ISSUE 2 • JUNE 2017
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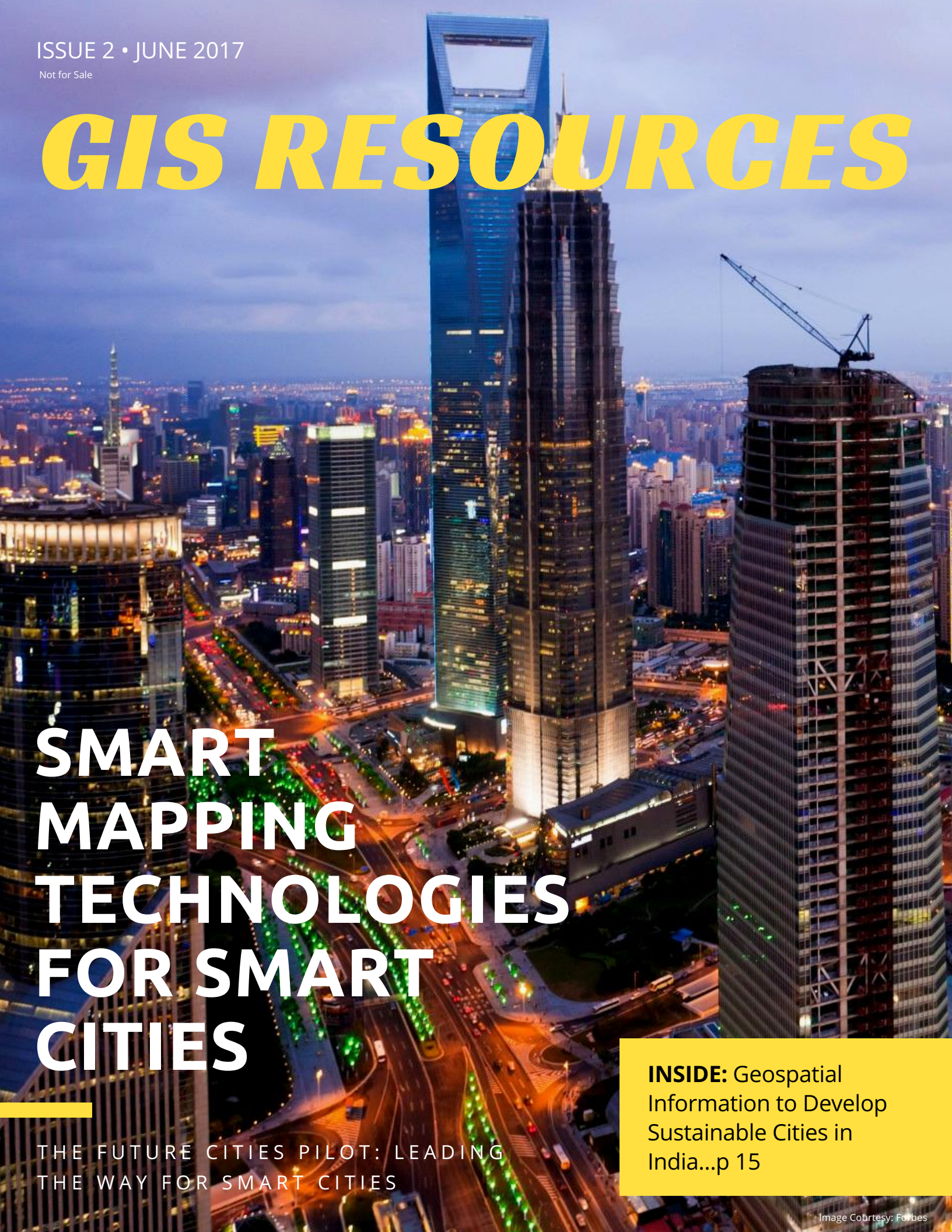
GIS RESOURCES



SMART MAPPING TECHNOLOGIES FOR SMART CITIES

THE FUTURE CITIES PILOT: LEADING THE WAY FOR SMART CITIES

INSIDE: Geospatial Information to Develop Sustainable Cities in India...p 15

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editor's note

Ashok Prim
Editor

A Smart City for Its Inhabitants

The term "smart city" has become a familiar word over the past year or two. But as yet few really know what it envisages, how it is to be implemented, what will be the cost, how will it be made sustainable, who would be responsible for its long term maintenance and who will be its beneficiaries.

The dual word has been coined to convey a concept being applicable for a city. Is the term meant for a new city or an old city? Can we make an old city smart? What about the surrounding semi-urban/rural areas of a city? Many questions still abound. Most of the works or projects currently being taken up under the smart city project are in the nature of infrastructure development. That is itself a good outcome of the smart city project which can be made better if this infrastructure is harnessed to have a salutary impact on people's lives. Various departments of the government must work in cohesion to deliver sustained developmental infrastructure. Very often we have seen that a perfectly laid out, newly surfaced road is dug up to lay water pipe lines or electricity cables which then lie in that state of disrepair for months together causing great inconvenience to residents & commuters besides causing environmental pollution.

People are necessarily at the centre of the smart city project. A smart city without satisfied people would be futile. Inhabitants must know the purpose of the smart infrastructure and the impact it will have on their lives. All this requires new forms of governance and public participation. Further as cities grow, people's needs and demands must be met. Smart cities must not only build on sustainability but also on resilience in the sense that cities as systems are made more resistant and adaptable to influences from forces within and outside.

Technology in all its forms has to be harnessed to fulfill the idea of a Smart city. A Spatial Data Infrastructure (SDI) is vital to create the framework in which the data essential for the smartness of the city is collected, coordinated, archived & retrieved. A robust Geographic Information System (GIS) will be able to generate information and present trends & scenarios for the generation & implementation of intelligent infrastructure necessary to make the city smart.

However development of smart cities has to be taken up with great caution. The social & cultural dimension of society must be preserved in a smart city. Sufficient leeway must be available to promote people's creativity and competences. Focus must be on health, education, safety & security of individuals and livelihood amongst other things. Development of social & cultural infrastructure must keep pace ensuring plurality of society and social cohesion.

It is also important to use resources with caution and provide an environment worth living in for everyone. Large green spaces must be reserved and expanded to ensure lasting quality for a growing population. Water resources must be revived & conserved so that safe and clean drinking water is ensured to every inhabitant. Ultimately a Smart city, with all its technological applications & innovations, must meet the aspirations of its inhabitants as well as leave a legacy for future generations to build an enlightened society in harmony with itself and with nature.

Essential of GIS-based Solid Waste Management Models for Smart Cities

Image Courtesy: BioEnable

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India has wide variety of natural resources existing. Being one of the most populated country in the world after China, need for these natural resources consumption is in the crest. Production rates of commodities and machinery is increasing in an incessant manner along with the rise of population. Every production has its own life time based on its usage by the human kind, thereafter it is so called to be the waste. In India, accumulation of waste around streets is higher than their collection and handling.

It's been 16 years Government of India revised its solid waste management rules, 2000 to solid waste management rules, 2016. This long time period for proposing new rules shows, how typical and challenging for the government to redefine the rules. Major focus observed from the recent 2016 rules include every urban local body including urban agglomerations, census towns and transport stations. Solid Waste Management Rules (SWMR) features rules on generation, collection, segregation and disposal stages. Despite the ground breaking policy measures implemented for SWM, enforcing technical policies and by-laws can help SWM to be more effective and efficient. There are various technical developments, assessments and analyses which can be implemented in the SWM system to enforce the urban local bodies implement by-laws for their community based SWM.

Life Cycle Assessment (LCA) and Material Flow Analysis (MFA)

Life cycle assessment is an accounting tool for studying and assessing the impacts of a product in the environment throughout its life cycle. Material flow analysis is a process chain of flow of materials in each stage of any defined process. In Indian context, Federation of Indian Chambers of Commerce and Industry (FICCI) took initiative in collaboration with United Nations Environment Programme (UNEP) to develop Indian LCA database. Based on the need and requirement, any practitioner of LCA can choose his own LCA approach variant.

For the performance of life cycle

assessment, initial step was to develop the life cycle inventory (LCI) data. This inventory contains the data regarding the product, raw material used, energy consumed for extraction of the raw material, transport charges from the resources field to industry, production process and the process involved in it, energy consumed in every stage of the production, packaging process information, usage phase by the society and its life time of working, then the disposal phase where it covers information about recycling or disposal activities done and then the impacts caused by the product on the environment because of the disposal.

There are various case studies conducted in India in life cycle perspective. These case studies include "Emission hotspot identification in coke ovens using Life Cycle Assessment" by TATA Steel showcasing the major environmental impact caused from the industry. Other LCA studies include LCM in India Glycols Limited, studies the derivatives produced from industry based on their energy usage and carbon footprints resulting in sustainability of the industry. These kind of successful stories bring out the importance on LCA for further development in Indian context with efficient database developed by the FICCI. There are various professional software available for performing this LCA efficiently which includes commercial softwares like, GaBi and SimaPro. Open source LCA software includes openLCA. These tools contains different countries LCA database.

Material flow analysis gives a clear idea on how the materials in a process chain are flown. MFA is based on the law of conservation of mass, accounting the goods and substances through a system or process. This can help in redefining the flow of materials and involve any new process for more efficient flow of materials in the process. For the construction of material flow analysis, software like STAN developed by Vienna University of Technology and many other are available for download on the web.

LCA Variant	Requirement
Cradle to Grave approach	Assess the product from raw material extraction to disposal stage.
Cradle to gate approach	Assessment involve resources extraction till factory gate for processing.
Cradle to Cradle approach	End-of-life assessment for reducing environmental impacts.
Gate to Gate approach	For factory production chain ideal for industrial practitioners.
Well to Wheel approach	Used to assess the transport fuels and vehicles energy consumption, energy conversion efficiency and emissions.

Case Study on a Proposed Smart City: Vellore City Municipal Corporation, Tamil Nadu, India

Government of India initiated a sustainable and citizen friendly development mission in 2015, Smart cities mission, which is featured to promote mixed land use, expanding housing opportunities for all the citizens, creating walkable localities, promoting various transport options, developing more recreational facilities, giving identity to the city by initiating smart solutions using smart technologies.

These smart cities challenges include solid waste management in the proposed smart cities. New and smart solutions include, involvement of various stakeholders for the development and finding solution for solid waste challenges faced by the municipal corporations. To overcome these challenges proper policy making is required based on the solid waste flow from the generation stage to the disposal stage. Vellore city is proposed to be the smart city in the 3rd round of selection of smart cities.

Material flow analysis is conducted for the wards 9 & 12 of the Vellore city Municipal Corporation which comes under smart city area. A model on waste materials flow have been developed based on LCA perspective using an open source software, STAN. This model is divided into three stages, Generation/Collection phase, Handling phase and Disposal phase (Fig. 1).

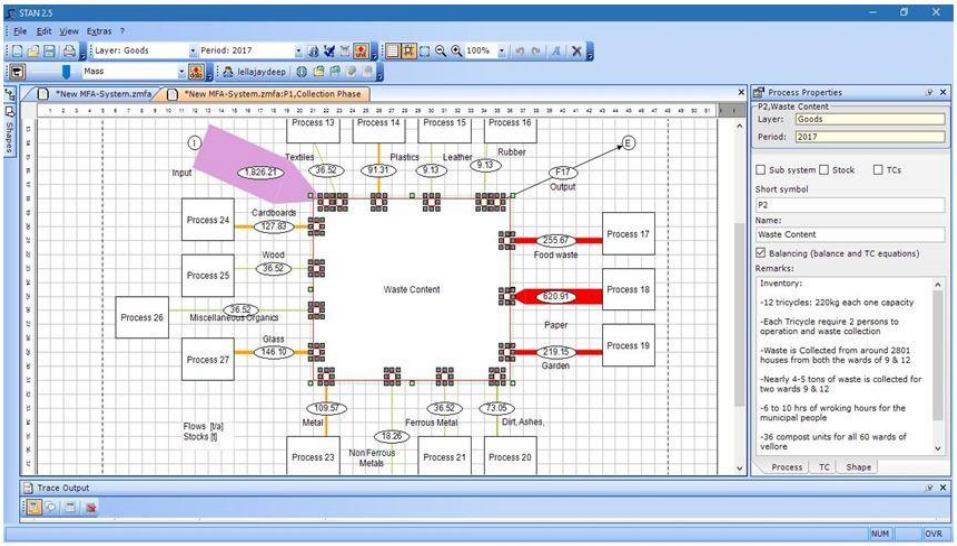

Figure (1). STAN software used for modelling material flow of the waste in wards 9 & 12 of Vellore city Municipal Corporation

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As described earlier this model is divided into three phases, each phase is created with subsystem which defines the internal process involved in that phase. This model can be reconstructed based on the requirements of the municipal corporation. Any new handling process or flow diversion can be made very easily, so that the practitioners and policy makers for any ULB can define their own by-laws based on the flow quantity of type of material into different process (fig. 2).

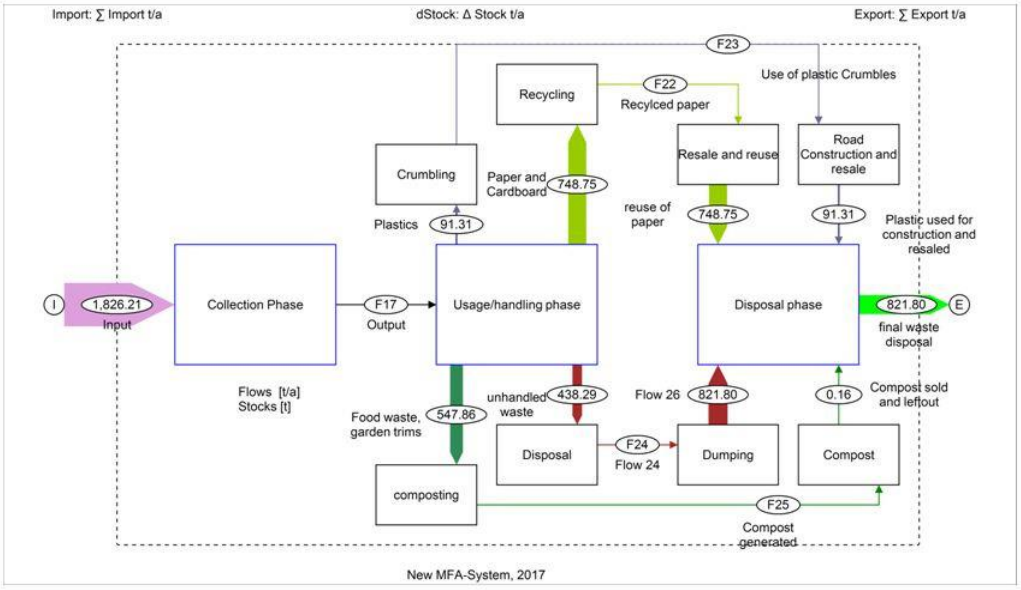

Figure (2). MFA model created for wards 9 & 12 of Vellore city Municipal Corporation

GIS Approach for SWM

Smart Technologies defines smart solutions for smart cities. GIS approach for SWM is an innovative and useful decision support system for minimizing impacts on the environment and SWM organisation. Major part of the SWM includes collection of waste, transportation of waste and handling of the waste. Network analyst extension in GIS packages helps in minimizing these collection and transportation challenges for efficient SWM.

Boundaries and road network data layers for Vellore city Municipal Corporation have been created for network analysis. The stops have been defined for HDPE bins located in the municipality. Transfer stations, where the total waste can be collected and handling processes can be carried are proposed for each zone of the city by reducing the Euclidean distance of all the HDPE bins located in the municipality. Each zone optimal collection route with navigation is evaluated. Navigation details helps the collection crew to quickly follow the optimal route. Optimal route can be observed with real time traffic data and road restrictions (fig 3).

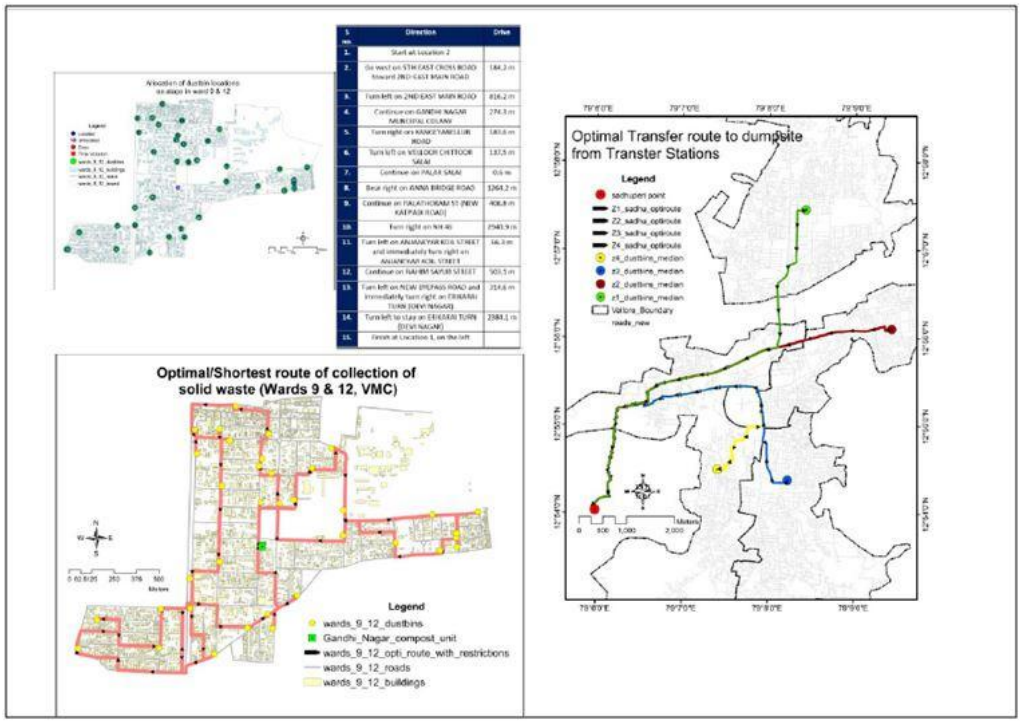

Figure (3). GIS approach in SWM management for Vellore City Municipal Corporation

These types of studies and technologies helps proposed smart cities to develop an efficient approach for solid waste management, helps to develop various by-laws in the corporations of the smart cities as well as GIS technologies reduce the burdens of collection and transportation by the collection crew of the solid waste.

These types of studies and technologies helps proposed smart cities to develop an efficient approach for solid waste management, helps to develop various by-laws in the corporations of the smart cities as well as GIS technologies reduce the burdens of collection and transportation by the collection crew of the solid waste.

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An Application of 3D Laser Scanning for Infrastructural Mapping and Its Comparison With Photogrammetry

Image Courtesy: Unisky Ltd

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3D modeling of buildings is becoming one of the most important part of urban planning. With the latest development in smart city projects specially in India, it has attracted attention from both academic and other sectors. LiDAR remote sensing and photogrammetry are the most widely used 3D mapping techniques for smart cities around the world.

This study summarizes generating 3D building model using point cloud by laser scanning and photogrammetry techniques. A comparison has been attempted between Laser Scanning and Photogrammetry to understand the advantages and disadvantages of both the technologies, since the future of 3D mapping lies in these type of 3D technologies.

Introduction

Increasing population and uncontrolled rapid development in infrastructure projects are the main driving forces of 3D building and city models. 3D modelling is although not a new term but with the recent technological advancements and introduction of some new tools such as LiDAR has given an impetus . Traditional method of photogrammetry which has also got renewed with the latest inventions in digital photography. Laser scanning and photogrammetry are the two techniques which can deliver 3D models of building but both have some limitations and advantages over each other. A number of studies have been performed on these two techniques considering time & cost etc and different levels of results have been achieved but one should see them not as substitute for each other but as separate technologies used according to the demand of the project.

LiDAR is an acronym for light detection and ranging. It is the optical counter part of more familiar radar technique and uses laser light for remote sensing. Hence, it has been referred as Laser Radar. LiDAR is an emerging technology with a wide range of applications; the principal reasons for this growth are threefold: speed, accuracy and detail. No other mapping method combines all three as in case of LiDAR.

LiDAR data can be used for generating the maps of urban areas at large scale. LiDAR facilitates

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identification of buildings from the point cloud of data points, which are important for mapping, revenue estimation, and change detection studies. Drainage planning in urban areas needs accurate topographic data which are not possible to be generated in busy streets using conventional methods. The ability of LiDAR to collect data even in narrow and shadowy lanes in cities makes it ideal for this purpose. Accurate, dense and fast collection of topographic data can prove useful for variety of other GIS applications in urban areas, e.g. visualization, emergency route planning, etc. Basically three types of surveys are adopted they are airborne survey, terrestrial survey and mobile LiDAR survey depending upon the nature of requirement.

Photogrammetry is the art and science of deriving accurate metric and descriptive information from analog and digital images" (Habib et al., 2007). Starting in the 1990s, the popularity and development of photogrammetry have increased in tandem with the continuing development of digital cameras and computer vision techniques. Due to the steady decrease in the cost of digital cameras, photogrammetric object space reconstruction has become one of the most popular studies in many fields (e.g., archaeology, architecture, biomedical engineering, and civil engineering). Photogrammetry can mainly be categorized into three groups: space (satellite) photogrammetry, aerial photogrammetry, and close range (terrestrial) photogrammetry. Satellites collect images for space photogrammetric applications and are mainly used for monitoring earth observations (i.e. ice mapping, natural disasters, etc.) Large format images, which are captured from a high point using a camera that is generally mounted on an aircraft, are used for aerial photogrammetry. Aerial photogrammetry is generally used for mapping. The technique is considered "close range photogrammetry" when the distance from the camera to the object of interest is in sub 100 meters. Close range photogrammetry has a wide spectrum of applications (e.g., archaeology, medicine, heritage conservation, architecture, aerospace industry, automotive, machine industry, natural science, and many others) (Luhmann et al., 2006).

Comparison Between 3D Laser Scanning and 3D Photogrammetry

3D modelling is very popular in today's world because with the development of computer vision and graphics technology it has become very easy to visualize things in 3D. In such technological advanced era everything needs to be visualized in 3D for better planning and management purposes.

The two main technologies discussed here for generating 3D models of building are laser scanning and photogrammetry. One of the greatest advantage of the photogrammetry over laser scanning is its cost effectiveness whereas in other aspects, LiDAR is definitely a better technology especially in the case where both the technologies are used to generate a 3D building model. LiDAR is light independent whereas photogrammetry depends on proper lighting (if proper light is not there it will badly affect the final result i.e. holes or gaps will appear in shadowed areas). A table showing advantages and disadvantages of both the technologies is mentioned below and also the figures showing the output from both the technologies.

Figure (1-a). Outline extracted from photogrammetric data

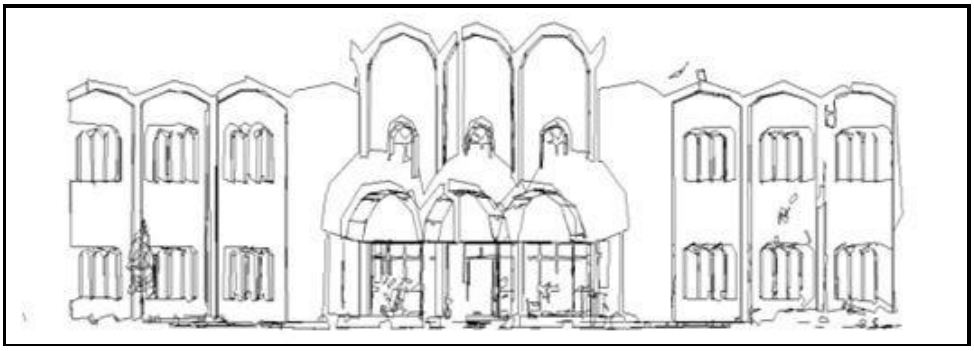

Figure (1-b). Outline extracted from LiDAR data

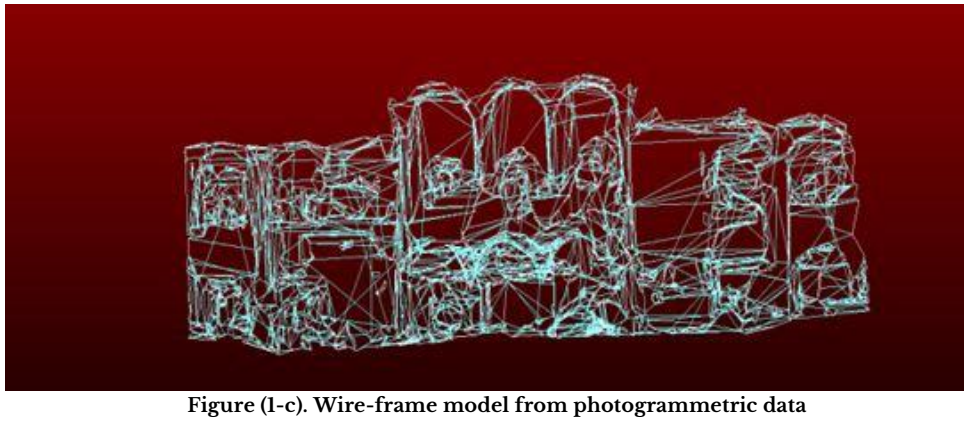

Figure (1-c). Wire-frame model from photogrammetric data

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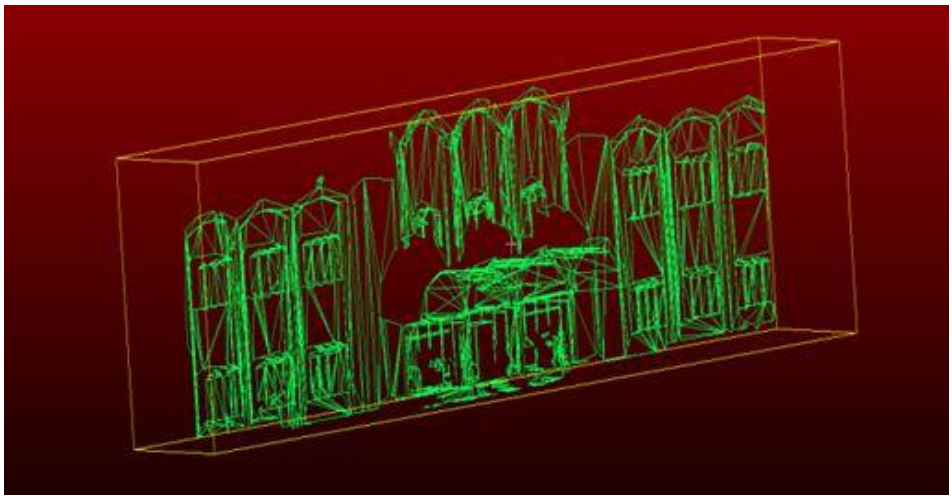

Figure (1-d). Wire-frame model from LiDAR data

S.No.	Category	LiDAR	Photogrammetry
1	**Device / Equipment**	• Terrestrial laser scanner • Geodetic tripod • Rotator (horizontal and vertical planes) • Battery or generator • Field computer or laptop	• Camera • GPS (not used here)
2	**Cost D/E**	80 Lakhs to 1 Crore (in case of terrestrial LiDAR)	From as cheap as 3000 Thousand to 1.5 Lakhs (for close range)
3	**Weight D/E**	6 Kg	450 gm (additional 200 gm weight if GPS used)
4	**Precision**	Centimetre (with some hybrid devices mm accuracy is possible)	Few centimetres to more (varies)
5	**Range**	From few meters to about 4000 m	Up to 500 m depending upon the size of the object.
6	**Steps Involved in Data Processing**	1. Data preparation 2. Data registration 3. Feature extraction 4. Modeling	1. Photo matching 2. Sparse point cloud generation 3. Dense point cloud generation 4. Mesh generation
7	**Processing Time**	As point cloud data is directly generated by the device ,From few hours to few days depending upon the size of the dimension	Images are matched stitched and then point data is generated first sparse and then dense, took one to many days for good quality point generation
8	**3D Information**	Direct	To be derived
9	**Texture**	Present (integrated camera)	Present
10	**Data Collection**	Day or night	Day time only
11	**Penetration**	Can see through trees	Can't see through trees
12	**Applications**	Unlimited	Limited

3D Model

With the ever growing technology in the field of computer vision and graphics it has now become very easy to visualize the objects in 3D. 3D visualization has many benefits such as buildings may be perceived in a detailed manner, can have a 360 degree view also 3D building modeling is becoming very popular for smart city planning program because we can have building information models, energy efficient building models, solar power potential model of buildings, in past level of detail was available for building information was up to Level of Detail (LOD) 2 but with 3D modeling we can have information up to LOD 5. With latest technologies like LiDAR we can have a very high accuracy 3D model.

An attempt has been made to create three dimensional model through LiDAR scanned data of a building. Modeling with LiDAR data is easy fast and reliable which is now attracting attention from people across the different sectors such as survey, civil engineering, architects, interior designers etc. Not only for planning but for the preservation of historical buildings and other religious monuments, this 3D modelling is used. Laser scanned areas are now converted into digital 3D interactive models for visualization and future references.

> "Smart mapping technologies ushering new frontiers in urban planning, architecture, and designing. 3D visualizations, mapping and modelling techniques are drastically changing the way we understand and helps to make quality decisions that benefit our community for decades."

Conclusion

From the study performed for the creation of 3D model for a building , LiDAR Scanning has been found much more accurate and reliable model for further management and planning. Nevertheless, importance of photogrammetry technology can not be ignored.

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Figure (2). Textured 3D model of building

Figure (3). Textured 3D model of building on Google Earth

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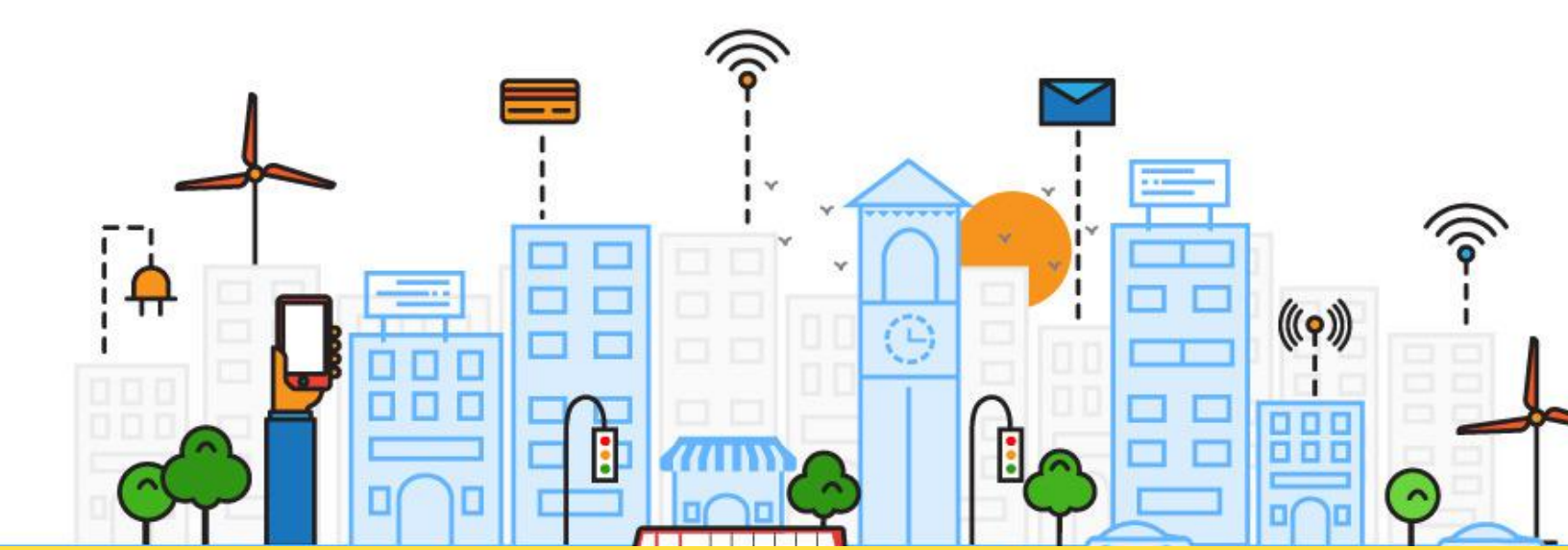

Role of ICT in Smart City Planning?

Image Courtesy: Surat Municipal Corporation

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Rapid growth in India fueled by burgeoning population and migration to city for daily requirements need to be handled smartly by local and federal governments. A smart city involves application of technology for addressing the issues of unplanned urbanization. Both the government and private organizations are the stakeholders. The exponential urban growth of India adds pressure to the resource base and claims demand for infrastructure like sewage, energy, and water as well as for public services, education, and health care for better quality of life. Certainly, a smart approach is inevitable for this problem. It states there is a lot of gap in binding of spatio-temporal information with the routine infrastructure maintenance. This in turn will influence the assessment of regional resources towards a better budgeting, planning, resource scarcity, demographic explosion, and environmental constraints.

To accomplish smart city objectives spatial and non-spatial data is a bare necessity in the planning and execution process. Geospatial data can include postcodes, the location of a traffic light or the GPS co-ordinates of a smart phone picture. Moreover, an Urban Local Body (ULB) may want to add residential information such as the electoral roll or tax registers. Citizens can also contribute data to ULBs in the form of geo-tagged images for raising complaints on state of local roads, sanitary system, etc.With the help of GIS uninterrupted solutions sustainable practices can be bespoken, provided there is seamless flow of geospatial information. Everything has a location, footprint, form, field or shoreline. These all mutually act together with each other in several ways. On a geographic position the data may record an underground rail service, offices and homes and perhaps roof garden. Thus, the three-dimensional nature of cities causes data to mount up.

Another useful piece of information, but one which contributes to the unmanageable speed is historical data of spatial data. A building, shoreline or marsh is not transient, but it has a

history which can be useful in analysis purposes. Historical flood patterns for example, can be very useful to ULBs considering how best to spend flood-prevention budgets whether it is for water storage purposes or drainage system control. In managing all such digital data the Information and Communication Technologies (ICT) plays a vital role for a smart city (Figure 1) in several areas such as asset management, citizen services, smart transportation services, slum management, etc.

Figure (1). Fig-1 Categories of smart city implementation
Image Courtesy: Blog - Bosch India

Role of ICT

The ICT can valuable influence the urban governance for a smart city in building the competitiveness, physical infrastructure, the natural environment and public administration. They must educate and inform stakeholders about effective technologies. The smart city transformation is fueled by advanced technology and the deployment of Intelligent& Information Management systems. Dream of Smart cities can be achieved at accelerated pace with higher dependence on ICT. Digital makeovers including social media, mobility, Machine-to-Machine (M2M), Internet of Things (IoT), Big Data, and Cloud Computing will certainly uphold the smart cities by virtue of their services.

As depicted in Table-1, the role of ICT in smart city applications are then a mesh of technologies services and a combination of many vertical smart solutions deployment in different locations and over many domains, such as energy, buildings, transportation, water, waste management, health care, education, financial services and mobility.

Conclusion

ICT infrastructure will involve different technologies depending on the application and the deployment environment. Wireless technologies are the most desired solution. However, there are still challenges that wireless communication has to cope with, like power consumption, ease of installation, great indoor coverage. To overcome these challenges, manufacturers and network operators have unified their activities to develop and deploy new wave of wireless technologies.

Smart Energy	Smart Buildings	Smart Transportation	Smart Water
Smart metering	Light control	Traffic and fleet monitoring and control	Smart metering
Smart lighting	Heating control	Services for drivers and Passages on real time information	Water conservation and efficiency
Smart distribution automation	Energy efficiency	Smart public transportation	Pressure management
Smart Distribution generation	Security control		Remote control and predictive maintenance
Smart Integration of Renewable &decentralized energy	Software: Automation and control, analytics and big data management		
Smart Network monitoring and Control	CCTV video surveillance and analytics		
Smart Waste	**Smart Health Care**	**Smart Education**	**Smart Financial Services**
Waste management	Panic button	Flexible learning an interactive learning environment	Unified payment interface
Waste water treatment	Disease control and mitigation	digital content online using collaborative technologies	eKYC
City cleaning	Prenatal & postnatal care	Massive open online courses	eWallet
Tracking of Waste	Remote health care and electronic records management	Digital classes	Domestic Money Transfer (IMPS and NEFT)

Table (1). Various role of ICT in smart city

Role of ICT

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(N.B.-This paper is a compilation of research works taken from various publications on the subject, and is compiled in an easier way for the readers understanding)

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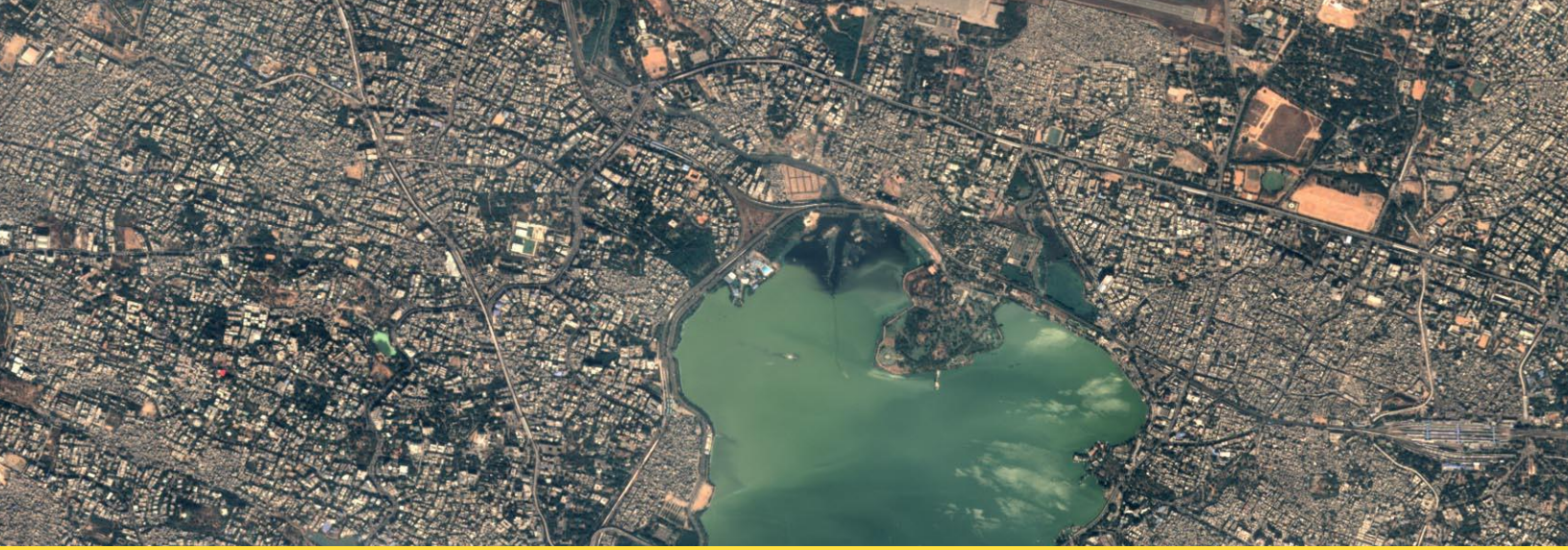

Geospatial Information to Develop Sustainable Cities in India

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With the second largest population in the world and its enormous urban growth, India's engineering, architecture and urban planning sectors are key to foster sustainable development and, as a result, mapping technologies may also play a crucial role.

India's internet economy is one of the faster-growing in the world and the country has the world's second-largest smartphone market in terms of users. Therefore, there is a unique supply of skilled workers to develop digital and innovative solutions, such as smart maps.

Maps are an essential tool, not only in our everyday lives, but also to foster sustainable growth through urban planning. As cities continue to expand in India, even the most accurate maps will be quickly outdated. Thus, a challenge arose: to develop an easy-to-use and cost-effective solution to map new infrastructures and urban growth accurately and timely. The recent advancements in Geospatial technologies and remote sensing, provide the necessary tools to do so in an up to date and reliable manner, while Smart Maps provide inclusivity and interaction with the citizens.

Smart Maps are conceived as digital maps that converge a broad range of data and information, built to be quickly updated, and allowing users to interact and add further layers of their own data. According to researchers, "Smart Maps could help India gain upwards of USD $8 billion in savings and value, save 13,000 lives, and reduce 1 million metric tons of carbon emissions a year, in cities alone."[1]

As mapping, 3D modeling and big data join to create precise, updated and interactive maps, geospatial information becomes and increasingly role player in the development of smart maps.

In 2015, the Indian Government launched the "Smart Cities Awas Yojna Mission" to develop 100 smart cities and rejuvenate 500 others. Last January, 2017, the Minister of Housing and Urban Poverty Alleviation M. Venkaiah Naidu announced the government's plan to extensively utilise Geospatial technology for the accomplishment of this mission. "Cities, in the past, were built on riverbanks. They are now built along highways. In the future, they will be built, based on the availability of optical fibre networks and next-generation infrastructure. Our government's vision is to build 100 smart cities across the country and Geospatial Science & Technology (GS&T) is the means to realise this vision," he said, addressing a conference at the Geospatial World Forum, and repeating the words that Indian Prime Minister Narendra Modi said during a speech about the country's development, shortly after taking office.

Satellite Imagery for Urban Planning Applications

Geospatial information is a valuable source of information to develop rigorous and cost-effective topographic mapping and 3D modelling of buildings and cities, for urban development and for civil engineering applications.

Accurate satellite imagery is crucial for designers, surveyors, engineers and architects at every stage of a project. It improves decision making and assessment from the initial planning throughout the whole process. It allows to visualize and evaluate the impact on the surrounding environment, to work with much greater cost and quality control, and to easily test and adapt the designs to the client's needs.

Better mapping results in better urban management by helping detect infractions, improving accountability and streamlining planning processes.

Moreover, hydrological modelling, assessment of terrain stability and soil and topographic mapping allow to monitor urban growth and surface movements and changes, supporting a quick detection of undesired effects deriving from constructions as well as helping in risk assessment. They also help to identify the most appropriated locations for new buildings and infrastructures, ensuring they are optimally placed.

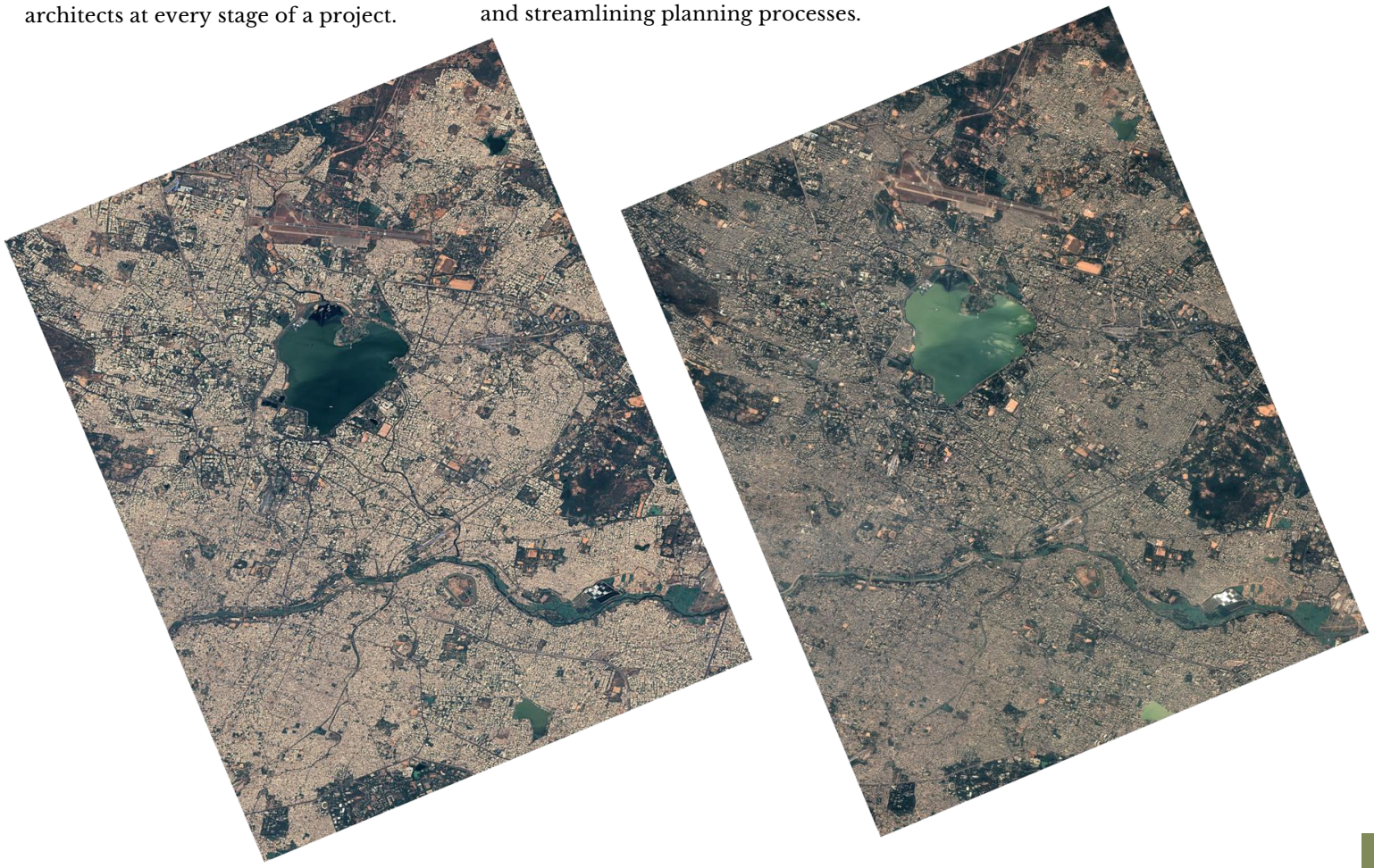

Figure (1). Deimos-2 Pan-stereo images of Hyderabad, India, captured on January 5, 2017

The Deimos Imaging DEM Portfolio

Deimos-2 off-nadir imaging ability, up to 45 degrees, enables the acquisition of single pass stereo imagery, which are used to create accurate Digital Elevation Models (DEM). The elevation of the terrain is a vital source of information for numerous engineering applications such as: D terrain and hydrological modeling, assessment of terrain stability, soil and topographic mapping. In addition, Deimos-2 imagery allows to remotely monitor urban growth, detect surface movements and changes, perform efficient and objective risk assessment, as well as detect undesired effects deriving from construction projects in a timely manner. Its very high spatial resolution, combined with its unique agility, makes Deimos-2 DEM product ideal for urban planning, engineering and growth monitoring applications.

A notable feature of Deimos-2 is its capability to acquire high resolution stereoscopic imagery. The stereo images are collected on the same orbit with suitable angles optimal for stereo viewing and manipulation. The Deimos-2 stereo product is composed by two images for which the angular difference can be adjusted. The main parameter characterizing the system's stereoscopic capability is the Base to Height (B/H) ratio, that is the distance on the ground between the centers of images, used to determine vertical exaggeration.Its high revisit frequency, also allows Deimos-2 to do timely monitoring campaigns over any area of interest.

Deimos Imaging, a subsidiary of the Canadian UrtheCast Corp, is a Spanish provider of Earth Observation products and solutions. Its satellite Deimos-2 was launched in 2014 and designed for cost-effective, dependable very-high-resolution Earth Observation applications. Providing 75 cm/pixel pan-sharpened images, this is the first Spanish very-high resolution Earth Observation satellite and the highest-resolution non-governmental satellite in Europe.

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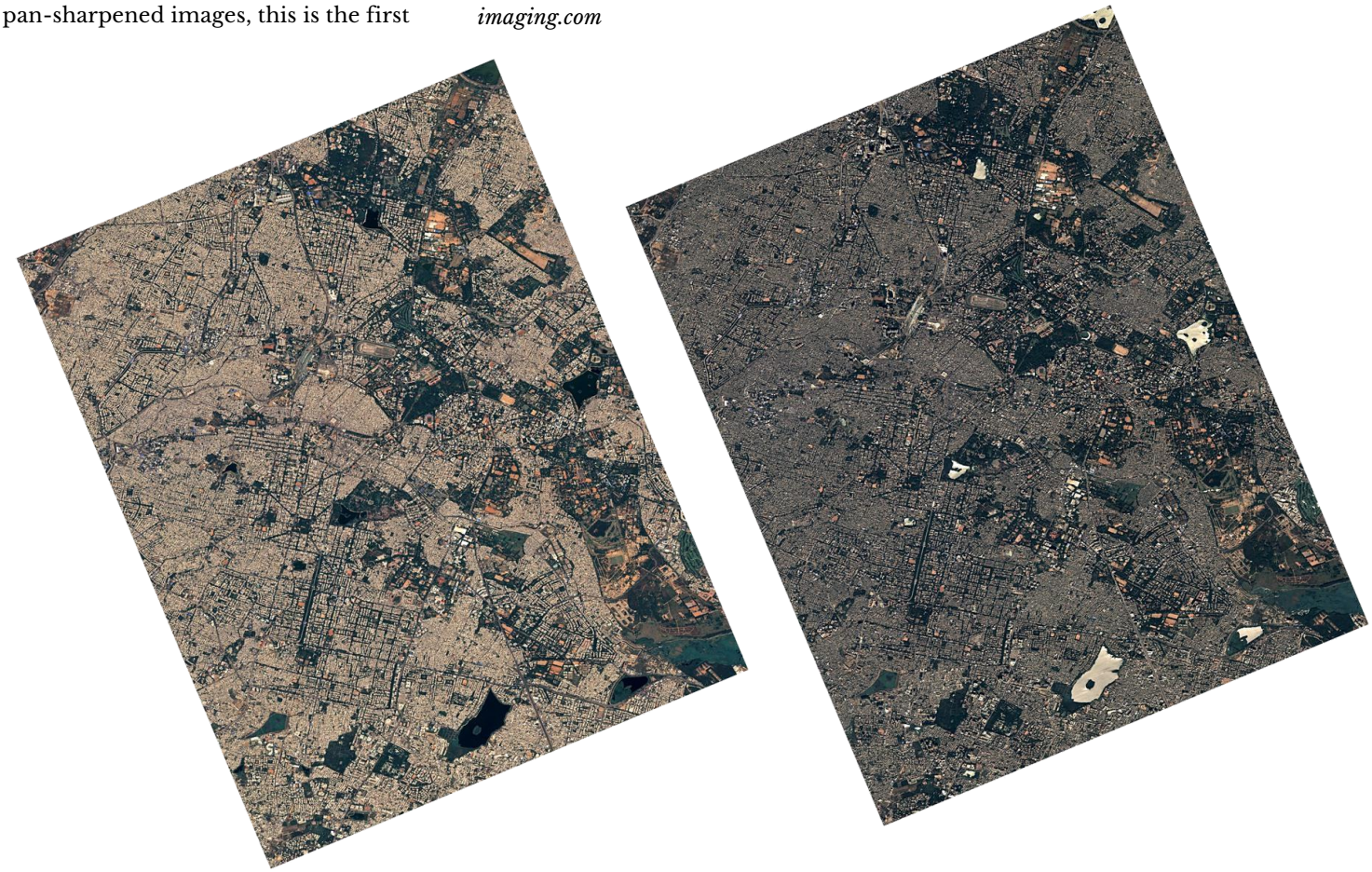

Figure (2). Deimos-2 Pan-stereo images of Bengaluru, India, captured on December 18, 2016

The Future Cities Pilot: Leading the Way for Smart Cities

Image Courtesy: Shutterstock

Simon Chester
Open Geospatial Consortium (OGC)

According to the Ministry of Urban Development's Smart Cities Mission Statement & Guidelines [1], urban areas in India are expected to house 40% of India's population and contribute 75% of India's GDP by 2030. This is part of a global trend, with the growth of cities outpacing growth in rural areas [2]. With cities playing home to so many people, and with them playing such an important economic role, is imperative that we use the best technology and tools available to efficiently manage their development and operation.

This, of course, is not news: leaders in urban planning and the IT industry alike, including the Open Geospatial Consortium (OGC), have been promoting the concepts of 'connected cities,' 'smart cities,' and 'resilient cities,' as solutions to growing urbanisation for years. Indeed, all cities, with varying degrees of planning, are increasingly using digital technologies to enhance the quality and performance of urban services, reduce costs, use resources more efficiently, and generally plan and run cities 'smarter.'

The Government of India's Ministry of Urban Development's Smart Cities Mission recognises that 'smart cities' is a beneficial concept, but one that means different things to citizens with different relationships to technology and different aspirations. The mission therefore aims to generally "promote cities that provide core infrastructure and give a decent quality of life to its citizens, a clean and sustainable environment, and application of 'Smart' Solutions." This is a wise direction for policy, and all cities - whether they're involved with the Smart Cities Mission or not - would do well to treat these as priorities for the future of city management.

'Smart solutions' can be viewed as ones that aid in, or are based upon, the integration of the dynamic human, social, and physical environments with the digital system(s) that represent them - the ultimate representation being an accurate 4D city model. Smart solutions can take the form of, say, sensor networks that collect data about the urban environment and feed it into the city model, or they could be tools that use the data in the model to create useful information, knowledge, and insight for the city's residents and stakeholders, or myriad other forms not yet explored.

The common feature of these smart solutions is that they empower stakeholders to make better informed decisions in their daily lives. Collectively, better informed decision making - by citizens and planners alike - improves financial, environmental, and social outcomes for citizens, and helps make urban areas more prosperous, inclusive, sustainable, and resilient.

The Smartest Cities Are Open

The key to making this vision of integrated, yet disparate, systems work together is in the widespread adoption

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and use of open standards.

City models are, by necessity, built from and include diverse data types - including cadastre, as-built plans, LiDAR scans, aerial/satellite imagery, utility data, real-time air quality, traffic, etc - and are populated from equally diverse sources, including from construction firms, government bodies, 3D/data providers, commercial and public/citizen sensors, utility companies, social media, etc. This diversity makes data/service integration difficult because different vendors have, quite naturally, taken different approaches to implementing technical solutions.

An effective way to guarantee the seamless integration of such diverse data is through a governmental requirement for, and the widespread use of, software that complies with open standards. OGC wants to help cities understand the benefits of using free and open standards for describing things in space and time, as well as the best way to use them. This approach is outlined in its white paper, OGC Smart Cities Spatial Information Framework [3].

Open spatial standards maximize spatial interoperability; that is, they support the communication and integration of spatial information, which is not only critical for 'smart solutions' to work properly, but also provides several other benefits, too:

- Through leadership-oriented policy decisions that mandate the use of standards, cities can pave the way for less risky, less expensive, and more effective public and private sector urban technology initiatives in the coming years and decades.
- When cities endorse or prescribe the use of standards, ad hoc initiatives tend to fit together, providing a 'plug n play' experience for developers and authorities alike.
- Major programs tend to be more easily integrated with existing, concurrently developed, and unforeseen future initiatives.
- Standards open up opportunities for local developers to innovate, building on the data & service offerings that their cities have provided.
- Citizens are empowered through great awareness of their urban environments leading to better collective decisions and participative governance.

Recognising this value, OGC has, over time, created a stack of interoperability standards, such as CityGML, IndoorGML, InfraGML, SensorThings API, and others that support smart cities, and has cultivated their evolution and application through a series of initiatives, including testbeds, pilots, and plugfests. One such initiative recently completed its first phase in Europe: OGC's Future Cities Pilot.

OGC's Future Cities Pilot

The OGC Future Cities Pilot aims to demonstrate ways to improve financial, environmental, health, and social outcomes for citizens of cities that use open standards to improve access to information, knowledge, and insight.

Phase 1 of the pilot achieved this through a series of practical demonstrations - scenarios - that can serve as blueprints for other cities to modify and apply in their own context. The four scenarios focused on the following areas: Urban Planning, Urban Flood Mapping, Adult Social Care, and Dynamic Resource Modeling.

Phase 1 was sponsored by: Ordnance Survey Great Britain; Sant Cugat del Vallès (Barcelona), Spain; Institut National de l'Information Géographique et Forestière (IGN), France, and; virtualcitySYSTEMS GmbH, Berlin.

To aid in the adoption of the technologies demonstrated, OGC will release a number of free Engineering Reports, guides for best practices, and modified and updated geospatial standards that resulted from, and document, the Pilot. An overview video is available now at *www.opengeospatial.org/projects/initiatives/fcp1*.

Scenario 1: Urban Planning

This scenario demonstrated how a CityGML-based 3D city model can accept plans from architects and developers - even when delivered in Industry Foundation Class (IFC) format - in order to check conformance with city rules (during the design stage) and to keep the 3D city model current (at the as-built stage).

The city of Rennes, France, mandates the use of BIM models encoded in IFCs for important building projects. During the pilot, a web-based validation tool

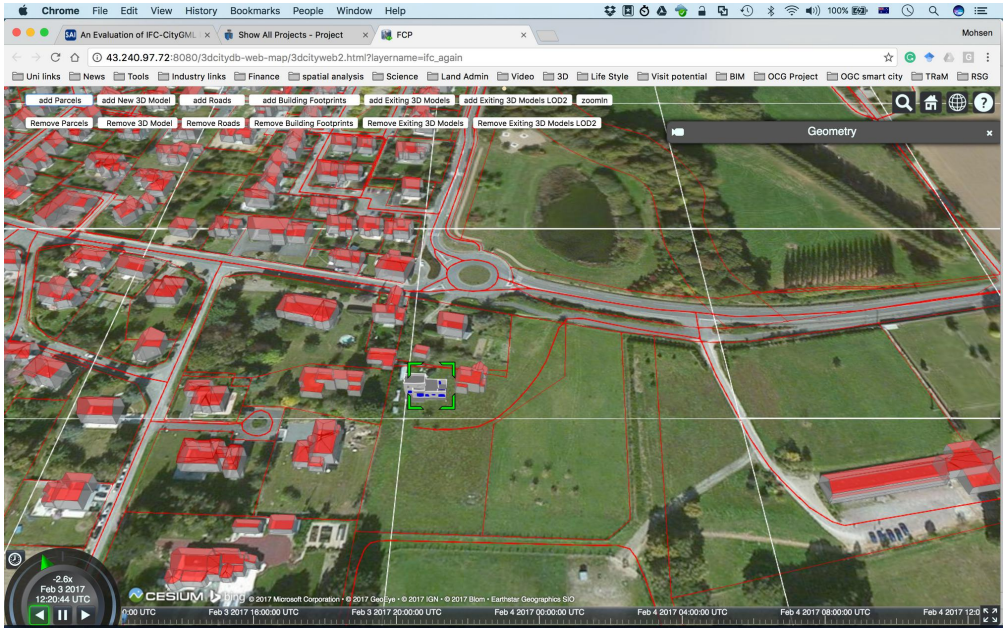

Figure (1). CityGML after conversion from IFC as seen with its surroundings in the 3D-DB-Web-Map-Client

was created and demonstrated that extracts the building information from the submitted IFC files and places it in the city's 3D city model for automated validation against city planning rules, such as restrictions on the building's height, depth, overhang etc. If the design breaches any of these rules, the submitter is immediately notified.

For final verification, an analyst views the building project within the existing 3D city model of the city. Conformant buildings are then added to the 3D city model, using the submitted IFC files to keep the city's 3D city model up-to-date. The original IFC is stored separately for future reference.

Scenario 2: Urban Flood Mapping

A novel use of a 3D city model, as demonstrated in Phase 1, was to use it for more accurate urban flooding maps. Using 3D city models of the Royal Borough of Greenwich, London and Rennes Métropole, France, the Pilot demonstrated how simple it is to create more accurate flood maps than methods based on Digital Terrain Models (DTMs). While not demonstrated by the pilot, it would be possible to also use the semantic information in the 3D city model to identify more 'at-risk' residents and areas, such as nursing homes or hospitals. The pilot demonstrated a new level of interoperability between hydrological flood models and 3D city models. The pilot builds on the previous OGC Testbed 12 results that increased the fidelity of urban flood predictions due to sea level rise and aiding in increased urban resilience.

Scenario 3: Adult Social Care

This scenario demonstrated how OGC's Dynamizer can feed dynamic information from sensors into a CityGML-based 3D city model in order to assess and reduce the risk to residents of social housing during periods of extreme weather.

Prior to the pilot, the Royal Borough of Greenwich, London sought to increase the quality of adult social care by reducing the humidity-a potentially dangerous factor over winter months - in the Borough's social housing.

The scenario demonstrated how the city could use sensors inside public housing to monitor humidity. Properties that display high humidity during the more temperate months could have maintenance tasks assigned to them to reduce the humidity before the winter months put the residents at risk.

At the heart of this scenario is OGC's 'Dynamizer' - a CityGML Application Domain Extension slated to be approved in the CityGML version 3 standard - which allowed previously static properties of objects in the CityGML 3D city model to be overwritten with dynamic information, in this case humidity data coming in via a Sensor Observation Service (SOS).

Scenario 4: Dynamic Resource Modelling

Demonstrating further capabilities of OGC's dynamizer was a scenario based in the commune of Bruzlocated 11 km southwest from Rennes in Brittany,

Figure (2). Visualization of flooding in Rennes using the proposed CityGML encoding draped over 3D terrain and building data (provided by Rennes Métropole/IGN)

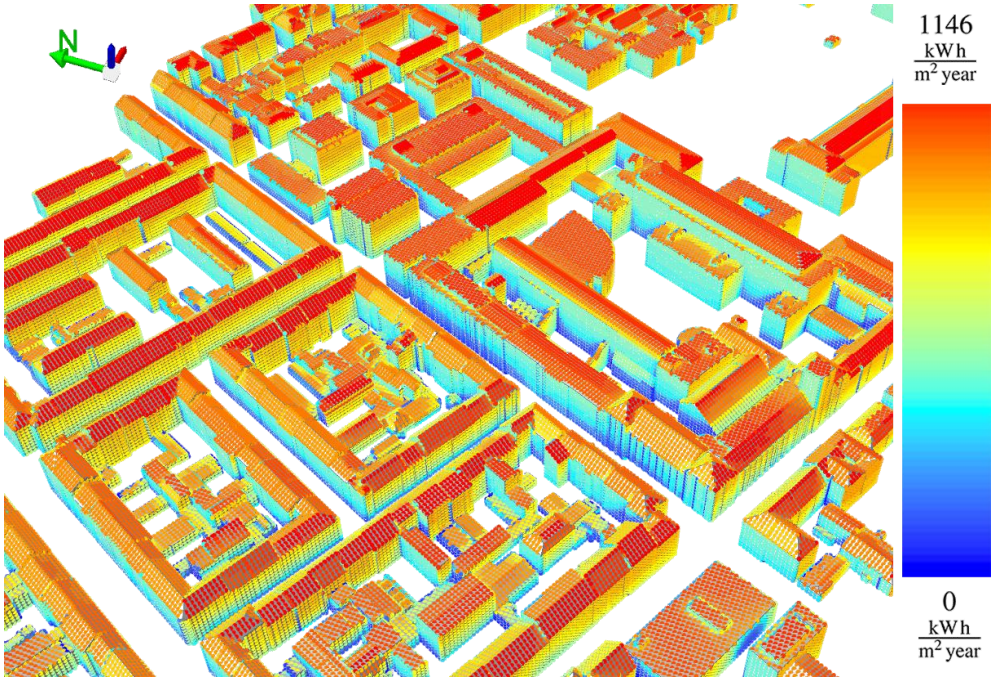

Figure (3). Illustration of yearly global irradiation sum for the building facades, as seen in the web mapping application (image taken from https://mediatum.ub.tum.de/node?id=1348882)

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France (part of Rennes Métropole), that integrated time-dependent properties with a semantic 3D city model - in this case the values of a solar potential analysis for the period of a year.

The CityGML dataset was enriched by solar irradiation values computed by a Solar Potential Analysis tool. The simulation tool estimated the solar power from direct, diffuse, and global sunlight irradiation for individual months of the year. The Dynamizers then allowed the monthly solar irradiation values to be represented within the CityGML dataset, which readying it for visualizations and simulations. For visualization, a web mapping application was developed that allowed interactive exploration of the 3D buildings and solar irradiation values (see figure 3).

Dynamizer: Enhancing City Models With Dynamic Data

Scenarios 3 & 4 both made use of OGC's 'Dynamizer' CityGML Application Domain Extension, which allows the modeling and integration of dynamic properties within semantic 3D city models. As shown in figure 4, the dynamizer serves three main purposes:

1. Dynamizer is a data structure to represent dynamic values in different and generic ways. Such dynamic values may be given by tabulation of time/value pairs; patterns of time/value pairs; by referencing an external file. These values can be obtained from sensors, simulation specific databases, and also external files such as CSV or Excel sheets.

2. Dynamizer delivers a method to enhance static city models by dynamic property values. It references a specific property (e.g. spatial, thematic, or appearance properties) of an object within a 3D city model and provides dynamic values that override the static value of the referenced object attribute.

3. Dynamizer objects establish explicit links between sensor/observation data and the respective properties of city model objects that are measured by them. By making such explicit links with city object properties, the semantics of sensor data become implicitly defined by the city model.

In this way, dynamizers can be used to inject dynamic variations of city object properties into an otherwise static representation. The advantage in using such approach is that it allows only selected properties of city models to be made dynamic. If an application does not support dynamic data, it simply does not allow/include these special types of features.

Dynamizers therefore pave the way for existing 3D city models to move from representing static built environments to becoming models of 'living cities,' enabling decision makers to view their city model not just in space, but also time. This is the continuation of GIS moving from 2D maps, to 3D models, to 4D models, and paving the way for the next step in the evolution of city management: 4D predictive city models.

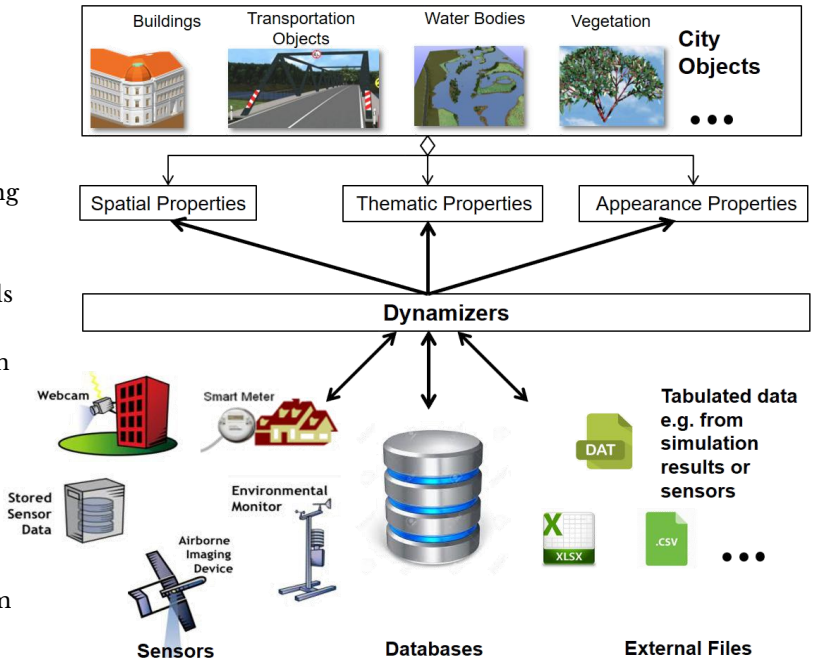

Figure (4). Conceptual representation of Dynamizers (image created by Thomas H. Kolbe, Technische Universität München - Runder Tisch GIS e.V.)

Applying the Outcomes

The Future City Pilot Phase 1 successfully demonstrated how the use of open data standards can provide stakeholders with information, knowledge, and insight that improves financial, environmental, and social outcomes for citizens living in cities, in turn making urban areas more prosperous, inclusive, sustainable, and resilient.

OGC firmly believes that open standards will play a crucial part in the adoption and success of smart applications in the cities of the future, and hopes that the demonstrations that formed Phase 1 of the Future Cities Pilot will serve as a 'blueprint' for other cities around the world to base their own 'smart solutions' on.

Phase 2 of the Future Cities Pilot will continue to focus on the convergence of Geospatial, Civil Engineering, and BIM, and will additionally demonstrate applications for facility management and indoor mapping. Phase 2 will continue to improve the interoperability between IFC and CityGML. If you have a spatial problem that you would like Phase 2 to examine, or if you're interested in learning more about how 3D city models, CityGML, or any of OGC's standards can benefit your city or organisation, contact the OGC at www.opengeospatial.org/contact.

The outcomes of the Future City Pilot, including a summary video, engineering reports, examples of best practice implementations, and more will soon be available for free at www.opengeospatial.org/projects/initiatives/fcp1.

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From the Ground Up: The Importance of Accurate 3D City Reconstruction for Smart City Management and Maintenance

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Smart cities are an increasingly popular goal for the future of urban centers worldwide that strive to thrive on innovation, livability, access to resources and citizen input. The definition and components of a smart city vary among sources, but the overarching vision is of a cohesive center of information for all a city's assets and the movement toward one intuitive city system. There are many cities around the world that have implemented aspects of a smart city: Smart parking systems, utilities smart grid technology and needs-based transit systems. None have achieved all their ambitious goals, but many governments continue to attempt the lofty feat of designing a smart city. Smart city designers are excited by the prospective innovation and sustainability that grows from smart community development. An essential step in creating a smart community is mapping the current assets in their geographic location and using the 3D city reconstruction as a base map for all the subsequent layers of information.

3D City Reconstruction for Smart City Planning & Maintenance

In order to design a smart city, one needs a digital replica of the current city and all its assets. A smart city requires oversight of the many working parts of an urban area from the public transit system to the radio towers on building tops. Smart city curators pull from thousands of sources to form a cohesive picture of their city with the needs of the people within it. Converting an established urban area into a smart city begins with a 3D reconstruction that accurately maps every entity within the city. The precision of this map is extremely important, because it is the foundation of the whole system. Inaccuracies in placement or attribute could potentially trickle into the entire structure or lead to serious consequences in a new building project or in an emergency response situation. An accurate 3D city reconstruction is the most important aspect in smart city management and requires the right software tools for GIS professionals.

Creating an exact 3D city reconstruction requires human interaction and oversight. Automated software tools for creating accurately georeferenced Digital Surface Models (DSMs), point clouds and orthomosaics are becoming increasingly powerful and accurate. However, quality assurance professionals still need post-processing software solutions to meet stringent requirements and to further refine the data.

The DAT/EM® Photogrammetric Suite offers a line of software products that gives the user control over their data. The main products in the software line are Summit Evolution and LandScape. Summit Evolution provides a set of powerful tools for discovering and capturing 3D information from stereo data. The software includes orientation measurement, orthorectification, terrain visualization, contour generation, point translation, DTM collection and many more tools. With LandScape, the user can view and edit 3-dimensional point clouds.

Robust LandScape can operate on very large terrain point clouds such as from LiDAR or SfM.

In the smart city workflow, DAT/EM software accurately measures the height (z) in previously processed orthophotos or point clouds and refines any data that changes over time through expansion or growth of the smart city. LandScape can run together with the Summit Evolution stereoplotter where the point cloud is superimposed over the stereo imagery view. The user can refine the point cloud by creating, modifying and classifying points as well as drawing vectors based on those points while verifying the data with the stereo imagery. LandScape's point cloud editing tools allow easy modification of single points, multiple selected points, all points, or points filtered by vectors or other automatic selection criteria. DAT/EM Summit Evolution and LandScape offer an add-on to collect vectors directly into one or more fully functional companion CAD or GIS programs. Image or point cloud features from a project are digitized directly into AutoCAD®, MicroStation®, ArcGIS®, Global Mapper® or custom programs using the DAT/EM API.

Once the 3D city reconstruction is complete, it is easily uploaded into the CAD or GIS program where smart city managers input layers of information tied to the system via real-time data gathered from sensors and databases throughout the city. As the real communities grow and change, alterations to the virtual 3D city must follow. Since DAT/EM Summit Evolution and LandScape offer the ability to work in tandem with the most common CAD or GIS programs, DAT/EM software allows for easy modifications or updates to existing data in the established system. When there are new buildings constructed or as a set of trees grows, a GIS professional can easily use DAT/EM software to accurately measure the features and add or alter them in an existing CAD or GIS project.

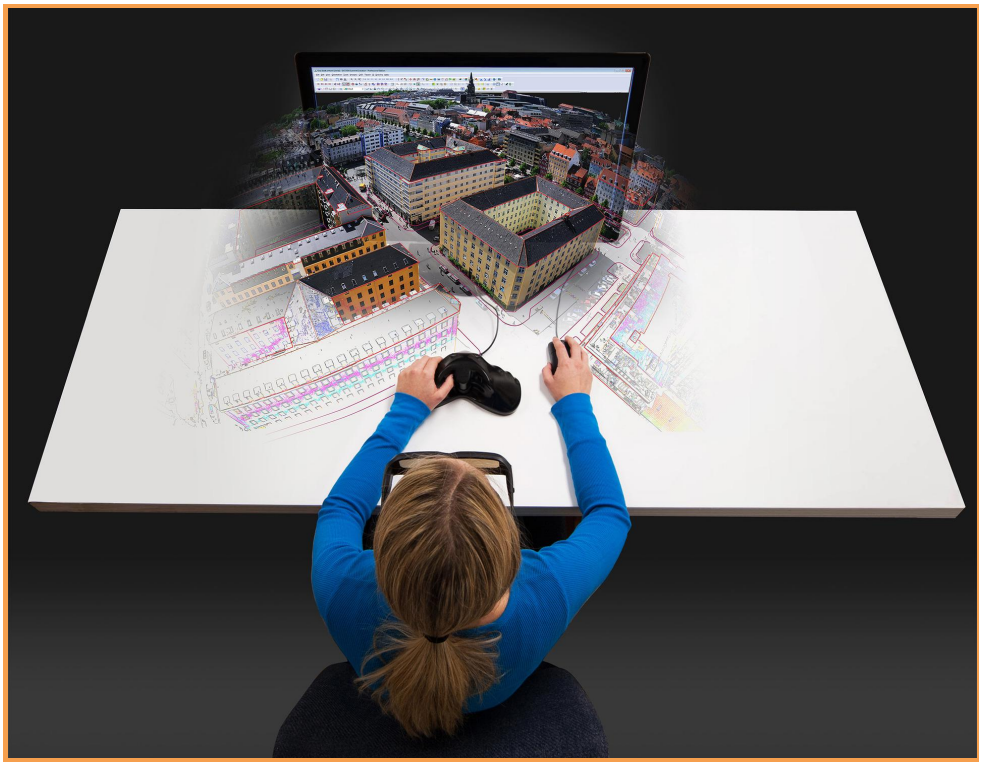

Figure (1). 3D stereo mapping solutions for GIS, Photogrammetry and Engineering

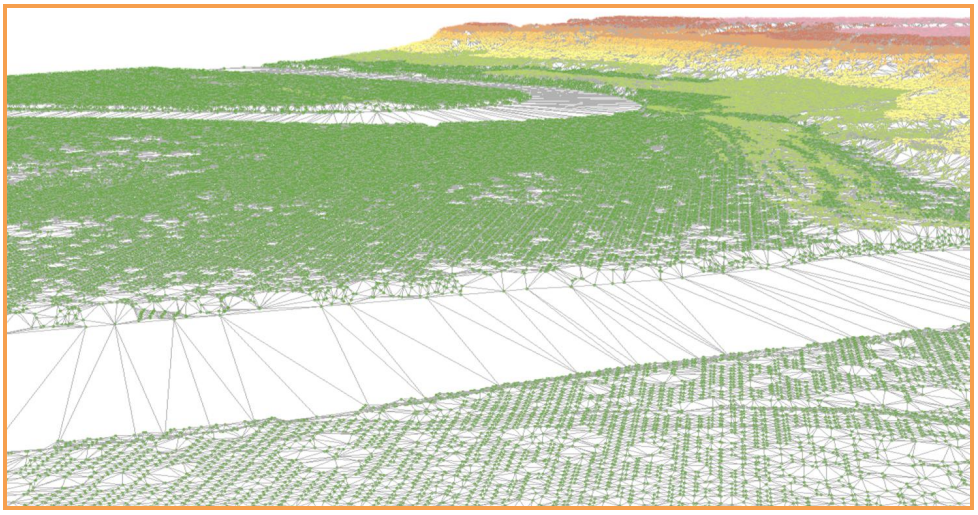

Figure (2). DAT/EM LandScape point cloud editor

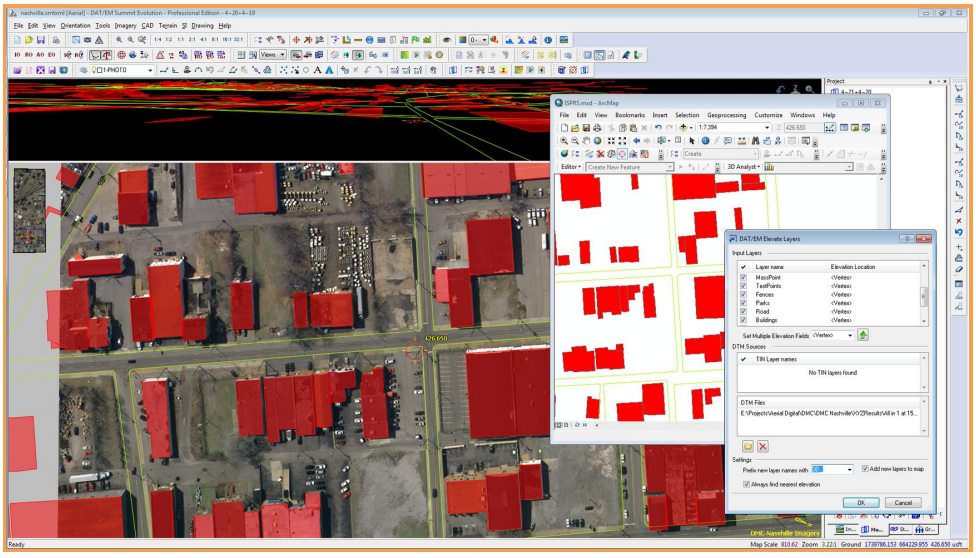

Figure (3). DAT/EM Summit Evolution elevate layers tool shows the layers in ArcMap elevation differences

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DAT/EM Emerging Developments and Smart Cities

Summit UAS

Unmanned Aircraft Systems (UAS) and smart cities will eventually be an inseparable team. A UAS can collect important geo-information and images to measure changes within a city. Safer and often less expensive than suspending someone from a bridge or a building to inspect infrastructure, for example, UAS has the potential for endless implementations into a smart city system.

In the new version available in summer 2017, Summit UAS allows the user to superimpose a point cloud onto stereo imagery in order to view and modify the points that were automatically generated from their UAS processing software. This program contains simple and mobile tools to critically examine and compare UAS data by drawing, viewing, editing and defining features. It can be used to modify surfaces, detect surface changes and classify points. It includes tools to convert point formats, cut points into tiles, colorize points using orthophotos and convert point coordinate values. Summit UAS is the right choice to explore and analyze UAS data and digitize accurately georeferenced 3D vectors.

Point Cloud VR

DAT/EM's newest software ambition combines Virtual Reality (VR) with the latest DirectX 11 technology for extremely fast stereo rendering of point cloud projects with billions of points. Imagine being able to view the desktop and CAD or GIS window, snap to points and surfaces, and digitize 3D vectors while flying around the virtual 3D smart city. The Point Cloud VR technology can allow the viewer to see the entire city and their 3D measurements through immersive eyewear. Still under development, the Point Cloud VR technology is an evolutionary alternative to the 3D screen and will change the landscape of 3D stereo software solutions.

In order to achieve a cohesive urban ecosystem, smart cities need software solutions that provide user control over data, read countless file types and link to several CAD and GIS programs. DAT/EM Systems International offers solutions that meet these criteria and more. DAT/EM Software is an integral tool in 3D city reconstruction for use in smart cities, because of its user control to ensure accurate measurements, ability to integrate with several mainstream programs and promising future developments.

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Figure (4). DAT/EM Point Cloud VR allows the viewer to see the entire city and their 3D measurements through immersive eyewear

Using Pix4Dmapper Pro for Smart City Modeling

Image Courtesy: Gavin Bain

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Pix4D
Lausanne, Switzerland

Smart city development is a popular GIS topics recently. Technology advancement enables the integration of eclectic geospatial information and creates an interactive system anybody can use.

One of the most basic but crucial elements to support planning smart cities in the long-term is collecting geospatial data. It's been decades that photogrammetry has been used for generating 2D and 3D mapping outputs. Along with the surge of drone usage, acquiring geospatial data has become faster and easier, with drastically increased resolution.

Anybody can create a detailed 3D model of their own property with a consumer drone, a mobile applications - Pix4Dcapture, and an image processing software - Pix4Dmapper Pro. Pix4Dcapture allows you to choose the flight plans according to your mapping targets, and it automatically controls the drone and triggers the camera on-board referring to your requirement on overlaps, ground sampling distance, and many more.

Once the flight is completed, you can upload the images directly to Pix4D's cloud for high-speed server processing, or use the Pix4D desktop software to reconstruct the mapping outputs locally and experience more functionalities with a full 3D view in Pix4Dmapper Pro's raycloud – a unique, interactive interface displaying 2D image - 3D reconstruction correlations.

For large-scale mapping plans from official authorities, a BVLOS (beyond visual line of sight) drone system will allow them to cover an entire urban area with one flight. Those drones are normally capable of carrying more payloads, for example a multi-camera rig system. Camera rigs composed of multiple nadir and oblique cameras can obtain more information of the facades with one capture which leads to more photo-realistic 3D models with a shorter data acquisition time.

In Pix4Dmapper Pro, those large-scale meshes can be exported in tiled and layered forms, the LoD (level-of-detail) meshes. The LoD meshes allow the 3D model to be displayed in an efficient way: the browser only loads the 3D mesh within the visual extent and the corresponding level of details corresponding to the zoom level. For example, if you are now viewing the 3D of the city of Lausanne in Switzerland, the browser will load only the extent within your current window, and as you zoom in to a particular region, say, EPFL innovation park, you see the 3D mesh in higher resolution which you would not need when you are viewing the entire city.

Thanks to these technologies, both official authorities and individuals can easily become contributors to a web-GIS platform, providing insanely detailed data of as frequently as required.

About Pix4D

Pix4D is a dynamic and rapidly expanding software company with headquarters in Lausanne, Switzerland, and local offices in San Francisco and Shanghai. The company develops a line of end-to-end mapping solutions which convert images into georeferenced maps and models. Using advanced algorithms based on computer vision and photogrammetry, Pix4D offers survey-grade accuracy, as well as a unique bundle of desktop and cloud processing.

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Reference

https://pix4d.com/product/pix4dmapper-pro/

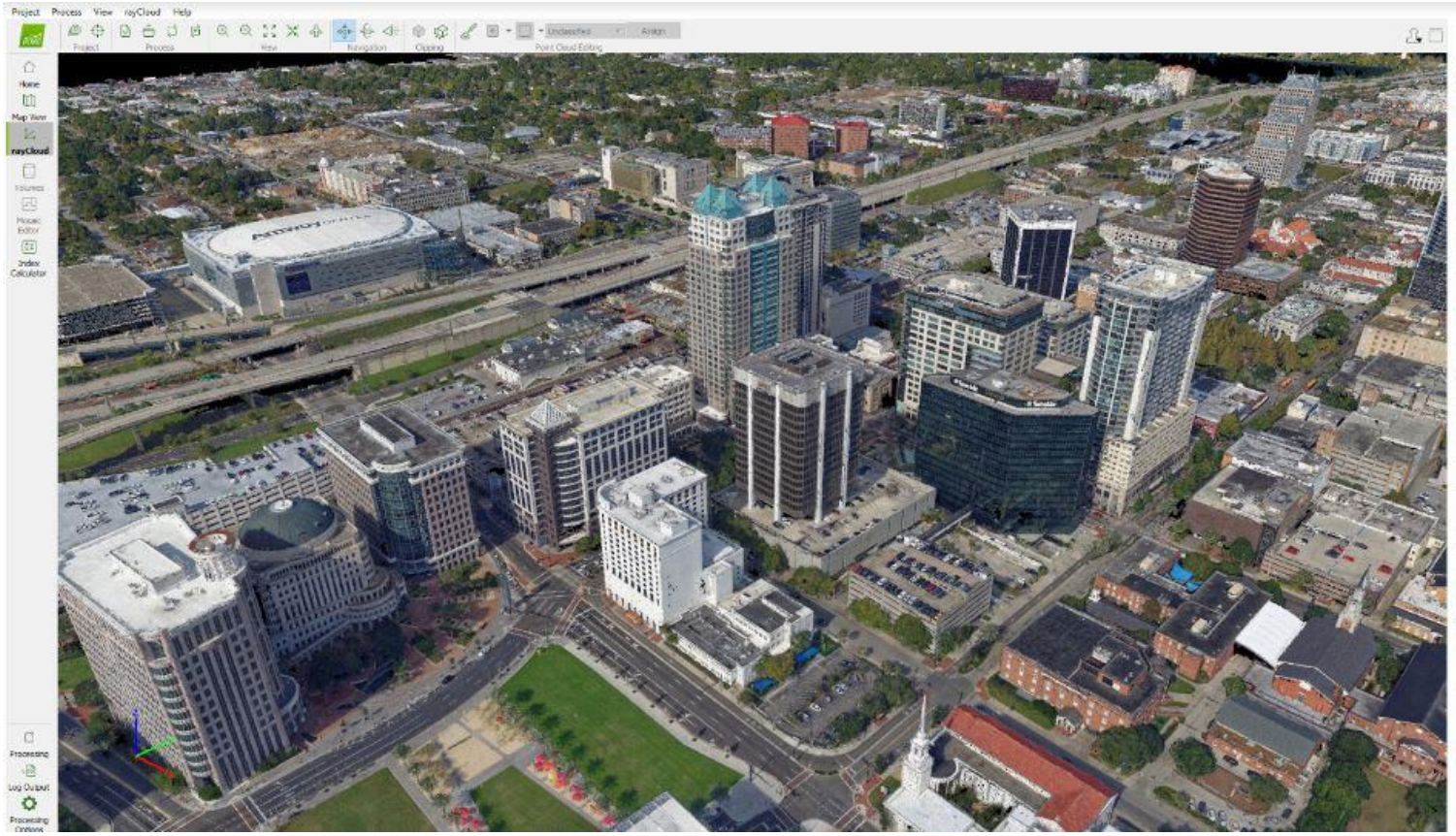

Figure (1). Pix4Dmapper Pro turns your images into highly precise, georeferenced 2D maps and 3D models

PRODUCT WATCH

Business

March 15 - June 15, 2017

JALBTCX Technical Award for RIEGL

RIEGL has received Sebastian Sizgoric Technical Achievement Award at 18thAnnual JALBTCX Airborne Coastal Mapping and Charting Workshop took place in Georgia. JALBTCX is the Joint Airborne Lidar Bathymetry Technical Center of Expertise whose mission is to perform operations, research, and development in airborne LiDAR bathymetry and complementary technologies to support the coastal mapping and charting requirements of the US Army Corps of Engineers (USACE), the US Naval Meteorology and Oceanography Command, and the NOAA.

Leica DX Office - New Utility Post Processing Software

Leica Geosystems, industry leader in measurement technology, released its new DX Office Vision utility post processing software for mapping ground penetrating radar (GPR) data from the field into a CAD drawing in an easy and professional way with minimal training.

Hexagon Appoints New Chief Strategy Officer

Hexagon has announced the appointment of Ben Maslen as Hexagon's Chief Strategy Officer (CSO). As CSO, Mr. Maslen will be responsible for the development and execution of strategic initiatives to support Hexagon's long-term growth and shareholder value. Mr. Maslen has over 15 years of experience in the capital markets industry.

Leica Geosystems Introduces Leica GeoMoS Imaging

Leica Geosystems, industry leader in measurement technology, announced Leica GeoMoS Imaging, a monitoring technology that provides visual information for site documentation, inspection and detection from remote access. With GeoMoS Imaging, an image based extension to the existing GeoMoS monitoring solution, users can continuously stay up-to-date on their monitoring project and make the best decision quickly and easily.

Hexagon Geospatial Honors Canadian Armed Forces Mapping and Charting Establishment

Hexagon Geospatial presented the Mapping and Charting Establishment (MCE), with the Shaping Change award. Announced at HxGN LIVE, Hexagon's annual conference, the Shaping Change Recognition Program is Hexagon's highest customer award, acknowledging organizations that consistently make significant contributions to the businesses and industries they serve.

Harris Corporation Awarded $500 Million IDIQ Contract to Improve Data Search Capability for NGA

Harris Corporation has been awarded a five-year, $500 million ceiling, single-award IDIQ contract from the National Geospatial-Intelligence Agency (NGA) to develop software that will enable NGA analysts and customers to search and retrieve data from intelligence systems faster and more efficiently than ever before. The contract was received during the third quarter of Harris' fiscal 2017.

Airbus and Scanex to Feed Russia's Most Popular Search Engine Yandex with "One Atlas" Satellite Imagery Data

Airbus Defence and Space has signed a 4-year contract with Scanex, the Russian Earth observation company, for access to optical satellite imagery via the One Atlas platform, covering 180 million km² throughout the contract. The 180 million km² of One Atlas data will be integrated into Yandex.Maps, ensuring access to fresh SPOT satellites 1.5m resolution images on a global scale, and Pléiades satellite 0.5m resolution product over cities. One Atlas is a satellite image basemap which covers the earth landmasses with professional grade imagery. Available online 24/7 and refreshed within a 12-month period, One Atlas provides customers with easy access to cost effective, high-quality and homogeneous imagery.

Earth-i Joins USGIF

British satellite company Earth-i has joined the USGIF (United States GeoSpatial Intelligence Forum) and will be expanding its operations in the US. The company already has a number of customers in the US and is in discussions with other high-profile potential partners and customers across North America.

PCI Geomatics Expands Business Partner Network in Central America

PCI Geomatics, a world leading developer of remote sensing and photogrammetric software and systems, announced today it has expanded its business partner network in Central America with the appointment of Mattie Engineers, S.A.

Aeroscout Introduced Their New Scout B-330 UAV Helicopter to the North American Market

Aeroscout has launched their new Scout B-330 UAV helicopter, which is built with a high payload capacity of up to 50 kg (110 lbs), a very long flight endurance (at least 03 hours) and the capability of flying at very high altitudes (up to 3,000m above sea level) in a typical mission scenario. This includes a full autonomous take-off sequence, a mission flight at variable speed, and a landing sequence.

World's Largest Satellite Fleet Owner Joins The Geological Remote Sensing Group

The Geological Remote Sensing Group (GRSG) has expanded its membership once again with the recent news that Planet; the owners and operators of the world's largest commercially-operated fleet of satellites has joined as the Group's latest corporate member.

DigitalGlobe Makes MDA's RADARSAT-2 Data Available on the Geospatial Big Data platform

DigitalGlobe has signed an agreement with MDA's to make RADARSAT-2 data available on DigitalGlobe's Geospatial Big Data platform, GBDX, unlocking new applications made possible by the combination of optical and radar satellite data.

MDA to Provide NOAA with RADARSAT-2 Information for Ice Monitoring

MacDonald, Dettwiler and Associates Ltd. (MDA) has announced that it has signed a contract with the National Oceanic and Atmospheric Administration (NOAA). MDA will provide near real-time information from its RADARSAT-2 satellite that will be used to provide large and small scale ice and snow products, ice forecasting, and other monitoring services. The contract includes one base year and three annual renewal options.

Space Flight Laboratory (SFL) Signs Contract with Dubai Space Centre to Build Environmental Monitoring Satellite

The Space Flight Laboratory (SFL) of Toronto has signed a new contract to provide Dubai-based Mohammed Bin Rashid Space Centre (MBRSC) with a microsatellite for aerosol and greenhouse gas monitoring. SFL's Next-generation Earth Monitoring and Observation (NEMO) platform technology, which incorporates high-performance ground target tracking capability, is a key enabler for the mission.

Airbus Creates New Commercial Drone Services Start-up "Airbus Aerial"

Airbus has launched its U.S. base and operations of a new commercial drone start-up, named Airbus Aerial. With bases both in the U.S. and in Europe, Airbus Aerial's initial business will focus on developing new imagery services. These services will leverage the best software and aerospace technology from across the globe to offer actionable data and analysis of information provided by drones, satellites, high altitude aircraft and other sources.

PCI Geomatics Now a Planet Ecosystem Partner

PCI Geomatics has become a Planet Ecosystem Partner. PCI Geomatics has worked closely with Planet sensors since the RapidEye Constellation, and continues to add support for the new PlanetScope data format. Geomatica 2017, released recently, includes atmospheric-correction support for PlanetScope imagery. In addition, with the Geomatica API, customers can access Planet.com imagery and integrate the data into operational workflows leveraging more than 550 algorithms available in Geomatica and GeoImaging Accelerator (GXL).

30 Years of Success Leads DAT/EM to Virtual Reality and UAS

DAT/EM is investing in UAS and Virtual Reality software development to serve photogrammetric, engineering and GIS professionals. The DAT/EM Point Cloud VR technology will be an evolutionary alternative to the 3D screen and will change the landscape of 3D stereo software solutions. Summit UAS is an emerging product that offers tools to locate meaning in the orthophoto and point cloud created by popular UAS processing software tools.

Airware Accelerates Enterprise Growth With Key Executive Hires

Airware has announced several new additions to its executive team and board of directors. Yvonne Wassenaar joins the company as Chief Operations Officer, Rick Baker as VP of Global Sales, Andrew Mackles as VP of Product, and David Arsenault as VP of Engineering. Airware, which continues its growth as the leading enterprise platform for aerial business intelligence, has added these key leaders to expand the market category.

PlanetObserver Announces Release of PlanetSAT Global Imagery Basemap Version #2017

PlanetObserver has announced the release of PlanetSAT Global #2017, the unique seamless and global imagery basemapprocessed with fresh and cloud-free satellite images. Processed with current Landsat 8 source data for 40% of the global and more than 300 major urban areas across the world, PlanetSAT Global version #2017 is the high quality natural color imagery basemap that offers detailed and up-to-date geographic information, perfect for 1:50,000 scale mapping.

Pix4D Expands R&D in Berlin

Drone-mapping software developer Pix4D announces the opening of a research and development office in Berlin, Germany. The office in Berlin will continue to develop vertical applications and enhance Pix4D's strength in low-level computer vision and photogrammetry.

BAE Systems Enhances Geospatial Software by Adding Movement Intelligence Capabilities

BAE Systems has integrated capabilities called Movement Intelligence, or MOVINT, into its Geospatial eXploitation Products™ (GXP®) line of software, helping analysts to more easily identify intelligence threats using motion sensors. These new capabilities, which include complex multi-tracking analytics, interpret movement and activity from video, radar, and other types of motion sensors, enabling analysts to efficiently track people, vehicles, and other objects of interest.

exactEarth Launches Revolutionary Global Real-Time Maritime Tracking and Information Service

exactEarth Ltd has announced the launch of exactView™ RT powered by Harris ("exactView RT") – the world's first global, persistent real-time Satellite AIS service. This revolutionary capability is expected to enable a wide variety of new service capabilities for the global maritime community and to contribute strongly over the next 20 years to the improvement of maritime safety, commerce, navigation, environmental management, and security.

senseFly Corridor Solution Boosts Efficiency of Linear Mapping Projects

senseFly Corridor, a new platform enhancement that vastly simplifies the drone (UAS) mapping of linear infrastructure and sites. senseFly Corridor is a combined hardware and software solution, which is optimised for any eBee Plus drone that carries a senseFly S.O.D.A. photogrammetry camera.

Excellence in space – 10 years of TerraSAR-X

Designed to return unique images of the Earth for five years, the German radar satellite TerraSAR-X has outdone itself. The satellite has been in operation for twice that time – and there is still no end in sight to its service. Since its picture-perfect launch on 15 June 2007 from the Russian cosmodrome in Baikonur, the German Aerospace Center (Deutsches Zentrum für Luft- und Raumfahrt; DLR) TerraSAR-X mission has exceeded all expectations.

Facebook Launches Disaster Maps to Help Communities Recover and Rebuild

Facebook Newsroom - Facebook is introducing disaster maps that use aggregated, de-identified Facebook data to help organizations address the critical gap in the information they often face when responding to natural disasters. Many of these organizations worked with us to identify what data would be most helpful and how it could be put to action in the moments following a disaster.

EarthSense Systems Computer Models Impact of Trees on Urban Air Pollution

Software developed by EarthSense Systems has been used to assess how trees impact on urban air quality, called FluidAir, the state of the art solution uses Computational Fluid Dynamics (CFD) to simulate the flow and dispersion of pollutants within complex 3D surroundings, such as city streets. Scientists, who specialise in air quality monitoring solutions, integrated road, building and tree data to create an accurate 3D model of the Marylebone area of London. Recorded pollution levels were combined with traffic flow data from the Department for Transport and meteorological information from London City Airport, to calculate pollution concentrations.

AAM's Innovative 3D Analysis Tools Assist Development of Australia's Largest Solar Farm

AAM has proudly played an integral role in ensuring the success of Solar Q's development application to build Australia's largest solar farm in Gympie, Queensland. AAM provided foundation spatial data and developed the required 3D analysis tools to assess the viability and potential success of this project. Utilising extensive experience and expertise in aerial surveying, AAM has captured new LiDAR and aerial imagery as the foundation datasets for the basis of project analysis. This data was used to build a detailed model of the landscape and built environment – a key input in assessing the potential impact of the proposed development.

World Bank in Partnership with AEDB Launched a Series of New Solar Potential Maps for Pakistan

The World Bank, in partnership with the Alternative Energy Development Board (AEDB) has recently launched a series of new solar maps for Pakistan in support of the efforts to increase the deployment of renewable energy in Pakistan. These new solar maps will definitely ensure qualified improvement to harness the tremendous solar potential and support to the efforts to increase the deployment of renewable energy in Pakistan.

Sharjah Rolled out Geo-address Across the Emirate

United Arab Emirates - The Sharjah Urban Planning Council (SUPC) has started a full rollout of a postal code system which gives areas unique addresses linked to the geographical information system (GIS) as per international standards. Using 102,076 signboards and the postal code proposed by the Emirates Post Group, the new system ensures precise identification of destinations. The system also aims to raise the efficiency of postal services in the emirate so that all segments of society, including emergency services, and other service sectors, can now easily identify locations and destinations via the city's streets and roads.

China Unveils Results of First National Geoinformation Survey

In a press briefing, the State Council Information Office has unveiled that China boasts a total of 7.56 million square kilometers of vegetation cover, while buildings cover 153,000 square kilometers of land. The numbers are part of the 770-terabyte results of China's first national geoinformation survey, which collects basic information about the country's natural resources, such as their location, range and area.

Belarus, Sweden to Share Experience in GIS Development

Belarus and Sweden will exchange experience in geographic information systems (GIS) development, BelTA learned from Belarus' State Property Committee. The Swedish specialists will come to Belarus to share experience in GIS development according to the project on modifying the system of urban development and territorial resource management in Belarus. The parties will also discuss the matters related to the application of GIS in the projects and activities of the National Cadastral Agency.

At Least 15 Russian Remote Sensing Satellites to Operate by 2020

Sputnik - Russian President Vladimir Putin stated that the remote sensing technologies must be used to boost the Russian defense and security, develop the economy and social sphere, and increase the quality of the state's governance. Russia needs to build up the orbital grouping with at least 15 spacecraft operating in the orbit by 2020 to provide remote sensing of Russia and the whole world.

Currently, a group of eight Russian remote sensing satellites is in orbit around the planet. He pointed out that the demand for services linked to the use of data obtained by remote sensing was significantly increasing.

NASA Scientists Developed Technology to Help Drones Land Safely

NASA scientists have developed a new software that will help drones automatically spot the best places to crash-land in case of an emergency, without hurting anyone on the ground. During eight test flights, the technology successfully spotted safer landing sites such as swamps or drainage ditches to crash instead of cars or people on the ground.

Google Maps Adds Real-time Location Sharing of Trips

Google Maps has unveiled a new real-time location sharing feature that allows dear ones to share their location with your Google contacts, or even share with friends and family by sending a link to your favorite messenger apps. Whenever we share our location, the people we've chosen to share with will see us on their map. It will notify us with an icon above the compass on own map reminding us that we're actively sharing our location.

Taxation Authority in Indonesia Selects SuperPad 3.3 to Collect Data

With the assistance of Supergeo's partner in Indonesia, DataScrip, the regional offices of Indonesian taxation authority recently selected SuperPad 3.3 as the mobile GIS software for spatial data collection. Under the Ministry of Finance, the Directorate General of Taxes (DGT) is the national taxation administration of Indonesia, which the core mission includes researching, implementing, monitoring, and evaluating the tax policy.

FICCI Report Highlights Importance of Geospatial Technologies in India

A report released by the Federation of Indian Chambers of Commerce and Industry (FICCI) suggested that the need-based pull for usage of geospatial tools and data has begun. As India endeavors to achieve its developmental goals, the multifaceted capabilities offered by geospatial technologies will play a crucial role in information management in the future. FICCI believes that it is mandatory to implement geospatial technologies for effective decision-making and better governance.

ISRO to Set up Geospatial Outreach Research Facility in Hyderabad, India

The Indian Space Research Organisation (ISRO) will set up an outreach facility in Hyderabad, Telangana and it is a matter of pride for the state to be given this research centre. It will propel the state's image as a leader in geospatial technology.

3D Map Tools Launched for Maltese Islands

The 3D map tools cover the whole of the Maltese islands and up to one nautical mile offshore. Users of the tools can fly around the data and view their zone of interest in new ways, including newly-published marine zones, such as underwater artifacts. For example, they can see sea-level rises and ancient coasts around the Maltese islands. The tools can also be used to measure and calculate heights, distances, and areas.

LiDAR

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Washington State Department of Natural Resources Published New Landslide Mapping Standards Using LiDAR

The Washington State Department of Natural Resources (DNR) has published standardized methods for mapping landslides in Washington using LiDAR. Geologists from the Washington Geological Survey, a division of DNR, created the new protocol to ensure the many agencies that map landslides do so with consistent data that can be easily catalogued. The Washington LiDAR Portal is designed to allow for easy access and download of publically available LiDAR data. Mapped data will be posted on the survey's Geologic Information Portal. Earlier this year, DNR launched an online LiDAR database to provide more information on geologic hazards impacting Washington communities.

Orbit GT and LiDAR USA Upgrade ScanLook and Snoopy Interoperability

Orbit GT and LiDAR USA have significantly upgraded their Scanlook and Snoopy interoperability. Improved interoperability has increased reliability and processing speed, which results in a faster turnaround for a project at large. While ScanLook systems make it easy to capture the data in the field and generate nice point clouds, the end client wants GIS or CAD data. Orbit GT offers a very nice experience take to extract this information.

3D Mapping to Investigate Traffic Accident Cases

Singapore – The traffic police officers from the Fatal Accident Investigation Team (FAIT) of Singapore are event of accident site using 3D mapping technology to solve and investigate traffic accident cases. They also have Faro 3D Scanner (LiDAR instrument), which allows them to scan and map out a 3D image to reconstruct the site of a fatal accident. team has been using the Faro scanner since late last year. A crime scene technician took photographs of the scene and used the Faro scanner to capture a 360- degree view of the accident site.

Velodyne LiDAR Announces New "Velarray" LiDAR Sensor

Velodyne LiDAR Inc. has announced the release of its new fixed-laser, solid-state Velarray™ LiDAR sensor, a cost-effective yet high-performance and rugged automotive product in a small form factor. With the Velarray sensor, which can be seamlessly embedded in both autonomous vehicles and advanced driver-assist safety (ADAS) systems.

Bluesky LiDAR Maps Used to Monitor the Spread of Deadly Tree Disease

Laser maps collected by airborne mounted sensors have, for the first time, been used to successfully segment individual trees affected by the deadly Larch tree disease. The laser scanning surveys (LiDAR) were undertaken by aerial mapping company Bluesky and used to model tree canopy height models as part of a wider study to prove the effective use of the technology for disease identification and monitoring. Using the Bluesky LiDAR data, sample plots of two study sites in Wales were assessed using different segmentation algorithms. A series of raster format CHMs were computed at different pixel sizes and tested across a range of plantation larch plots in order to perform ITC delineation.

Cepton Launches its High-Performance LiDAR Solutions

Cepton Technologies, Inc., a provider of 3D sensing solutions for automotive and industrial applications, has announced the launch of its HR80T long-range and HR80W wide-angle LiDAR. Cepton's HR series drives automation forward by bringing perception and 3D mapping to smart machines with higher resolution and longer range imaging at dramatically lower costs.

Bentley Systems Advances Reality Modeling to Extend the Scope of Engineering and Surveying Value

Bentley Systems new ContextCapture offerings for reality modeling that increase joint opportunities in surveying and engineering. ContextCapture capabilities now include cloud processing services, a mobile app, and photo planning for Bentley's applications. ContextShare extends Bentley's ProjectWise connected data environment to securely manage, share, and stream reality meshes, and their input sources, across project teams and applications. Navigator Web is a new web application that delivers high-performance streaming of very large reality meshes through the browser to desktop or mobile devices.

3D at Depth and iXblue Develop INS Aided LiDAR Data Collection Technology for Subsea Applications

3D at Depth has announced, the success of a recent trial using Inertial Navigation System (INS) aided LiDAR data collection from a moving platform. The project was jointly sponsored by TechnipFMC and 3D at Depth, LLC with inertial navigation partner iXblue. Overall, the system incorporates 3D at Depth's SL1 subsea LiDAR system, a Phins INS coupled with a 1200 kHz DVL, iXblue RAMSES and a 3D at Depth Subsea FiT (fiber/time Multiplexer).

AIOFM's Rapid Online Monitoring LiDAR System Steps into Its Industrialization

Anhui Institute of Optics and Fine Mechanics (AIOFM), Hefei Institutes of Physical Science, Chinese Academy of Sciences, announced they have successfully developed a rapid online LIDAR system for spatial-temporal detection of atmospheric fine particle and ozone, and which is to step into its industrialization.

GNSS

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Trimble RTX Corrections Gets Boost in Performance from the Galileo Constellation

Trimble announced that its Trimble RTX℠ -based correction services now support the Galileo constellation. As a true five-constellation technology that uses GPS, GLONASS, BeiDou, QZSS and now Galileo satellites, Trimble RTX delivers improved real-time positioning performance to its users worldwide. With accessibility to the Galileo constellation, users now have visibility to more satellites, which can be advantageous for extreme latitudinal positions or in environments where line-of-sight may be limited. Surveyors, mapping and GIS professionals now have a more versatile and robust solution.

Japan Launches Satellite Carrying Its Own Version of GPS

Japan has recently launched a rocket carrying a satellite with a local version of the US global positioning system (GPS) (Quasi-Zenith Satellite System), which is expected to increase the precision of location information used in smartphones and car navigation system. Japan launched an H-2A rocket which carries the satellite called "Michibiki No.2" from a space center in Tanegashima, southern Japan. Once the four satellites are in orbit, at least one satellite will be flying over Japan for eight hours per day.

New Leica Zeno GG04 Smart Antenna Increases Access to GIS, Enhances Tracking Performance

Leica Geosystems has announced the launch of new Leica Zeno GG04 smart antenna, enabling a flexible solution to improve mobile devices' GNSS accuracy with Real-Time Kinematic (RTK) and Precise Point Positioning. Paired with the Zeno GG04, any Zeno or third party mobile device with Android or Windows OS can now collect highly-precise positioning data with Leica Geosystems' GNSS technology and industry-leading *555*-channel tracking performance.

Hemisphere GNSS Announces New Vector™ Eclipse™ H328 OEM Positioning and Heading Board

Hemisphere GNSS announces the Vector Eclipse H328, the next offering in a line of new and refreshed, low-power, high-precision, positioning and heading OEM boards. The multi-frequency, multi-GNSS H328 is an all signals receiver board that includes Hemisphere's new and innovative hardware platform and integrates Atlas® GNSS Global Correction Service. It offers true scalability with centimeter-level accuracy in either single frequency mode or full performance multi-frequency mode.

Product Launch

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GIS & EO

University of Guelph: Whitebox Geospatial Analysis Tools for Processing Geospatial Data

The Whitebox Geospatial Analysis Tools (GAT) project began in 2009 and was conceived as a replacement for the Terrain Analysis System (TAS). Whitebox GAT was intended to have a broader focus than its predecessor, positioning it as an open-source desktop GIS and remote sensing software package for general applications of geospatial analysis and data visualization.
Whitebox GAT is intended to provide a platform for advanced geospatial data analysis with applications in both environmental research and the geomatics industry more broadly.

Esri Announce the Release of ArcGIS Maps for Adobe Creative Cloud!

The ArcGIS and Adobe® integration opens GIS up to an expanding group of design- and communications-focused users, who can now make direct use of spatial information. Cartographers can have the best of both worlds, too, since they can now work in Adobe and ArcGIS simultaneously. ArcGIS Maps for Adobe Creative Cloud is available via the Adobe Add-ons Marketplace to both Mac and PC users for Adobe Photoshop version 16.1 and newer and Adobe Illustrator version 19.2 and newer.

Supergeo Releases the Latest Update of SuperGIS Desktop 3.3

In this latest version SuperGIS Desktop 3.3, Supergeo's product team has improved and enhanced particular functions for a smoother user experience. For example, when you are processing the data, the selected features will be automatically saved. Therefore, if the work is not finished, and you have to open the project file again, there is no need to re-select the features. Besides, in the past, the information would not be completely recorded when converting the DXF file. This problem has also been fixed. Finally, this version strengthens the support for XLSX format, which enables users to directly check and use the value obtained by Excel formulas in SuperGIS Desktop.

PDF3D Release 3D PDF Conversion Plugin for ParaView 5.3 Users

PDF3D have released the latest update to their PV+ plugin, V2.14, to allow users of the award-winning ParaView visualization application to convert 3D data into interactive, animated 3D PDFs. PDF3D's latest PV+, V2.14, combines V5.2 and V5.3 of Kitware's ParaView visualization application features, making it compatible with a range of new visualization techniques, which are particularly useful for those working with fluid dynamics, climate data and LiDAR Point Clouds.

Land Viewer: On-the-Fly Earth Observation Imagery Analytics in Your Browser

Data Scientists, GIS Engineers and Software Developers from California-based company EOS have recently launched the most advanced cloud based tool to allow users, journalists, researchers, and students easily search and analyze huge amounts of the most recent earth observation data. With Land Viewer users are able to explore satellite imagery, from Sentinel 2 and Landsat 8 satellites stored on Amazon Cloud platform, apply search filter by date of image acquisition, cloudiness or sun elevation, analyze, download and share with others.

Esri ArcGIS 10.5 Leading Platform in OGC Compliance

Esri has announced that it has received over 30 compliance certificates from the OGC, for its ArcGIS 10.5 platform. These certificates of compliance cover a wide variety of OGC implementation standards, which allow customers to work more collaboratively, especially within the GEOINT community.

Global Mapper 18.2 Released with New 3D Digitizing Functionality and Support for Connecting to Amazon Web Services

Blue Marble Geographics has announced the availability of Global Mapper version 18.2. This latest upgrade to the version 18 release includes new 3D digitizing functionality, support for Amazon Web Services, improved multiview display options, and several new supported data formats. As with all Global Mapper releases, the culmination of the software's ongoing development process brings with it functional and performance improvements throughout all aspects of the application.

Geodesy

New Open-source Software Enhances Satellite Geodesy Capability

Scientists from Geoscience Australia have released new software that will improve the ability to process big remotely-sensed satellite datasets. The new "PyRate" software being presented this week at the European Space Agency's Fringe 2017 workshop in Helsinki, Finland is open source Python software for collating and analysing Interferometric Synthetic Aperture Radar (InSAR) displacement time series data.

The new software builds upon a Python-language translation of the University of Leeds' π-RATE software. This provides a portable and free solution that is scalable from desktop machines for small area processing to large multi-node super computers for conducting regional or continental-scale analyses. The new software will enable Geoscience Australia to scale up its InSAR processing capability to run on the Australian National University's National Computational Infrastructure facility super computer. It will also support other scientists to make use of the ever expanding national archive of Sentinel-1 SAR data available via the Copernicus Australia data hub.

NEWS DIGEST

Drones/UAV

Pix4D Announces Release of Pix4Dmapper Desktop v.3.2

Pix4Dmapper Desktop 3.2 release, has great advancement in stability and usability – Upload desktop projects to cloud is now 10x faster; Camera parameter correlations are displayed in the quality report for easier troubleshooting and assessment; New key output: tiled level-of-detail mesh is available in osgb and Esri formats; and the software is now available in Russian Language.

Icaros Releases Version 5.0 of OneButton™ Drone Image Processing Software

The 5.0 release contains a significant number of major new features and hundreds of other improvements, including a new 2D and 3D map and model viewer. Icaros developed the OneButton family for geospatial end users to easily and automatically generate precise, fully orthorectified 2D maps and 3D models from frame-based aerial imaging systems. Originally engineered for manned aircraft sensors, the OneButton software has been modified to accommodate the unique collection conditions of unmanned aerial systems (UAS).

PrecisionHawk Launches Free PrecisionMapper Software for Drone Mapping

PrecisionHawk, a leading commercial drone and data company, has opened access to its professional mapping and analytics software, PrecisionMapper, for free. By eliminating the cost barrier, operators have the flexibility to 'bring their own drone' and consistently generate value from aerial information. Operators can quickly and easily upload imagery collected from a drone to PrecisionMapper. Using GPS information embedded within images, the software automatically stitches together a complete map, viewable in both 2D and 3D.

LiDAR

Teledyne Optech Polaris – Next-Generation Terrestrial Laser Scanner

Bridging the gap between indoor and outdoor scanners, the Polaris can survey targets up to 1600 m away in long-range mode or collect up to 500,000 measurements per second in short-range mode. Its 360°×120° field of view (FOV) captures indoor panoramas from a single site, while its rugged design, light weight, and swappable batteries let it travel deep into the field.

Orbit GT Releases Mobile Mapping Content Manager v17.1 with Cloud Upload Feature

Orbit GT releases v17.1 of its industry-leading Mobile Mapping Content Manager product including the all-new Upload to the Cloud feature. It is available for download from the website (www.orbitgt.com). Other new features are various updates and enhancements on EPSG support, British National Grid OSTN15 support, inverse co-ordinate systems support for WMS and WFS protocols, georeferencing of Point Clouds, and various usability improvements.

FARO® Introduces PointSense 18.0 Suite for Construction and Architecture

FARO® has announced the availability of the FARO® PointSense 18.0 software suite. This robust software platform evolution delivers seamless integration into the latest 2018 AutoCAD® and Revit® design tools, a better user experience, improved software handling and enhanced efficiency in processing software data.

Mobile Apps

ISRO Develops "Solar Calculator" Android App

An android App for the computation of solar energy potential has been developed by Space Applications Centre (SAC), ISRO, Ahmedabad at the behest of Ministry of New and Renewable Energy, Govt. of India. It is a very useful tool for installation of PV solar panels for tapping solar energy. The App provides monthly / yearly solar potential (in kWh/m2) and minimum / maximum temperature at any location. It also displays the location on the satellite image and provides azimuth / elevation angles as well as day length over different time periods in a year.

Global Mapper Mobile Now Available for Android Devices

Blue Marble Geographics has announced the availability of a beta release of the Android version of its Global Mapper Mobile app. Mirroring the capabilities of the iOS version, Global Mapper Mobile for Android offers powerful GIS data viewing and field data collection functionality utilizing the mobile device's GPS capability to provide situational awareness and locational intelligence for remote mapping projects.

SAR and 40cm Optical Satellite Imagery Tasking With SpyMeSat Mobile App

Orbit Logic has announced that SpyMeSat mobile app users can now send new tasking requests to the KOMPSAT-5 Synthetic Aperture RADAR (SAR) imaging satellite and KOMPSAT-3A high resolution (40cm) optical imaging satellite. KOMPSAT-5 is the first SAR satellite available for tasking in SpyMeSat and KOMPSAT-3A is now the highest resolution satellite available for tasking in SpyMeSat.

Launch of ARMADA™ Smartphone-based Hyperspectral Remote Sensing for Agri-science Applications

Galileo Group, Inc. announces the launch of the ARMADA™ smartphone-based hyperspectral system for agri-science applications and research, opening the way for generational improvement capabilities in phenotyping, disease detection and experimental plant characterization and modeling.

GNSS & Surveying

Trimble Business Center v3.90 Now Available

Trimble Business Center (TBC) provides users with the capability to efficiently edit, process, and adjust geospatial data and create deliverables with confidence. Some of the New features/updates included in TBC v3.90 are creation, editing, and transforming linestrings, polygons, and dynaviews in the Cutting Plane View, Orthophoto creation from point cloud data and Ortho-Rectified Image creation from Trimble VISION or SX10 panorama images,etc.

Sokkia Introduces New GCX3 Integrated Receiver

The new Sokkia GCX3 features the new second generation POST2™ (Precision Orbital Satellite Technology) integrated antenna – adding BeiDou, Galileo, SBAS, QZSS, and GAGAN satellite tracking in addition to GPS and GLONASS to ensure the best positioning availability.

Hemisphere GNSS Announces Vector™ VR1000 Rugged GNSS Receiver

Hemisphere GNSS, Inc. has announced the release of the Vector VR1000 Rugged GNSS Receiver. Designed specifically for harsh machine control environments, the multi-frequency, multi-GNSS receiver offers RTK positioning and high-precision heading.

Trimble's New Total Station Provides Millimeter Accuracy

The Trimble S5 Ti-M total station was specifically designed as a powerful, yet cost-effective solution scalable for monitoring projects of any size, from short-term jobs to multi-year construction operations. The S5 Ti-M new features Trimble's FineLock™ technology provides a pointing precision of less than 1 millimeter at a distance of 300 meters. When integrated with Trimble's 4D Control software, the S5 Ti-M is an even more powerful optical tool capable of handling the most complex monitoring applications.

New Data Resource

Survey of India Launches Web Portal to Download Maps

The Survey of India (SOI) has launched a website giving people the access to download 3,000 maps prepared by the SOI but made Aadhaar mandatory for the purpose. Using Aadhaar number, a person can download three maps every day from the portal: http://soinakshe.uk.gov.in/

ArcticDEM Project Has Now Mapped More Than 65 Percent of the Arctic

ArcticDEM Release 5 represents the largest release of elevation data to date, more than doubling the number of available strip DEMs, mosaic tiles and geographic coverage area of all releases thus far combined. This release is the largest yet, mapping 7.5 million square kilometers of the Arctic. With the previous four DEM releases, more than 24.6 million square kilometers of the Arctic has been mapped.

Hawaii Launches Geospatial Data Portal

The state Office of Planning's Hawaii Statewide GIS Program launched a new Geospatial Data Portal, which provides streamlined access to hundreds of data layers, topographic maps, imagery and developer features. The portal includes support for non-geospatial data files; an overall cleaner look and feel; the optimized layout of data attributes and tables; API tools for developers to create filtered data set URLs for apps development; and other improvements that facilitate site and content management.

Swiss Geospatial Data Now Available as Linked Data

The Swiss geoportal has started to publish geospatial data as linked data. This geoportal is harvested by the national Swiss Open Data portal, which is in turn harvested by the European Data Portal. With this development, more context is provided to the geospatial datasets, and data can be found and re-used more easily.

Geo Events

2-6 July
Cambridge Conference Mapping Nations: The Next Decades
United Kingdom
https://www.cambridgeconference.com/

5-7 July
AGIT 2017
University of Salzburg, Interfaculty Department of Geoinformatics, Salzburg, Austria
https://www.agit.at

10-14 July
Esri User Conference 2017
San Diego, CA, U.S.A.
http://www.esri.com/events/user-conference

10-14 July
Geo4Africa Summit 2017
Kampala, Uganda
http://geo4africa.com

4-5 September
INSPIRE Conference 2017
Kehl, Germany
http://inspire.ec.europa.eu/conference2017

6-8 September
InterDrone 2017
Rio Hotel and Casino, Las Vegas, NV
http://www.InterDrone.com

11-15 September
56th Photogrammetric Week '17
Stuttgart, Germany
http://www.ifp.uni-stuttgart.de/phowo

11-14 September
SPIE Remote Sensing 2017
Warsaw, Poland
http://spie.org/spieremotesensing

10-12 October
INTERGEO 2017
Berlin, Germany
http://www.intergeo.de

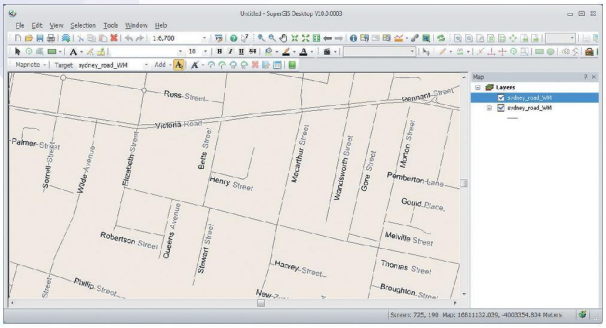
10-12 October
Bentley Systems 2017 Year in Infrastructure Conference
Singapore
https://www.bentley.com

16-19 October
FROM IMAGERY TO DIGITAL REALITY: ERS & Photogrammetry
Israel
http://conf.racurs.ru/conf2017/eng/

NEWS DIGEST

Advanced Map Design and Styling in SuperGIS® Desktop

In addition to general mapping general mapping functions, SuperGIS Desktop equips with the following features that enable users to create more beautiful and more informative maps with ease.

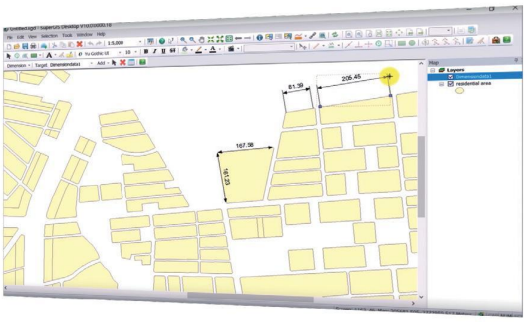


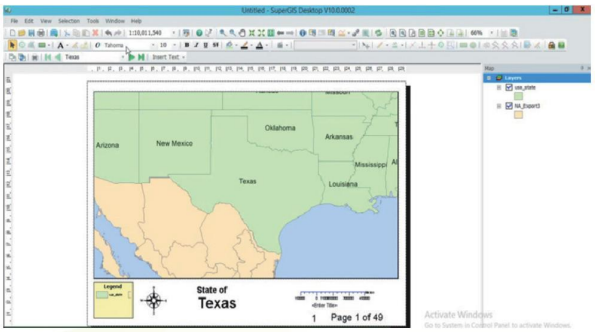
Mapnote Tool

After converting labels to a map note layer, you will gain greater flexibility to adjust the texts. This tool helps users to rotate, split, and style the annotations freely, maximizing the legibility.

Dimension Tool

With the Dimension Tool, it is easy to add lines to measure and highlight the length of a specified distance. Besides, its capability for snapping and adding prefixes and suffixes makes it super practical when working on cadastral data.





Feature Guided Page

SuperGIS Desktop 10 provides you a great tool called Feature Guided Page to print and publish your unique atlas quickly. By viewing each feature as a single map page, it is extremely useful for creating thematic map books because its small scope allows readers to check the information in detail.

To create more informative and useful maps, SuperGIS Desktop not only provides the tools mentioned above but also offers users tools to perform advanced visualization and precise data digitizing like density analysis, COGO tool, etc.

To learn more, please visit our YouTube channel for the demos and tutorials: SupergeoTV_

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