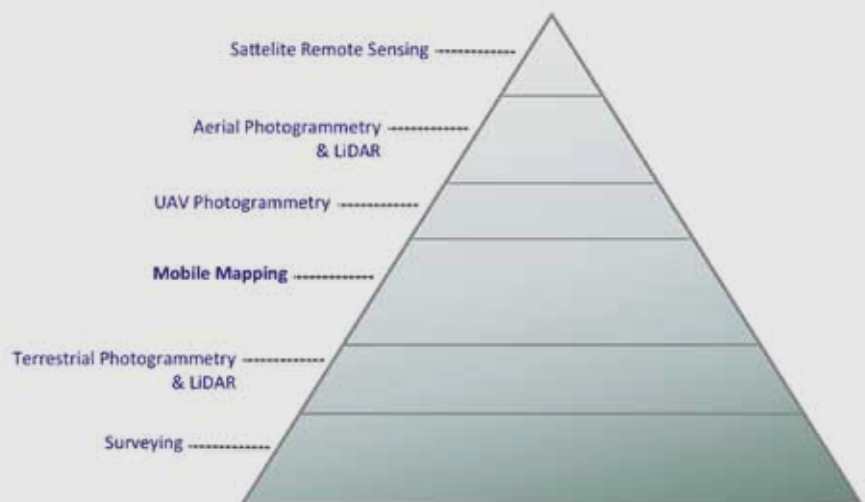
1. Capturing of raw data using vehicle mounted devices with photographic and/or LiDAR techniques.
2. Extracting relevant GeoSpatial content from this raw data

There are many variations available: from a 12-camera rooftop-setup to a single panoramic camera, various lidar setups, multi-sensor setups, systems using only lidar or only stereo-photography, and more. To make it easy for understanding, let's limit MoMa to panoramic imagery + a lidar point cloud.

The technological development has given us the possibility to combine top quality camera's, lidar, GPS, IMU and odometers in a single setup, combined with the processing power, transmission and storage capacity that is inherent with capturing huge amounts of data in a continuous way. After all, a MoMa car drives around at normal traffic speed and can easily gather terabytes of data in a single half-day run.

Positioning Mobile Mapping within other Data Captation Techniques

Since the range of applications is so diverse, one may consider it will replace existing techniques. In my opinion, I consider MoMa as a novel way to capture novel data and develop new and exciting solutions. Yes, there is an overlap with traditional surveying, but it will not and cannot replace it.



Fitting in Mobile Mapping in between existing Data Capturing Techniques

Mobile Mapping content has thus become very easy to collect, and can deliver top quality within a very short processing time. Next to that, it's most interesting features from a user's point of view is a result expressed with 3 R's : realistic, reliable, reference. Realistic because of it's human perception imagery, Reliable because of it's positioning and IMU - wether or not post-processed - and Reference because of it's unique viewing position and the availability of a point cloud, whichever density it may have.

The Panoramic Image as new GIS Standard

For most generic uses, I have a preference towards the panoramic image. It has become widely accepted (hence Google's Streetview and many smartphone do-it-yourself apps), and one can interact with it very naturally.

In combination with the standard GIS approach viewing geodata from a birds-eye view, panoramas give a human point of view to the same reality that we're trying to model with our geodata. Since we make GIS useful by combining reference data with our own data of interest (overlays, databases content, any other integrated input), it is simply logical that we want to do the same with panoramic images.

When trying to interpret one's content on a reference 2D map, one's insight grows dramatically when displaying the same content on panoramic images : it immediately comes to life. This is why Augmented Reality has become a hot topic for camera-equipped mobile devices.

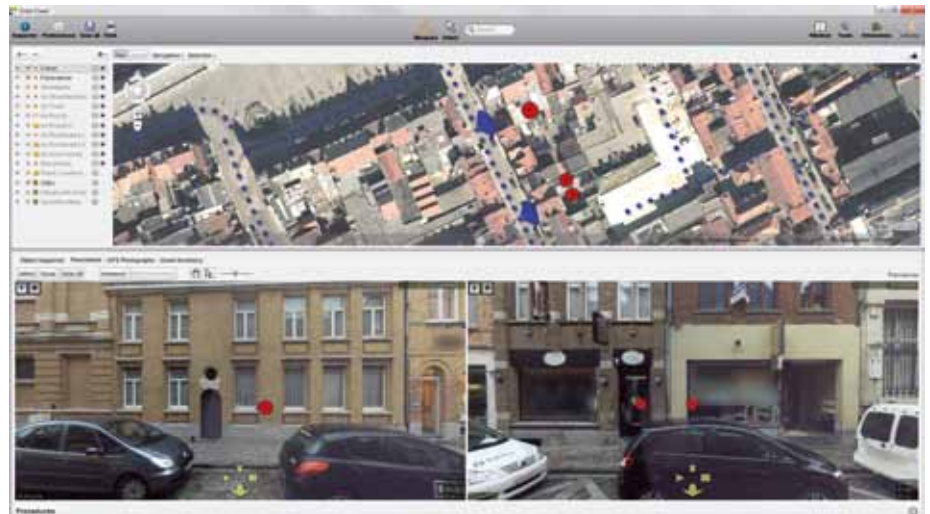
It is my strong belief that panoramic images will be come as common as the orthophoto or streetmap : not only when searching the internet, but in every GIS desktop or web application, for the occasional and professional user. A new type of Reference Map.

Using Mobile Mapping to enhance Situational Awareness

Situational Awareness is a term used by intervention and defence forces to describe the understanding of the location and situation in which they need to operate. There are quite some caases in which mobile mapping content, and especially panoramic images, can aid to lift this understanding to a higher level. Let's take a look on some dramatic advantages for Police, Defence, and other Public Safety Forces.

MoMa in Crime Analysis

Crime and strategic analysts can use Orbit tools to manually and automatically map any crime phenomenon. Traditional results can be statistic, a density or heat map, up to fine graded results on address locations. Orbit's Business Intelligence tools add drill-down graphs and maps to list and report.



Interpreting crime records

As a researcher digs deeper into the analysis results, panoramic imagery can help identify the situation in which crimes have taken place : by simply looking around on the spot, and comparing that to other spots that have suffered a similar crime, a situational analysis may result in better determination of the problem at hand, and finally in improved crime prevention.

MoMa in Traffic Analysis

Analysis in traffic violations or traffic accidents can gain in the same way as crime analysis. But there are some more advantages to mention. First of all is a realistic view of an accident location very helpful for the analyst. Using Orbit tools to precisely locate each individual accident, the hotspot on any crossroads appears on the screen in a split-second. But when you put it into perspective in a realistic panoramic view of the location, the analyst can better determine the causes of accidents, hence produce and document better advices to improve e.g. the public road infrastructure in order to avoid future incidents.



Interpreting road safety by accident locations

Next to interpretation of analyses, mobile mapping also means map making. Orbit's Asset Inventory Management solution presents all you require to detect and extract features and objects from your MoMa content. In this article context, this can be anything on the road and roadside : from traffic signs and markings to light poles and any streetfurniture that may be of importance to traffic management or e.g. a specific accident being examined or documented.

MoMa as Police Intervention and Dispatching Aid

Now let's move on to more real life situations. Orbit InfoCenter aids the dispatcher to fuse all police databases in a single and simple request. Based on either name or address, all relevant information lists up and appears on the map as configured. As an intervention request arrives, the dispatcher will send an intervention team to a given location. In the mean time, Orbit InfoCenter collects all knowledge about that location and the people that are in some way related to that location. It all shows on the map.



Immediate view of intervention location

Now picture that on a panorama. It's a near 3D view of reality, with precise tagging of all knowledge as if it were labelled on each house or building.

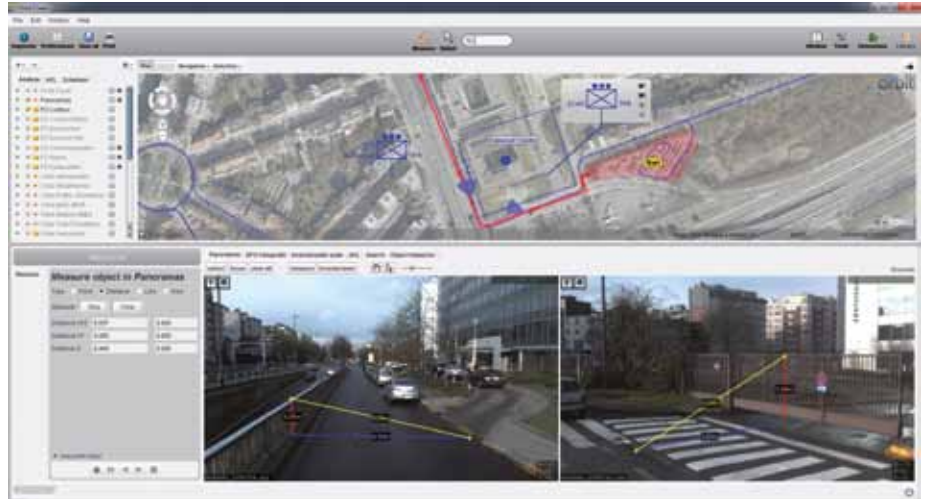
MoMa for Military and Intervention Forces Training

As for Contingency Planning, mobile mapping can be used for police and military training purposes. Instead of building a 3D model of an exercise zone just to discuss tactics or explain training instructions, MoMa content can be easily captured for any training field at much lower cost, fully up to date and very realistic. Just mount your hardware on a quad and you're ready to capture any battlefield or training compound.

MoMa in Contingency Planning

The Contingency Planning extension to Orbit GT's core GIS system uses the standards in conventional signs to prepare for manifestations, sports or any other event that require security forces to supervise, maintaining public order and intervene where and when required, in proportion to the given situation. The extension allows preparation, briefing, live registration and debriefing/playback.

Especially the briefing moment benefits dramatically from MoMa content. For example, every single location that holds any risk during a manifestation can be clearly shown, in detail, to each participating officer. No need to go out of take random pictures, just look at the string of panorama's that follow the route.



Situational insight when briefing for event safety operations

Look around to left and right, buildings and offices that might require special attention or protection, where backup forces will be located, how escape routes really look like and what obstacles can be encountered when in full action. Even more : measure distances, heights, widths of any relevant object during briefing or debriefing and document clearly. Be prepared as never before : this really is gamechanging !

MoMa for Fire Departments

As for Contingency Planning, Fire Departments have equal dramatic advantages from mobile mapping content. The availability of a realistic view of the environment is a paramount asset to intervention preparations, safety planning, risk analysis and real time intervention challenges.



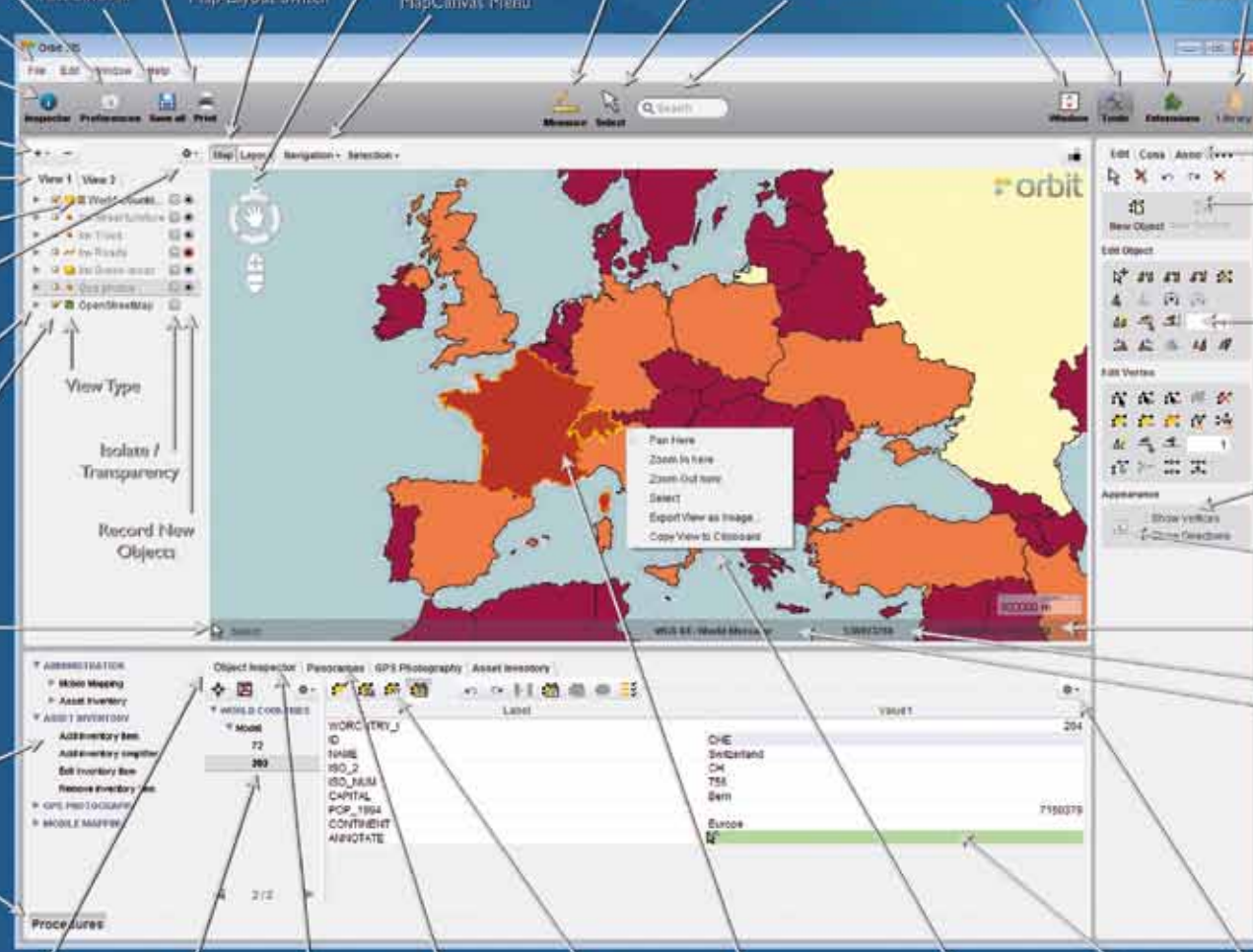
Intervention planning aided by mobile mapping content



MoMa in Mobile Applications

The availability of MoMa content, especially the panoramic imagery, will raise demand to have it ready on mobile devices. Orbit GT already delivers a MoMa Publishing Server and smartphone/tablet apps to wirelessly access this innovative content. By combining this with your real life or database content, either overlaying on the panoramic image or comparing the same content using Augmented Reality, Public Safety forces can gain immensely from these new technologies.

ORBIT GIS X. Making GIS so easy.



The screenshot shows the Orbit GIS X interface with a map of Europe. A context menu is open over a country, listing options: Pan Here, Zoom In Here, Zoom Out Here, Select, Export View as Image, and Copy View to Clipboard. The interface includes a top menu bar, a toolbar with icons for various functions, a left sidebar with a layer list, and a right sidebar with toolbars for editing and appearance. At the bottom, there are several panels: Object Inspector, Procedures, and a data table.

Annotations:

- All Preferences & Settings
- Fast Print
- Intuitive Navigation
- Fast Measure
- Fast Select
- Tools Sidebar
- Extensions Sidebar
- Workspace Menu
- Fast Save All
- Map-Layout Switch
- MapCanvas Menu
- Overall Search
- Windowing
- Layers Sidebar
- Fast Object Inspection
- Add / Remove Layers
- Multiple Lists
- Needs Save
- Dataset List Controls
- Fold Content
- On / Off / Solo / SoloSafe
- View Type
- Isolate / Transparency
- Record New Objects
- Fast Access
- Main Tools
- Clear Functions Layout
- Main Appearance Options
- Direct Preferences Access
- Mouse Co-ordinates
- Scale Settings
- CRS Settings
- Procedure Wizards Library
- Procedures On / Off
- Advanced Search Panel
- Selected Objects List
- Intelligent Object Inspector
- Extension Panels
- Focus Object Visual / Summary / Co-ordinates / Attributes
- Highlight Selected and Focus Objects
- MapCanvas Context Menu
- Intelligent Attributes
- Attributes Context Menu

Data Table:

WORLD COUNTRIES	Label	Value1
72		204
72	WOR_CTRY_ID	
	NAME	
	ISO_2	
	ISO_NUM	
	CAPITAL	
	POP_1994	
	CONTINENT	7190379
	ABBREVIATE	

