Sambus Geospatial

NEWSLETTER

THE MAIDEN EDITION

FOREWORD

The world has experienced an unprecedented level of advancement in geospatial technology in the past decade. The integration of Artificial Intelligence/Machine Learning, Blockchains, remote sensing, Internet of Things (IoT), Big Data, and the Cloud has become the embodiment of spatial data transformation, giving rise to new possibilities of organizing and analyzing huge quantities of data, for decision-making purposes. The new data sources discovered every day creates an environment where both governments and businesses can leverage geospatial technology to create a seamless workflow, storage, data exchange, and visualization to facilitate projects, foster deeper relationships and collaborations. It is in this vein that Sambus realized the need for a newsletter as a means of informing and disseminating credible and pioneering innovation in the field of Geographic Science and Data.

The Sambus Newsletter maiden edition highlights some of the newest advancements in geospatial infrastructure and Geographic Information System (GIS) solutions developed for different industries to bridge the gap between clients or individuals and organizations with the desire to leverage geospatial technology.

With different themes and theoretical concepts, a section of the Newsletter covers GIS solutions which are designed with the help of the intuitive power of spatial tools, creativity, and considerable ingenuity, resulting in the conception of a holistic procedure for deploying quantitative analysis and models to solve or gain deep insights into the most sophisticated problems in our society.

The Sambus Geospatial Newsletter maiden edition would pioneer the publication of a new series of newsletters within the Geospatial niche as we aspire to become the number one mouthpiece of the Geospatial Industry in West Africa and the entire African continent.

Our hope is for all readers to find the content of this newsletter enlightening and relevant as it projects the application of geospatial technologies in solving the challenges in our environment and also serve as a benchmark for future developments within Geospatial Industry in Africa.

Akua Aboabea Aboah – Baffoe, Managing Director

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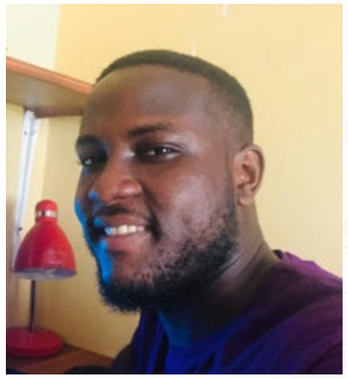

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HISTORY OF SAMBUS GEOSPATIAL

Sambus Geospatial

Sambus Geospatial is a technology integration firm that provides a range of geospatial solutions to different industries. With over 33 years of operational experience, our corporate alliance with geospatial giants; Esri, Trimble, L3Harris, and Wingtra Drones, has given us the edge in the implementation of location intelligence solutions to support and empower seamless workflow and informed decision making in every organization.

Sambus Geospatial Offices

Sambus Geospatial operates in Ghana, Nigeria, Liberia, Gambia, Gabon, Sierra Leone, and Equatorial Guinea. Our home office is in Ghana and the country office is located in Nigeria, as we are also supported by resellers across our operational regions. Operating with a compelling urge to empower the needs of Africa using State-of-the-art geographical standard technology, Sambus Geospatial remains the most preferred mapping and geospatial solution provider in West Africa as we have a massive clientele base within the public and private sectors. The expertise of our staff has been leveraged to successfully develop and deploy tailor-made solutions for all clients to gain optimum benefits and satisfaction of our geospatial products as we strive to become the most distinguished organization in the application and development of geospatial technology and knowledge.

Vision statement: To be a distinguished organisation in the application and advancement of Geospatial knowledge and technology in West Africa.

Mission statement: To achieve our vision and distinguished status, we aspire to become the first choice for organisations in West Africa that want to create added value in their operations through the application of industry-leading GIS products. Our role in this is to be the one that sells the GIS products by being the connecting link between the OEMs/Franchisers and end-users of their products.

Values: Our guiding principles
Lasting success can only be built on astute ethical standards, and the following values are the principles on which the lofty ambitions of Sambus are to be based. The following values are what we at Sambus stand for and urge all our stakeholders to espouse.

Sambus Team

Sambus employees encompass professional engineers, GIS Application Experts (ArcUsers), Data Analysts who are very adept in the use of geospatial tools to deliver quality and oriented results.
The company is measured on the quality, innovation, focus, and long-term relationships and results. Our custom-made solutions are carefully developed by our professional staff using our technologies and Intelligent Information Management Systems to deliver end-to-end Information Technology solutions to the client's specific needs, as we take full responsibility for Installation support, system maintenance and Training Services required. We are measured on quality, innovation, focus on long term relationships, and results.

TIME WITH MANAGING DIRECTOR

A short interview session with the M.D of Sambus Geospatial

Tell us about how Sambus Geospatial started.
Sambus Geospatial was established over 33 years ago by the late Mr. Samuel Aboah as he partnered with his friend, Jack Dangermond who is the president of ESRI. Before its inception, Mr. Samuel Aboah witnessed first-hand the contributions computer-based mapping and analysis made to geographic planning and environmental science in the USA, which was pioneered by Jack Dangermond and decided to introduce the technology in Ghana. He named the business "Sambus" which was the shortened form of Samuel's (i.e. Sam) business (i.e. bus). Later, the late Mr. Samuel Aboah teamed with the two trusted associates who became co-founders of Sambus Geospatial, as their expertise became the foundation needed to build the company. Eventually Sambus Geospatial expanded to become distributor of ESRI, ENVI, Trimble, Wingtra and Microdrone with representation in Ghana, Nigeria, Gambia, Gabon, Sierra Leone and Liberia.

How would you explain the current state of the company now as compared to 10 years ago?
The major difference has to do with operational expansion. 10 years ago, Sambus Geospatial was operating within Ghana. Today the company's operational countries spread across West Africa, with a Country Office located in Nigeria to focus on the Nigerian Domestic Market.

Give us your inputs about how Sambus Geospatial operational regions are embracing GIS technology.
Although the company is activity involved in the selling of solutions, we work closely with organizations and government entities to solve potential and pending problems within our society and West Africa. However, in the last few years, many have resorted to the use of geospatial tools as a requirement for the execution of projects and others integrate it into their workflows. Realizing the essence of geospatial technology different industries, organizations and institutions better appreciate the use of geospatial technology today.

In the next 5 years, where do you see Sambus Geospatial reaching as a corporate entity?
I envision Sambus Geospatial having a staff presence in every West African country, with an overall staff of 150 and an annual turnover of 25 million USD and looking at growing in the Central African Region.

Elaborate on some of the opportunities a GIS professional can find in the geospatial industry.
Many institutions are integrating location intelligence and predictive analysis in their workflows today, as they have recognized the competitive advantage it gives them. Embracing this innovation, the demand for GIS Professionals have increased because, the system can be fully utilized by professionals with a deep level of expertise in the use of geospatial technology. There is no limit to the industry it can be used in, thus professionals tend to specialize in utilization of geospatial technology within specific industries, making them more relevant on the market.

What has been your biggest challenge, and how did you overcome it?
Well, the succession planning in a family business was very challenging but through Humility and the willingness to learn, I was able to overcome it.

Tell us about biggest accomplishments so far as the managing director of Sambus Geospatial?
Expanding the business footprint across Ghana's border.

How do you prepare for major industry or company changes?
The process involves understanding the initiative, planning it inclusively, explaining to the team and rolling it.

What major threats do you foresee for the Geospatial industry business?
Our geospatial products are commercial use. Its only natural for open source technologies to become a rival. However, Open Source technologies always have limitations to its use. Developers who try to overcome this shortcoming usually fail. As a result, they turn back to us for our full suite of services, as they need these functionalities to execute their projects well.
With Covid; the breakdown of international borders and the universal acceptance of digital systems across all regions – international and regional threats will also surge. For instance Amazon

Do you have any message you would like to share with all geospatial users and non-users out there?
We currently live in a world where making rapid decisions is a must. If we must ensure that these rapid decisions are 80% accurate so we can avoid the trial and errors then such decisions must be backed by research, analysis and data. Geospatial forms the soul of such research, analysis and data from planning out a health care infrastructure with proximity to it's intended audience, to siting a dam, or theatre or fertilizers for crop production. It is time to embrace and drive this train of Geospatial solutions so quality decision making will better our world and our lives.

Brief about the MD
Akua Aboabea Aboah - Baffoe, assumed her role as the MD for Sambus Geospatial in 2013. She is very optimistic about the development, and the reduction of poverty in Africa through incorporation of GIS technologies in governance and policymaking.

AKUA ABOABEA ABOAH - BAFFOE (Mrs.)
***Managing Director:** Sambus Geospatial*

OUR PARTNERS

Introducing

esri

The Environmental Systems Research Institute (Esri) was established to help solve some of the world's most difficult problems by supporting users' important work with a commitment to science, sustainability, community, education, research, and positive change.

Esri was founded by an American businessman and environmental scientist called Jack Dangermond with his wife Laura being the co-founder in 1969, as a privately held Geographic Information Systems software company, with a vision that computer-based mapping and analysis could make significant contributions in the areas of geographic planning and environmental science.

Esri focuses on GIS because of the belief that "location matters". Geography connects our many cultures and societies. GIS provides additional ways to understand cultures and societies which increases communication and collaboration opportunities.

Today, Esri is a global company with 49 offices worldwide and employees from 73 countries. Locally owned software companies across the world have decades of regional experience and deep expertise in local issues. 11 dedicated research centers are at the leading edge of global innovation

Esri business develops technologies that enable organizations to create sustain¬able and responsible solutions to problems at local and global scales.

The company believes that geography is at the heart of a more resilient and sustainable future, thus they have developed software's that governments, industry leaders, academics, and nongovernmental organizations (NGOs) can trust to connect them with the analytic knowledge they need to make critical decisions.

ArcGIS Platform

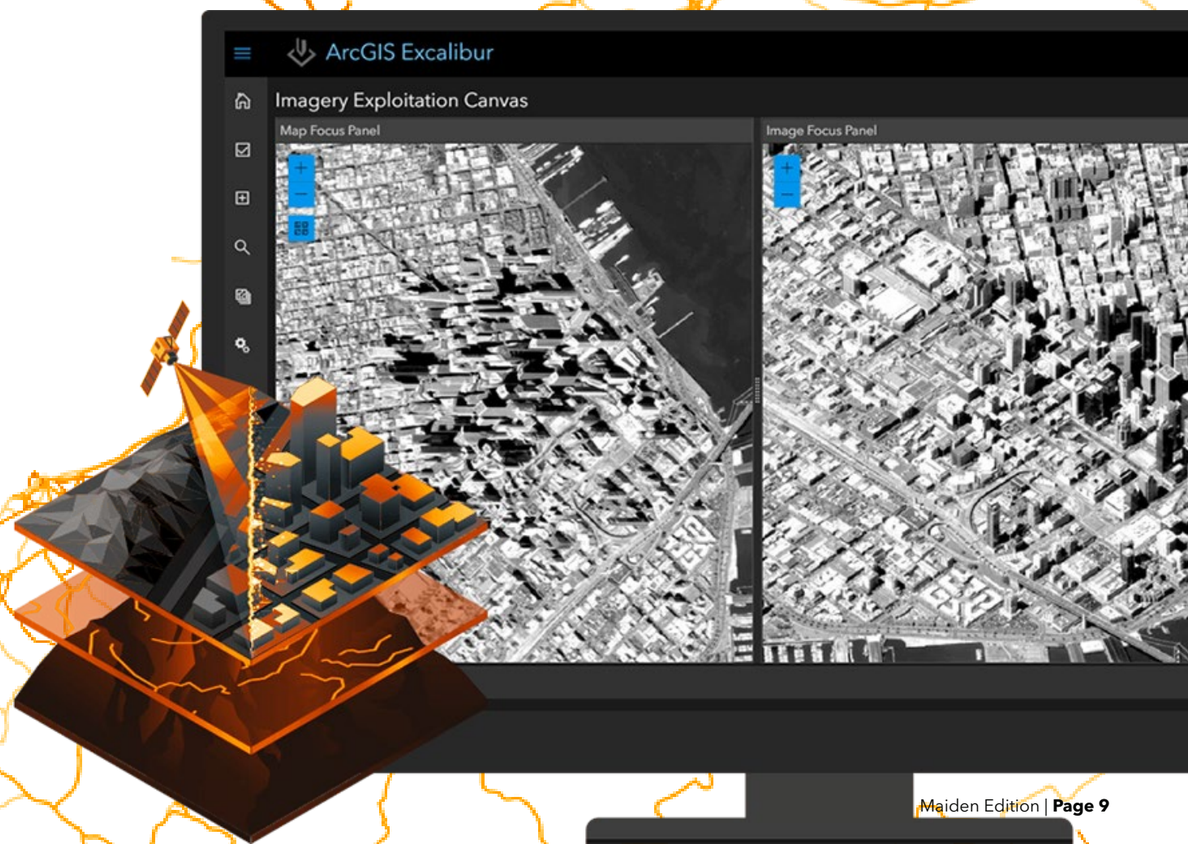
Esri's ArcGIS is a geographic information system (GIS) for working with maps and spatial data. It is used for: creating and using maps; compiling location data; analyzing mapped information; sharing and discovering geographic information; using maps and geographic information in a range of applications; and managing geographic information in a database. ArcGIS is developed purposely to help organizations integrate, display, analyze, and enrich information from many sources; see important changes that impact business, and bring new insights for better decision making. A key component of the ArcGIS platform is web GIS, which combines GIS servers, portals, and apps to enable everyone in an organization to discover, use, make, and share maps from any device, anywhere, anytime. Web GIS can be implemented as SaaS, as software on-premises, or as a hybrid of these.

ArcGIS Excalibur

Integrated image exploitation

Web-based image exploitation workflow for timely geospatial intelligence

Learn more: esri.com/en-us/arcgis/products/arcgis-excalibur



OUR PARTNERS

Introducing Trimble

Trimble technologies integrate a wide range of positioning technologies including GPS, GNSS, laser, optical and inertial technologies with application software, wireless communications, and services to provide complete commercial solutions.

Trimble is transforming the way the world works by delivering products and services that connect the physical and digital worlds. Core technologies in positioning, modeling, connectivity, and data analytics enable customers to improve productivity, quality, safety, and sustainability

From purpose-built products to enterprise lifecycle solutions, Trimble software, hardware, and services are transforming industries such as agriculture, construction, geospatial and transportation, and logistics.

Trimble solutions are used in over 150 countries around the world. Employees are located in more than 40 countries, coupled with a highly capable network of dealers and distribution partners, serve, and support our customers.

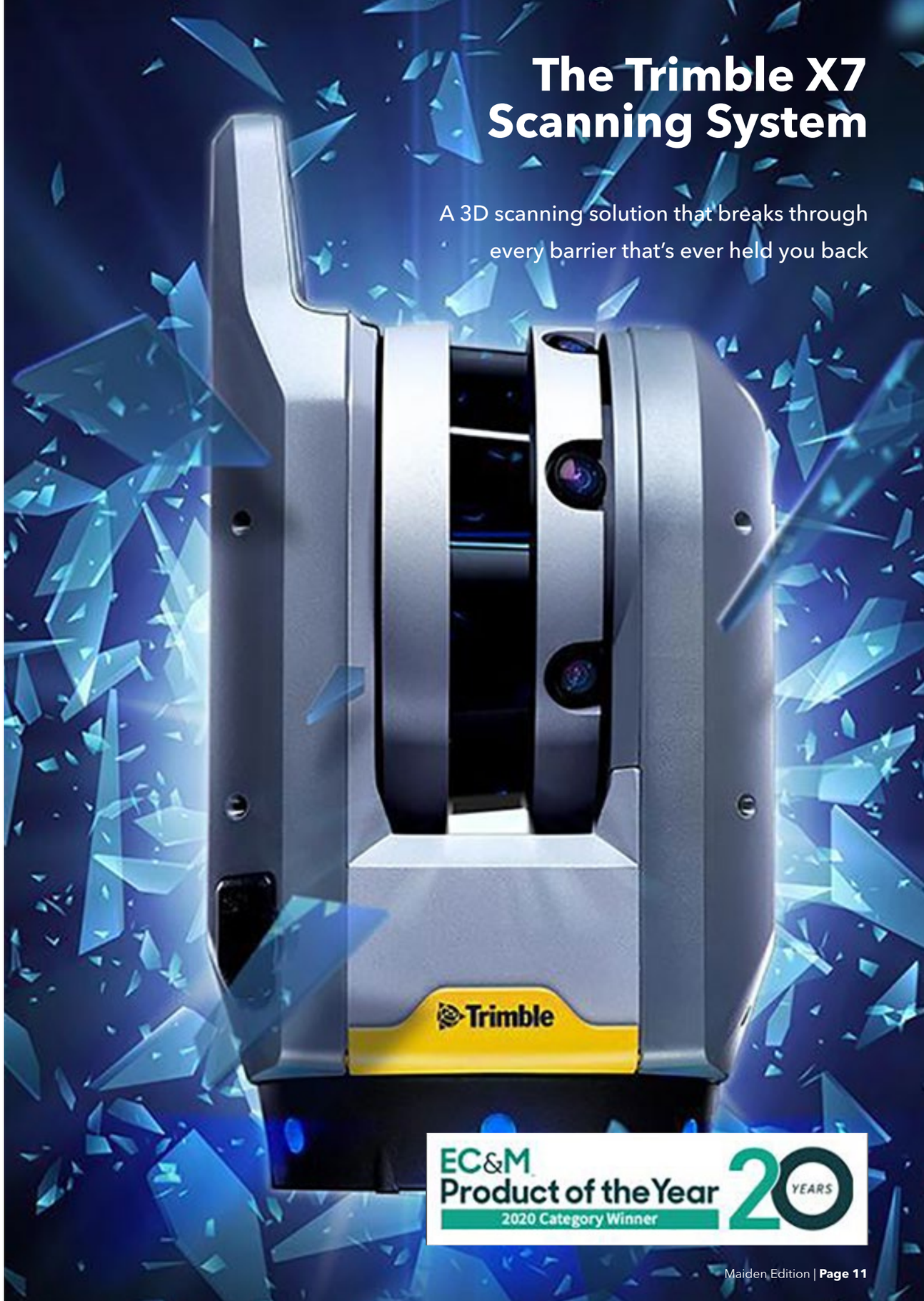
For over 40 years, Trimble has created unique solutions that help customers grow their business. With over 2,000 worldwide patents as well as research and development centers in more than 15 countries, Trimble augments its organic product development with strategic acquisitions to bring the latest technologies to a wider market

The Geospatial Industry

Trimble Geospatial provides solutions that allow you to make your mark using high-quality, productive workflows and information exchange, driving value for a global and diverse customer base of surveyors, engineering, and GIS service companies, governments, utilities, and transportation authorities. Trimble's innovative technologies include integrated sensors, field applications, real-time communications, and office software for processing, modeling, and data analytics.

The Trimble Geospatial Advantage

Trimble Pioneers the future of data intelligence by converging people, products, and places seamlessly to help them make a mark and leave a legacy. Make Your Mark with Trimble by integrating a wide range of positioning technologies including a fully integrated GNSS handheld for GIS data collection and maintenance, or a field controller to pair with your GNSS receiver and total station for survey work, Trimble has a range of high performing, rugged field devices that provide everything from centimeter accuracy to communications and more



OUR PARTNERS

Introducing L3HARRIS™

L3Harris' heritage is drawn from two companies – one with a proud history of more than a century of technology and communications leadership (Harris Corporation) and a younger company (L3 testimonial Technologies) comprised of some of the most successful aerospace and defense contractors in history.

Becoming L3Harris

In 1895, Alfred Harris disrupted the printing industry problem by creating a faster printing press, establishing the Harris Automatic Press Company in Niles, Ohio. Harris built on that early innovation by evolving in the following decades into an electronic communications provider. As the space race accelerated, Harris acquired Radiation Inc., and became a leader in miniaturized electronic tracking and pulse code technology. After relocating to Melbourne, Florida, in the 1970s, Harris Corporation transformed itself into a global communications and information technology company.

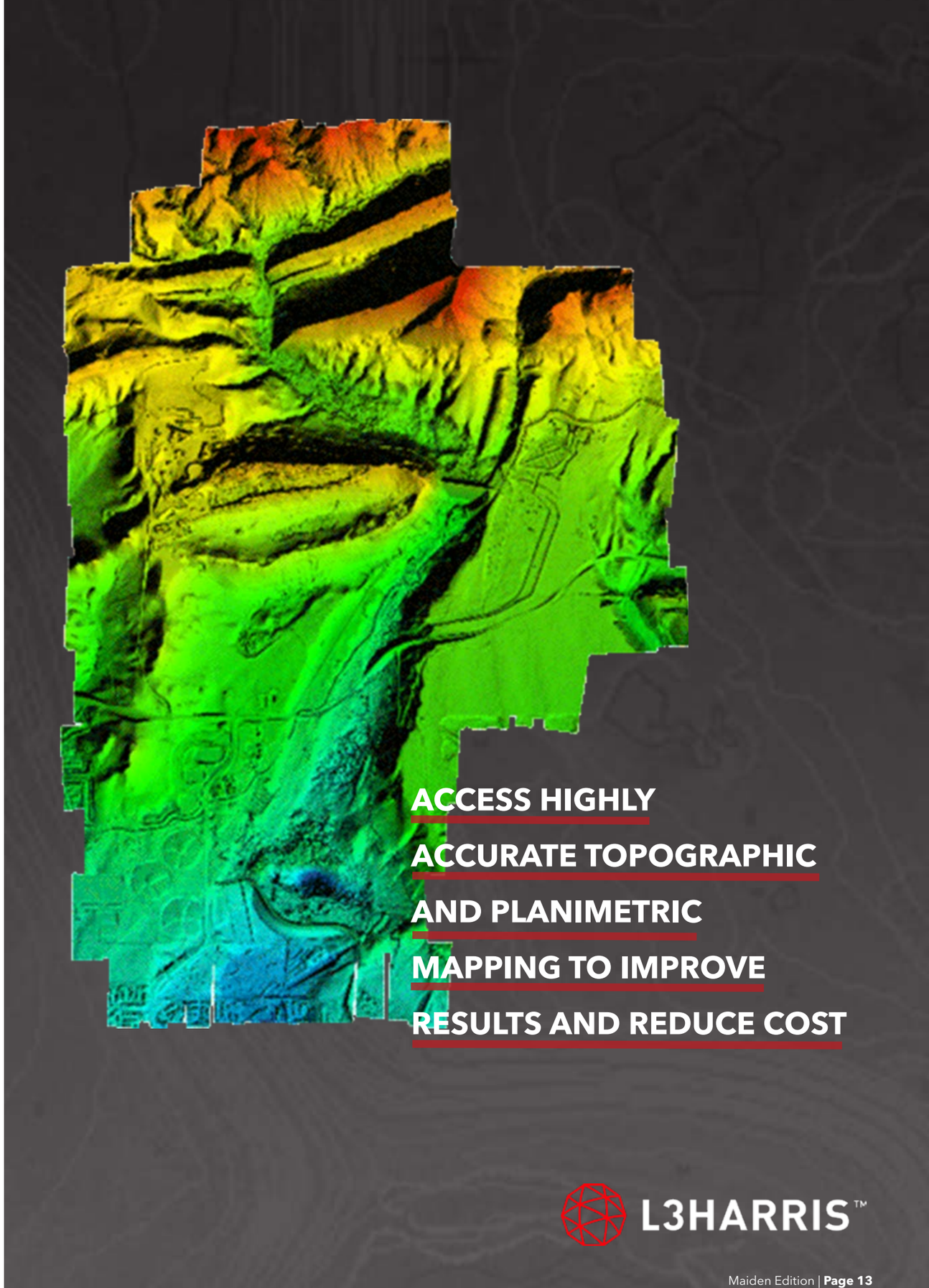
L3 Technologies was created in 1997 as L-3 Communications, named for the three initials of founders Frank Lanza and Robert LaPenta in partnership with Lehman Brothers. Lanza and LaPenta previously served in executive roles at Loral Corporation and Lockheed Martin, respectively. L3 was created through the divestiture of business segments following the merger of Lockheed Corporation and Martin Marietta – business segments that had originally been part of Loral Corporation and had been acquired by Lockheed in 1993.

Under Lanza's leadership, L3 experienced massive growth through 100+ acquisitions in its first 19 years. The company changed its name to L3 Technologies in 2016 to describe its wider scope more accurately.

In 2019, Harris and L3 combined complementary strengths in a merger of equals to form L3Harris Technologies, Inc. L3harris is an agile global aerospace and defense technology innovator, delivering end-to-end solutions that meet customers' mission-critical needs. The company provides advanced defense and commercial technologies across air, land, sea, space and cyber domains. L3Harris has approximately $18 billion in annual revenue and 48,000 employees, with customers in more than 100 countries.

ENVI®

ENVI image analysis software is used by GIS professionals, remote sensing scientists, and image analysts to extract meaningful information from imagery to make better decisions. ENVI can be deployed and accessed from the desktop, in the cloud, and on mobile devices, and can be customized through an API to meet specific project requirements.



OUR PARTNERS

Introducing

wingtra

Wingtra is the world's leading VTOL drone producer for mapping, survey and mining industry professionals. Since its market entry in early 2017, Wingtra has partnered with more than 60 of the biggest equipment dealers and has been selling mapping drones globally ever since. The Headquarters of Wingtra is located in Switzerland,

Rooted in years of technological research Wingtra is based in the heart of Zurich, Switzerland. In a 1,000 m2 (10,800 ft2) office, the company houses 80+ employees, out of which more than 30 focus on R&D.

Wingtra's engineers are graduates from the world's 3rd best university for engineering and technology, ETH Zurich (Top Universities, 2019) and are among the leading research engineers in VTOL technology.

Drones are assembled in-house in Zurich by our production team, and technical specialists support our customers in English, German and Mandarin.

The WingtraOne drone is rooted in years of robotics research at the Autonomous Systems Lab—one of the world's best drone laboratories.

Several of Wingtra's employees have based their doctoral and master projects on VTOL technology and now pursue research and development at Wingtra.

The Drone Hub

Since the 20th century, Switzerland has been known as one of the world's most advanced economies. It also ranks first in the Global Innovation Index (2019).

Nowadays, Switzerland, and especially its largest city Zurich, houses the biggest players in the tech and drone industries.

Not only Wingtra, but also Google, Facebook Oculus, Leica Geosystems, Pix4D, Auterion, PX4, Sensefly and Flyability are all headquartered inside the Swiss borders. Therefore, Switzerland is often referred to as "The Hub of Drones" or "The Silicon Valley of Robotics."

Conduct high-precision aerial surveys–fast and for large projects

Experience fast aerial surveys across wide or hard-to-reach areas and producing reliable maps with unparalleled resolution and accuracy

CLIENT INTERVIEWS

Emmanuel Amoah, the Route to Market Manager of Voltic Ghana Limited a Subsidiary of Coca Cola Beverages Africa

What first got you interested in geospatial technology?
That was about 2 years ago through my company's Route To Market project. Before this project, I just heard about the term GIS, but my interest was triggered when we began the project. I started researching and learning all I can about GIS technology as a result.

In your opinion, what is the most important quality a GIS professional needs?
I realized the blending of GIS with business is very essential because location intelligence has always been an important factor in segmenting and serving different categories of customers by companies. Different businesses can benefit from the integration of GIS to gain location insight that could be a retail shop with a local clientele, a supermarket, and a multi-distribution business.

How do you stay well-informed of the new developments in GIS, especially for your industry?
Well, I get notified with ESRI news updates regularly. It keeps me well informed about all the new developments being made in their line of software and solutions. Also, updates from the CCBA tech platform in other markets are very useful for me. I often take advantage of these resources to learn more about how to leverage GIS within my industry.

What is the next thing you want to learn about in GIS/geospatial technology? Why?
The possibilities in what you can learn about GIS is limitless but for now, I am only looking into learning how the technology is applied within my industry.

How long have this institution been utilizing geospatial technology in their workflows?
For about 2 years, our company has been making use of GIS technology and solutions in their workflow.

Tell us about a project your company undertook which required the use of GIS tools.
Our company undertook a project which required us to Digitally locate all outlets of interest to the company and segmenting those outlets. This was an innovation the company wanted to bring on board to monitor all retail outlets efficiently and effectively.

Mapping of the outlets required the use of GIS, hence becoming a necessary tool to complete the project.

Prior to the introduction of GIS Solutions, how did your company handle location-based projects?
Unfortunately, the company was not making use of GIS in previous location related projects.

How did your company arrive at the decision to implement GIS solutions for the project?
Using GIS was part of the standard requirements by Coca-Cola Beverages Africa for the project I mentioned earlier. For this reason, we had to scout for the best GIS solution suited to achieve the goal of the project. That is when we came across Esri technology. The system offered just what we needed to effectively undertake the project.

Tell us how the integration of GIS systems in your workflows have been beneficial to your Company.
We were able to successfully locate all outlets. As a result, we were able to design a new service delivery model forw different categories of outlets. Now, we can visualize and monitor product flow which are distributed using the various channels mapped out and critically make use of locational intelligence in making decisions

"The GIS ecosystem needs to do a lot to create awareness of the benefits of Geospatial technology to the business community"

CLIENT INTERVIEWS

Biyi Fafunmi, the Director of Information and Communication Technology Department of the National Bureau of Statistics (NBS) – Nigeria

What first got you interested in geospatial technology?
I got interested in geospatial technology when I was employed into the government service and I was working with an agency of government whereby I need to present and disseminated data to users, then I realized that data that with spatial attribute are not easily understood by user except when explain using color map

How do you stay well-informed on the new developments in GIS, especially for your industry?
I am a member some Geospatial communities, I subscribed to receive newsletters and product updates from ESRI and also learn from user conferences I attended

What's the next thing you want to learn about in GIS/geospatial technology? Why?
Geospatial Data Science, Statistical and Spatial Data Analysis using R (Big Data Analytics)

Prior to the introduction of GIS Solutions, how did your organization handle location-based projects?
Using Manual way like paper maps and when data are available to be presented, it only presented in tables

How did you arrive at the decision to implement GIS solutions for your projects?
By doing some GIS analysis, collecting GIS reports and present it to my chief Executive to show how useful the solution is. Buy-in by my CEO

Tell us about a project your organization is currently implementing using GIS solutions.
Impact Analysis of COVID-19, Nigeria Asset Decision Support System, Nigeria Business Sample Census, and Poverty Mapping of last Nigeria Living Standards Survey.

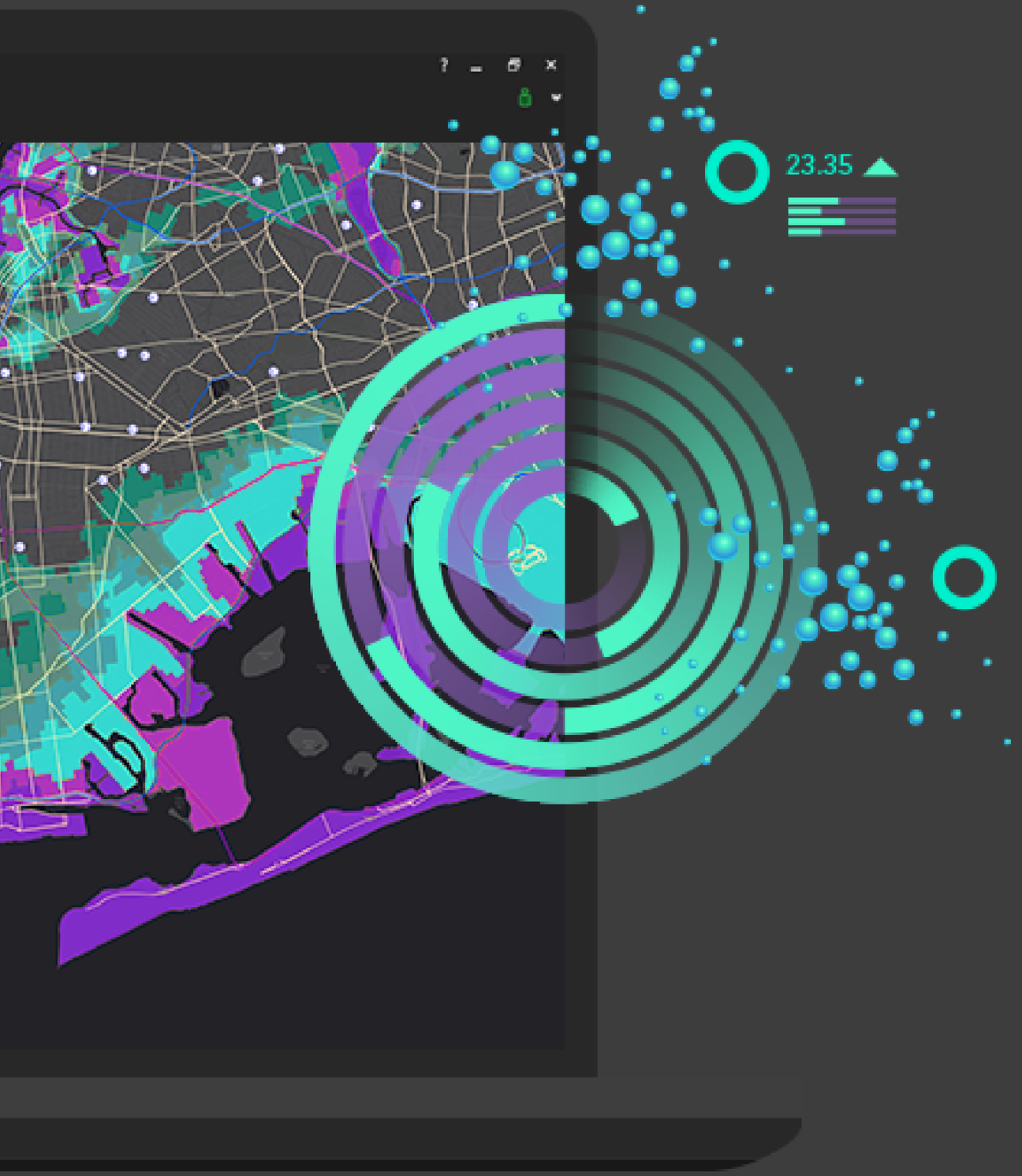
Can you identify any challenge your company is facing implementing GIS in your workflows and what are your biggest opportunities using GIS?
Maintenance Cost and Human Capacity are some of the challenges and the Opportunity is being a member of the GIS community, having local partners whom we can share our challenges with for advice and assistance

Would you recommend related industries to also adopt GIS infrastructure in their workflows?
Yes of course. As you know NBS is expected to warehouse all forms of data for the country including spatial data. So, if other agencies are not adopting the use of GIS it will be difficult for NBS

In your opinion, where do you see Geospatial technology in the next 5years?
I will only be specific to my area of data production. I see the entire data production system been driven by spatial technology. Already the United Nations system has initiated the integration of Geography and Statistics. Knowing fully that any meaningful data that will be used for development planning and intervention purposes must have spatial references

How important do you think GIS technology is to the Nigerian Business development?
Very important, just about what I mentioned earlier, the GIS technology is the science of where, how, what, etc. So, we would like to know where the business is, who is patronizing what, what business is thriving where and this will help our economic development.

Where do you think Geospatial technology in Nigeria needs improvement?
Data Development, Application, and more GIS community of pratice as well as the integration of GIS with other subject matter areas.



Product Focus

Explore some of Sambus Geospatial's software, apps, devices, technical contents and solutions

Sambus Geospatial Newsletter product focus section highlights some of the flagship products from our partners esri, trimble, l3harris/envi and wingtra,

ARCGIS PRO

Next-generation Desktop GIS
ArcGIS Pro is Esri's powerful, single desktop GIS application. Technologically ahead of everything else on the market, ArcGIS Pro supports data visualization, advanced analysis, and authoritative data maintenance in both 2D and 3D. ArcGIS Pro is tightly coupled with the ArcGIS platform supporting data sharing across ArcGIS Online and ArcGIS Enterprise through Web GIS.

With ArcGIS Pro, you can transform data into maps and actionable information.
Mash up multiple data sources to make maps that are as smart as they are beautiful. Use powerful 2D and 3D analytical tools to identify patterns and trends. Then put this information to good use by sharing it within your organization, online, and through mobile apps.

Exploration and Visualization
Using 3D exploratory analysis, investigate your data by interactively creating graphics and editing analysis parameters on-the-fly. Interactive tools help you to create analytical objects by clicking on the scene or using input source layers. Manipulate analysis parameters and receive real-time visual feedback.

Cartography and Design
Easily and accurately add your customized data to meet today's cartographic and design standards. Compile your data with just a few clicks and bring your projects into Adobe Illustrator with the new AIX export capability. ArcGIS Pro's deep symbology tools, performant rendering, and vast support of geospatial formats merges the domains of analysis and presentation. Take your projects further and tell the story you've always envisioned.

Imagery
ArcGIS Pro provides a collection of powerful tools to manage and analyze large collections of imagery such as drones, satellites, lidar and more.

Analytics and Data Science
Understand the world around you. Use scientific analytical tools on 2D, 3D, and 4D data to identify patterns, make predictions, and answer questions.

Launch New Capabilities
Discover Voxel layers, a 3D volumetric layer to visually analyze and explore your complex multidimensional data. Manage your 3D and 4D parcel data, run analysis with Trace networks, Python Notebooks, Geodatabase replication workflows and so much more. Add your work from ArcGIS Pro to Adobe Illustrator to finalize your design project.

Share Your Work
Quickly author and discover content and web maps all within ArcGIS Pro. Discover created work from within your organization or worldwide from the ArcGIS user community. Seamlessly access Living Atlas content and share your work throughout the Geospatial Cloud.

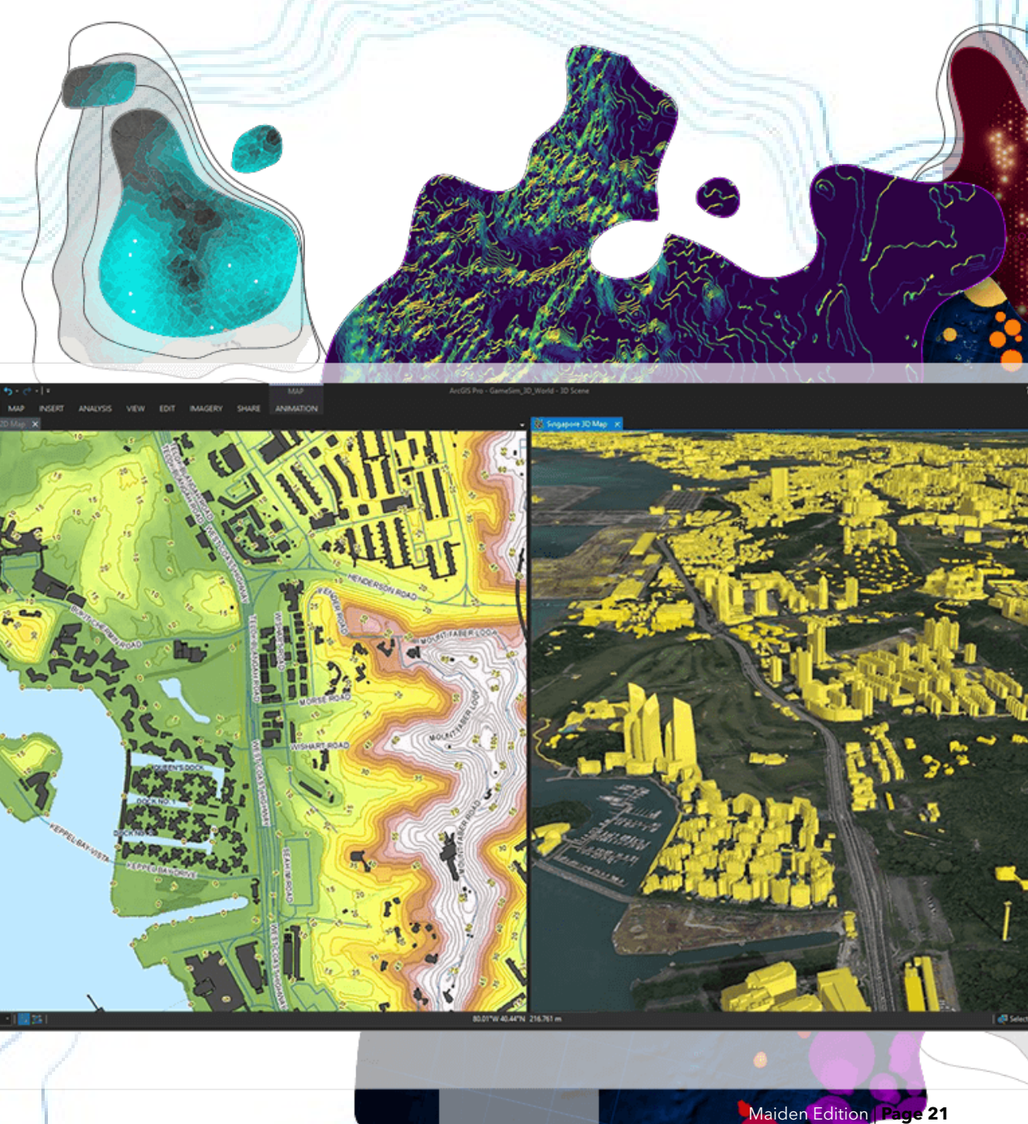
Customize and Create
Reimagine ArcGIS Pro with add-ins and configurations developed with the ArcGIS Pro SDK for .NET. Create, customize, and perfect your ideal ArcGIS Pro environment.

Data Management
Ensure data integrity with a complete set of tools for storing, editing, and managing various forms of spatial data—including big and real-time data.

ArcGIS Pro

Next-generation Desktop GIS

Learn more: esri.com/en-us/arcgis/products/arcgis-pro/overview



Trimble Geo7X

Handheld Data Collector

Be truly productive with the Geo 7X—no matter what gets in your way.

The Trimble® Geo 7X handheld belongs to the Trimble GeoExplorer® series family of integrated, rugged, and high-accuracy GNSS handhelds. As a streamlined solution that enables faster and more productive data collection, the Geo 7X is ideal for organizations such as utility companies, municipalities, and environmental agencies that require mobile data collection and asset management solutions.

Provides compatibility with existing and currently planned GNSS constellations to deliver reliable GNSS tracking today and for years to come. Achieves better accuracy in real time without need for a traditional reference station-based infrastructure or VRS network, thanks to Trimble RTX™ correction service options.

Compatible with Trimble GIS field and office software to provide you with flexible end-to-end data collection solutions and workflow choices.

Packed full of features that enable fast geospatial data collection anywhere with the level of accuracy and quality required by your organization, the Geo 7X ensures you have the right data the first time, enabling the best decisions to be made quickly and cost-effectively.

Smart data collection, smart investment

The Geo 7X provides compatibility with existing and currently planned GNSS constellations to deliver reliable GNSS tracking today and for years to come. It also achieves better accuracy in real time without need for a traditional reference station-based infrastructure or VRS network, thanks to Trimble RTX™ correction service options.

Compatible with Trimble GIS field and office software to provide you with flexible end-to-end data collection solutions and workflow choices.

See All Technical Specifications

• Powerful 1.0 GHz processor
• 256 MB RAM
• 4 GB of onboard storage
• IP65 rating
• Built-in 5MP camera with enhanced zoom operation, bright colour reproduction, and geo-tagging capability
• Sunlight-optimized display to maintain exceptional clarity in all outdoor conditions, for crisp on-screen text and images
• Integrated dual-mode cellular modem that enables continuous network and Internet access to real-time map data, web-based services, Trimble VRS Now™ and Trimble RTX corrections, and live updates of field information

Trimble Geo7X

1-100 cm
GNSS Accuracy

WEHH 6.5
Operating System

10.7 cm / 4.2″
Screen Size

ENVI® Deep Learning

L3Harris Geospatial has developed commercial off-the-shelf deep learning technology that is specifically designed to work with remotely sensed imagery to solve geospatial problems.

The ENVI Deep Learning module removes the barriers to performing deep learning with geospatial data and is currently being used to solve problems in agriculture, utilities, transportation, defence and other industries.

The ENVI Deep Learning module is offered as an extension to ENVI for desktop applications and is built on the ENVI Task framework. This means that classifiers can be built once and run in any environment, whether that is your desktop computer, on-premises servers or in the cloud.

Not everyone is a deep learning expert and the ENVI Deep Learning module was developed with this in mind.

The module has intuitive tools and workflows that do not require programming and enable users to easily label data and generate models with the click of a button.

Additionally, it is simple for seasoned imagery experts to fuse information layers such as spectral indices, elevation data or data transforms to create more robust classifiers.

ENVI Deep Learning Module

ENVI is the leading image analysis software on the market and its science-based analytics are accurate and reliable for extracting meaningful information from all types of geospatial imagery and data.

ENVI's preprocessing tools such as calibration, atmospheric correction and color space transforms create consistent input data for deep learning models. With deep learning technology built on TensorFlow, a leading open source library, you can create reliable models for image classification.

The ENVI Deep Learning module is offered as an extension to ENVI for desktop applications and is built on the ENVI Task framework. This means that classifiers can be built once and run in any environment, whether that's your desktop computer, on-premises servers or in the cloud.

To see how to use this technology, a variety of demonstrations have been developed for different industries, showing how deep learning can be used to find the solutions you need - No programming required.

Visit https://www.l3harrisgeospatial.com/Software-Technology/ENVI-Deep-Learning to see all Demos.

ENVI MODULES

Easily Extend Your Analysis through deep learning today

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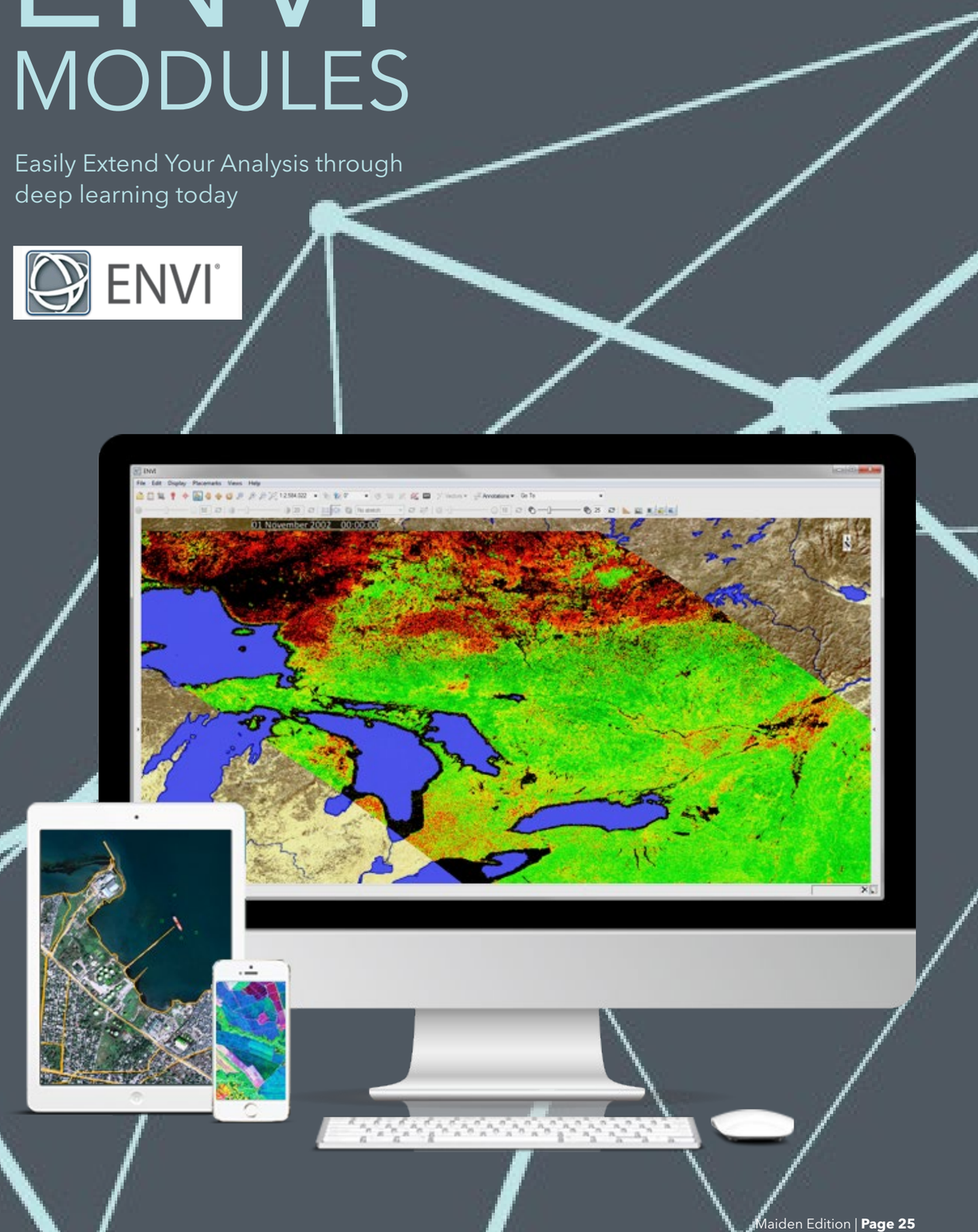


WINGTRA ONE

Mapping Drone for High - Accuracy Aerial Surveys

The WingtraOne VTOL mapping drone is capable of performing fast aerial surveys across wide or hard-to-reach areas and producing reliable maps with unparalleled resolution and accuracy.

WingtraOne comes equipped with a choice of Sony high-resolution mapping cameras or a professional multispectral camera by Micasense. Cameras can easily be exchanged in the field, making the same drone suitable for different applications. Using the intuitive flight planning software and the fully autonomous flying operations, surveyors can capture geo-tagged aerial images with virtually no piloting skills.

WingtraOne's drone image outputs can be processed by all major photogrammetry software to create highly-accurate orthomosaics and 3D models.

Take off and land like a helicopter, fly like an airplane

Vertical take-off and landing (VTOL) capability allows the WingtraOne mapping drone to ascend and move like a helicopter. For the drone mapping, it transitions into a forward cruise flight, matching the endurance and speed of fixed-wing survey drones. In order to land, the WingtraOne switches back to hover flight and descends vertically.

Visit wingtra.com/why-wingtra/vtol-drone to learn how VTOL Works

Drone Features

Take-off and land anywhere: Confined forest areas or gravel open-pit mine terrain are no longer obstacles. WingtraOne can land everywhere, smoothly.

No piloting skills needed: Fully autonomous vertical take-off and landing without human interaction.

Manual adjustments and hover: While all parts of the flight are autonomous, at any time, you can switch into manual mode and use the remote control as easily as with any standard quadcopter drone.

No belly landings: Up to 70 percent of fixed-wing survey drone issues are related to belly landings. Avoid them with a vertical landing.

High performance motors: Two light-weight, brushless motors for high flight performance and low noise level

Minimize your time in the field

In one flight, WingtraOne can map almost 2x more than a conventional fixed-wing drone and approximately 10 to 15x more than multicopter drones

Read more on how Map outputs, Data Accuracy, cameras, softwares and devices you need to run successful missions with Wingtra one at wingtra.com/mapping-drone-wingtraone

Redefining standards in aerial surveying

ARCGIS FOR UTILITY MANAGEMENT

Gain all the elements needed to solve utility challenges, not just make conventional maps faster.

Utilities all through the world are confronting unprecedented changes - from privatization of government- owned utilities, renewable energy down to rivalry for discounted and retail clients. In addition, mergers and acquisitions are equally adding new components of risk to the management of utilities today. This is a great problem lurking on the horizon. Energy and water suppliers are unable to depend on administrative security of region and clients. Individuals who are not influenced by direct deregulation are confronting increasing mindfulness by their key clients of cost and service alternatives. New instruments and techniques are required for capital- intensive companies to stay competitive in the marketplace. Better utilization of spatial information is one of the key areas of focus for most utilities today.

GIS is developing as a significant planning, execution, and activities management tool for the utility enterprises, for example water supply, wastewater, and health. Utilities have become the nerve hub and essential infrastructure requirement for development, hence utility execution companies or firms must guarantee that their distribution channels and technologies remain functional with no breakdown. The authorities ought to guarantee regulation or guidelines in customer services and reduce the number of breakdowns on a Standard Offer Service (SOS) level. This can be challenging, as one must ensure prudent management of such systems for the task to be substantially flexible.

Thus, the requirement will mean - a system conditioned visually on a geographical data, to facilitate easy tracking and attention.

In a Geographical Information System (GIS) environment, the real physical structure of the distribution system – where the lines run, where the connections are – can be copied, modeled or displayed on the computer, as can the entirety of different objects, similar to roads, structures, and land demarcations, that have a bearing or orientation on the distribution system. Utilities need the advantages of a genuine and true enterprise geographic information system to map assets, manage facilities and also aid in the planning, supervision and the actualization of cross-cutting applications for smoothing out operations, driving down expenses, and improving client service.

The ArcGIS system thrives on Location intelligence. This system utilizes location to fine-tune assets or resource management. It gives new experiences and insights about execution, risks, assets, resources and expenses. Utilizing the ArcGIS location platform, utilities managers can find patterns that straightforward simple reporting detailing will be unable to find, thereby improving electricity management results. ArcGIS does this in three different ways: managing asset data, surveying performance and optimizing the asset life cycle

Managing Asset Data

Electricity managers will in general sort out data from numerous different sources – enterprise asset management (EAM), work management, real-time data, metering, customer management, and network analysis systems. ArcGIS provides a new, complete network model that connects

Continue reading ... Next Page

these technologies, expending critical data from numerous sources to give a total image of the electric utility system.

Minimize your time in the field

ArcGIS conveys insight knowledge into the past, present, and future performance of the assets of the grid. Visualizing every asset's condition and its context to location is fundamental to any asset management system. ArcGIS further evaluates performance by uncovering assets weaknesses or vulnerabilities, anticipating/predicting performance, and providing transparency. The outcome of the performance assessment is a risk profile, considering weakness and illustrates the consequences of failure.

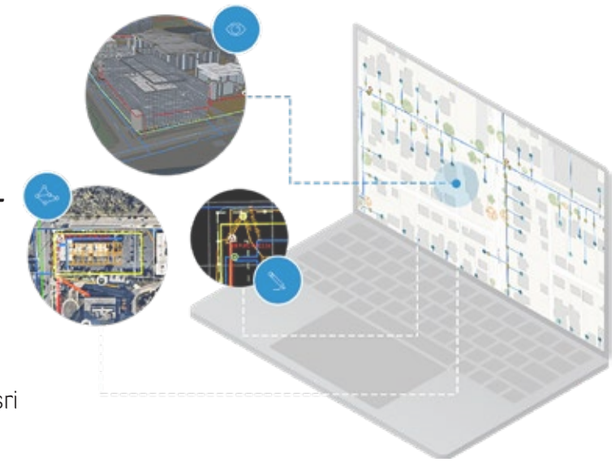
Optimizing the Asset Life Cycle

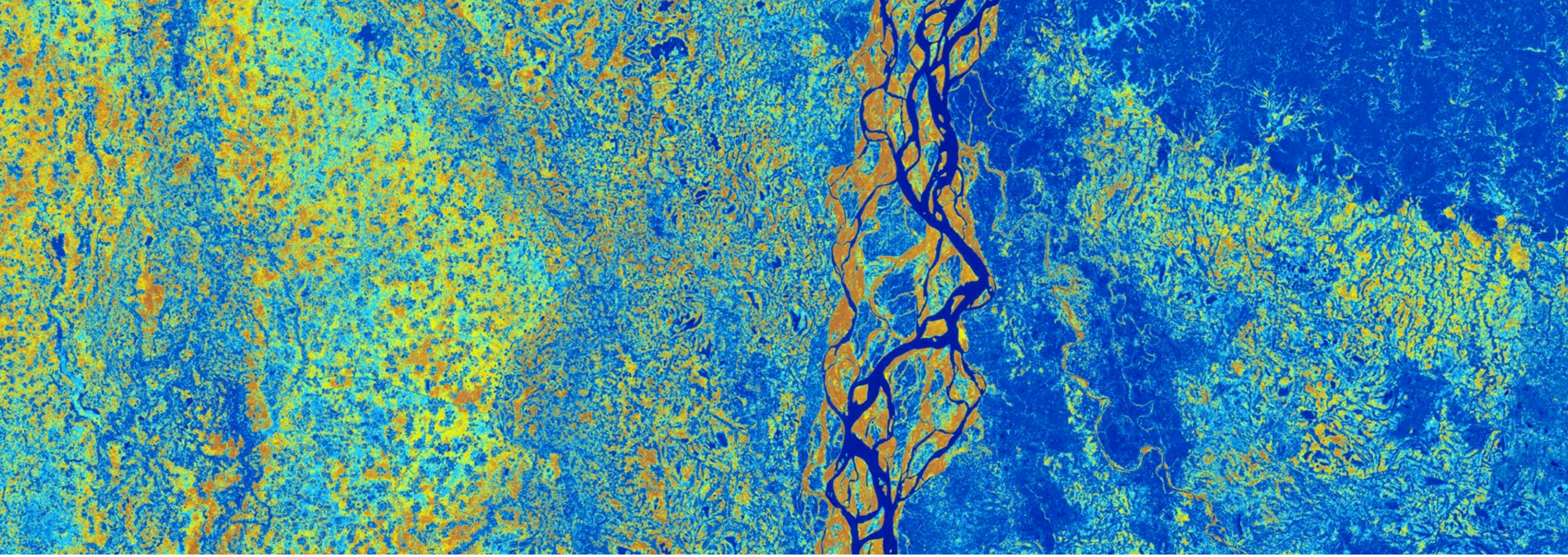
At the heart of any electricity asset management is the optimization of resources or assets. ArcGIS streamlines the whole asset life cycle by revolving it around location—organizing and coordinating capital and operational plans, and adjusting cost, risks, execution, and compliance. ArcGIS is completely lined up with the ISO 55000 standard

series, giving significant regulatory compliance functions. It additionally encapsulates undertaking abilities to maintain records, connect all partners or stakeholders, and uncover profound analytical insights making it better for electricity resource speculation and operational choices.

Utility management faces massive difficulties today and this shows no sign of slowing in the future. Utility managers have invested huge finances into their assets and should in turn make financial gains as expected. However, that may slip if technological tools are not involved in this envisaged advancement. ArcGIS brings an incentive to each utility irrespective of how its asset management practice has developed. As utility companies observe ISO 55000, they will require better instruments to adjust cost, risk, performance, and compliance. Location is a basic trait of utility resources and that is the reason geospatial innovation and, particularly, ArcGIS is a necessity for any utility system rather than the perceived add-on to fine-tunes asset management systems.

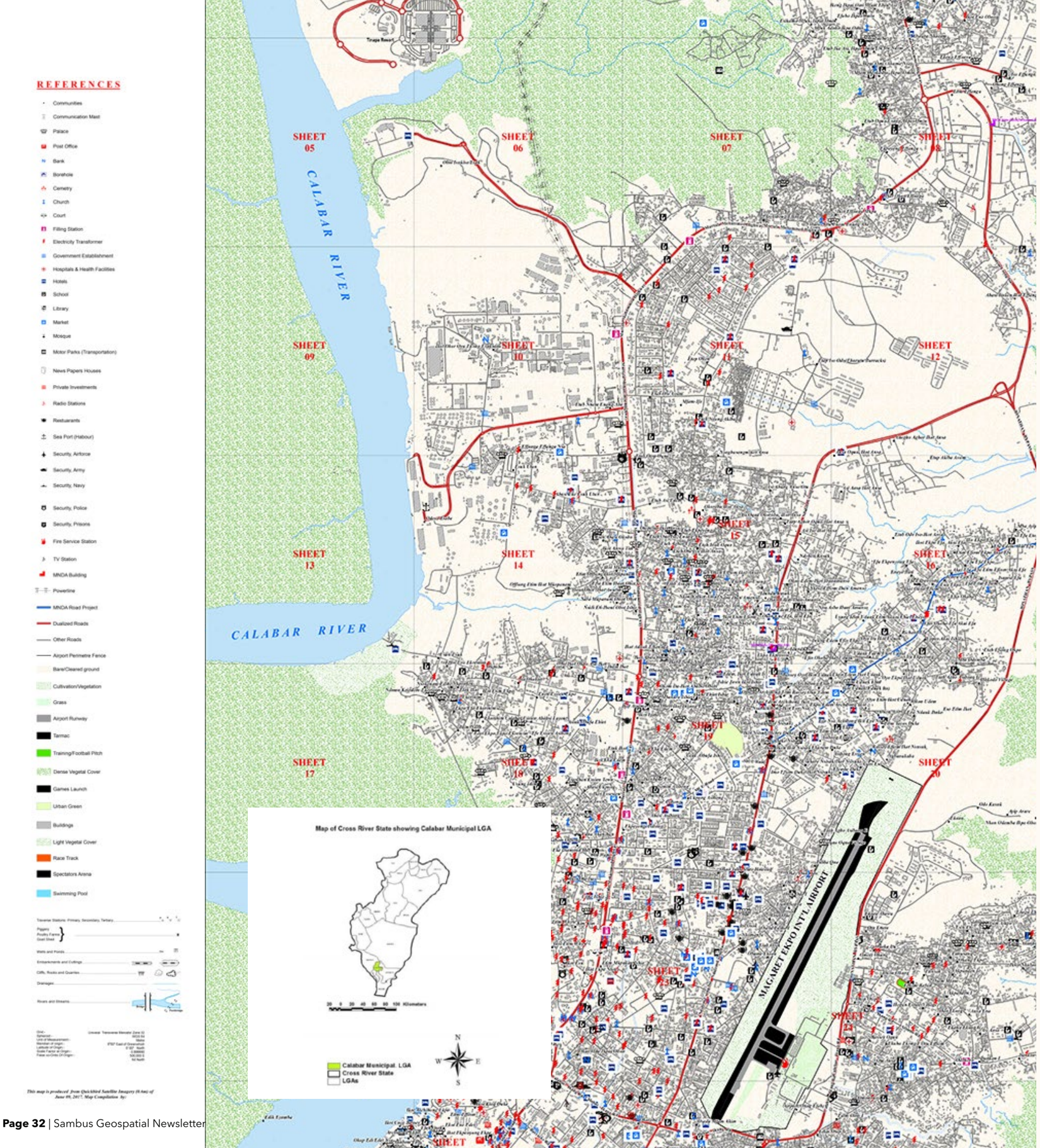
> **As an ArcGIS user, you can use this solution to support regulatory compliance, employee safety, and customer satisfaction, as well as streamline common mapping workflows**
>
> ... by Esri





MAP GALLERY

SEE THE BEST MAPS DEVELOPED BY GIS PROFESSIONALS IN VARIOUS INDUSTRIES



UTILITIES

THE UTILITY AND INFRASTRUCTURE MAPPING

El Sunnic Integrated Nig. Ltd
Niger Delta Region, Nigeria
By MR. KENNETH OBI

The overall objective of this project was to map development efforts including infrastructures and utilities, in the Ni¬ger Delta Region of Nigeria, starting with Calabar Municipal Area Council in Cross River State, Nigeria, as pilot towards ensuring robust facilitation and operationalization of the Action Plan for the region.

The specific developed to establish existing physical, infrastructural, and socio-economic baseline projects in the area. Characterizing the location of the projects/infrastructure and/or programs using GIS to proactively assess the potential and associated impact (including health, environmental, and socio-economic) of projects in identified areas.

Making appropriate recommendations concerning scalability, desirability, importance, and/or otherwise of identified project/programs. Recommending plans and procedures to better manage existing infrastructure and/or utility: Ensuring proper consultations with host local communities along with the project Right of Way (ROW) as to the impact, desirability, and /or otherwise of sited works in line with FMEnv and MNDA guidelines, and in addition to. Designing and implementing an infrastructure & Utility Management System

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Software
Software: ArcGIS 10.3, hand-held GPS/GIS devices

AGRICULTURE

TRAPPING LOCATION MAP

AyGeospatial Services
Kaduna State, Nigeria
By SAMUEL JOHN AYODELE

The study map area shows the trapping location within the vicinity as the aim is to access and determine the impact assessment and re-enforcement of the on-going Tsetse fly suppression project, using insecticides impregnated screens and targets within Oyo State, Nigeria.

Trypanosomiasis control in livestock using chemotherapeutic and chemoprophylactic drugs in International fertilizer Development Company (IFDC) operational areas in Oyo State, Nigeria.

Contact
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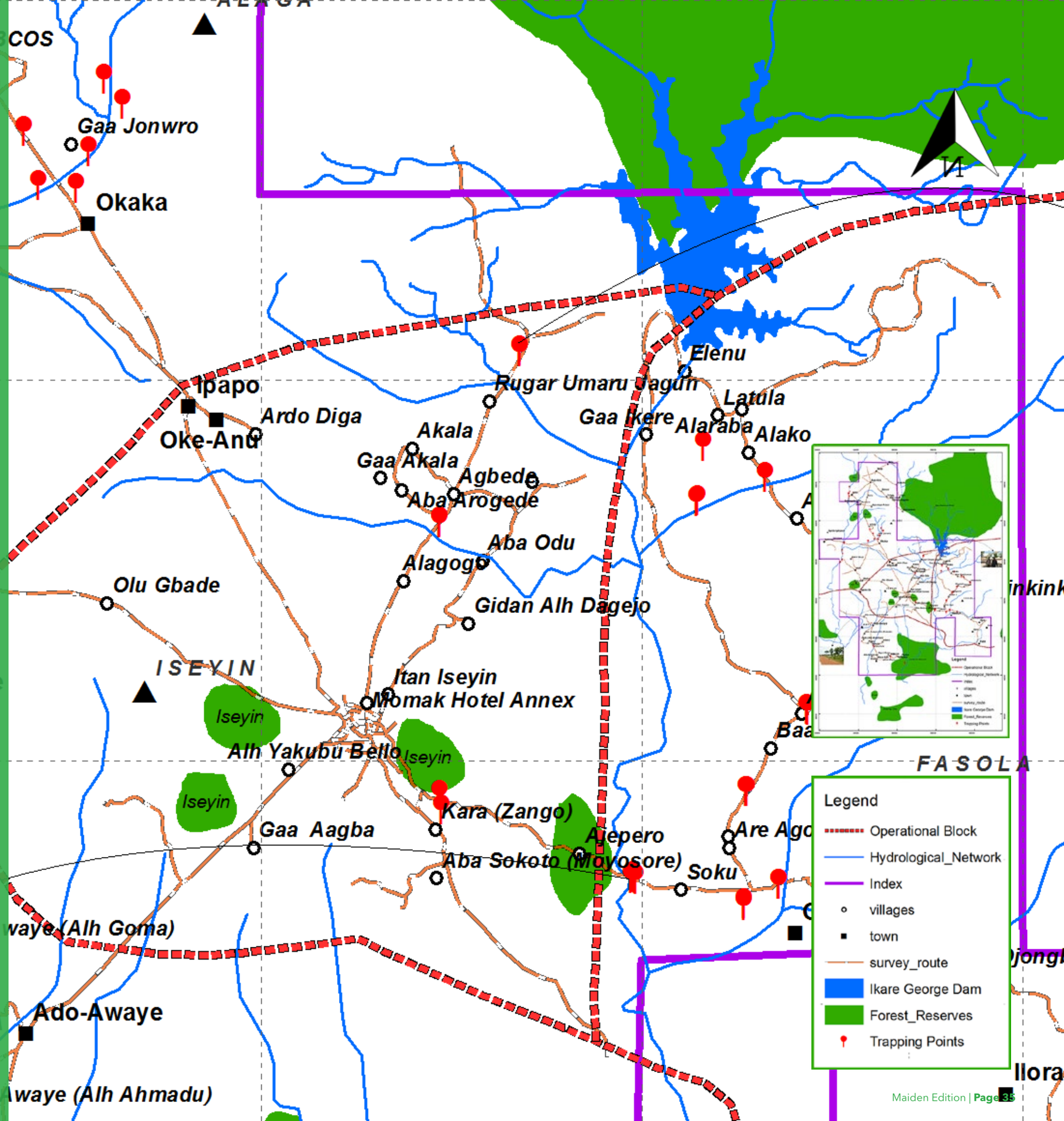
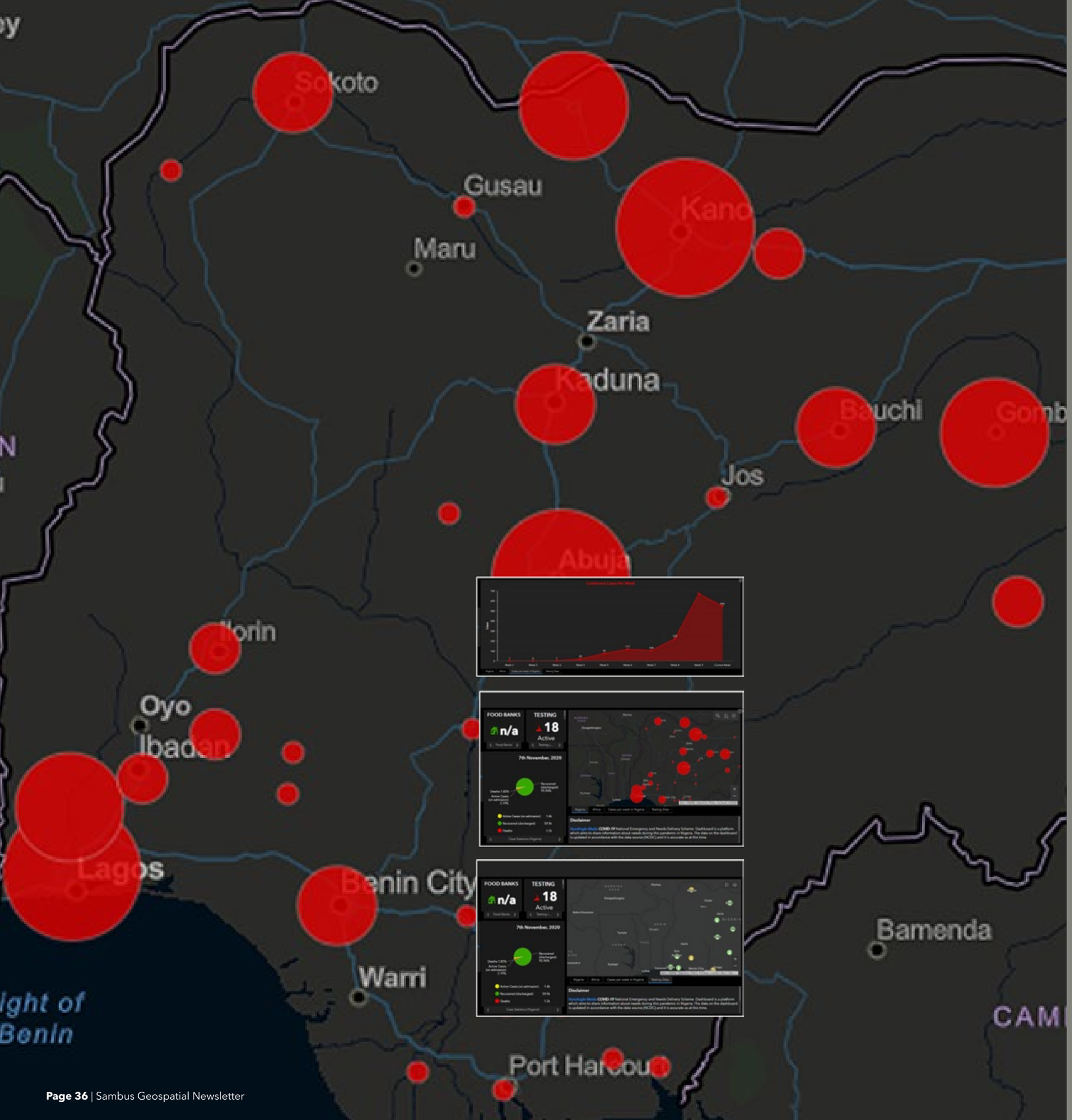
Software
Software: ArcGIS 10.8.1, Adobe Photoshop CC





HEALTH

COVID19: NATIONAL EMERGENCY NEEDS AND DELIVERY SCHEME

HumAngle Media Limited
B03 Durumi District, ABUJA - Nigeria
By MANSIR MUHAMMED

HumAngle Media Limited uses the ArcGIS pro dashboard solutions to create and maintain an operational Covid-19 Dashboard. As a media house operating in a developing country such as Nigeria, its been observed that there was a gap in information flow regarding the state of the Covid-19 cases.

The HumAngle National Emergency and
Needs Delivery Scheme Dashboard was developed and updated regularly with the cases for Nigeria and Africa from data collected from the National Centre for Disease Control (NCDC) and WorldoMeters.info websites (for Africa's updates). The dashboard also includes other features such as daily statistics, weekly trends, and information on the availability of food banks to help the users locate palliatives during the Covid-19 pandemic lockdown.

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humanglemedia@gmail.com

Software
Software: ArcGIS Pro 2.5

NATURAL RESOURCES

KARSHI CONTOURS

Starter Point
33 Euphrates Street, Maitama – Abuja FCT
By MADU CHINENYE

During construction, several properties might be demolished as a result of a change in physical planning, right of way among other reasons. The locals with affected properties therefore need to be compensated. However, the locals' claims are often exaggerated.

To ascertain the accurate volume of compensation for each beneficiary, a recent map is required because the study area lacks recent satellite imageries. Starter Point used a special mapping drone to take overlapping images (aerial photographs) of the area of interest (Karshi, Abuja).

ArcGIS Pro was used to render, process, and create an orthomosaic imagery for the study area at a high resolution. Elevation data of the area was exported from google earth and processed with GlobalMapper. The datasets were published on ArcGIS Online as tile layers for easy visualization.

With the updated map, our client would henceforth allocate compensations specifically without fear of frivolous litigation, thereby saving cost and fostering fast decision making.

Contact
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Software
Software: ArcPro, ArcMap, Google Earth, Global Mapper and ArcGIS online

Sambus Geospatial

Sambus Geospatial is measured on the quality, innovation, focus and long-term relationships and results. Our custom-made solutions are carefully developed by our professional staff using our technologies and Intelligent Information Management Systems to deliver end-to-end Information Technology solutions to the client's specific needs, as we take full responsibility for Installation support, system maintenance and Training Services required. We are measured on quality, innovation, focus on long term relationships and results.

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