

NEWSLETTER

4th Edition | September 2021

**ARCGIS EDUCATIONAL
PACKAGE FOR KAAF
UNIVERSITY**

**FACILITY MAPPING
OF INFRASTRUCTURE**

TESINI PRECIOUS DOMBO - SAMBUS GEOSPATIAL

**DONATION TO IDP
CAMP - ABUJA**

MAP GALLERY

THE BEST MAPS DEVELOPED BY GIS
PROFESSIONALS FOR VARIOUS INDUSTRIES

**GIS FOR ASSET
MANAGEMENT**



DISCOVERING THE WORLD THROUGH GIS

Whether you are a professional cartographer, a GIS manager, or a geography newbie, we encourage you to join us to learn and participate in the celebration of GIS on November 17th, 2021.

GIS day

November 17th, 2021

GIS Day 2021

Share your passion and inspire the world with GIS

Participate in the international celebration of GIS technology. GIS is a scientific framework for gathering, analyzing, and visualizing geographic data to help us make better decisions. On GIS Day, help others learn about geography and the real-world applications of GIS that are making a difference in our society. It's a chance for you to share your accomplishments and inspire others to discover and use GIS.

Visit sambusgeospatial.com to read our past GIS Day stories

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MANAGING DIRECTOR'S MESSAGE

All across our region, governments and business owners are beginning to realize the benefits of Geospatial technology integration as a sustainable development strategy. Technological advancement contributes to how society adapts to changes and provides solutions to challenges through effective and efficient services.

Geospatial information enables us to acquire useful knowledge that provides modern-day businesses and government decision-makers with capabilities towards quality planning and sustainable management. It involves different location-related datasets, combined into layers that show information such as land use and population density among others.

This edition of our newsletter features the most recent developments in Geographical information system - GIS, with details on the technical knowledge from geospatial industry trends critical to the industry build-out in West Africa.

In the previous editions, we highlighted geospatial application areas, capabilities, and results in our region with client interviews, features that gave a sneak peek into our customer's user experience providing the value chain that geospatial solutions feed.

In this quarter, you will have access to insights on best practices that will inspire you to continue to leverage the opportunities that geospatial technology advancements impart. We are building off on featuring projects that help in softening the ground flow of the industrial trends.

Thank you to our readers and contributors for providing informative local content and comments that enable this production. We are encouraged by your consistency.

Best Regard.



Akua Aboabea Aboah
Managing Director | Sibus Geospatial

THE TRUSTED STANDARD FOR GEOGRAPHIC INFORMATION SYSTEMS TRAINING

Sibus Geospatial provides a standardized training programme designed to equip learners and professionals with the knowledge and necessary skills required to effectively use location intelligence tools in solving everyday problems for sustainable development.

Our training module is developed on a periodic schedule and "on demand" basis, to gradually mould users in leveraging our solutions in the most efficient manner to improve productivity.

Receive the best guidance from certified instructors, with proven track record in using geospatial tools to deliver the quality results needed to guide decision makers in visualizing, analyzing and interpreting data to aid in making informed justifications.

Visit our website @ www.sibusgeospatial.com to see more training details and testimonials.





ArcGIS Dashboards

Your information at a glance, designed for those who need it



Easy to understand

Dashboards are visual displays that present data in an easy-to-read format. All relevant information can be seen on a single screen, facilitating understanding quickly and easily.

Ready to use & Interactive

Access dynamic dashboards that feature a robust suite of interactive data visualization tools, designed to answer questions and solve everyday problems by exploring the data.

Flexible

Build a dashboard that fits your needs and takes advantage of the data you have. Pull in external content and integrate with other web apps—the power is in your hands.

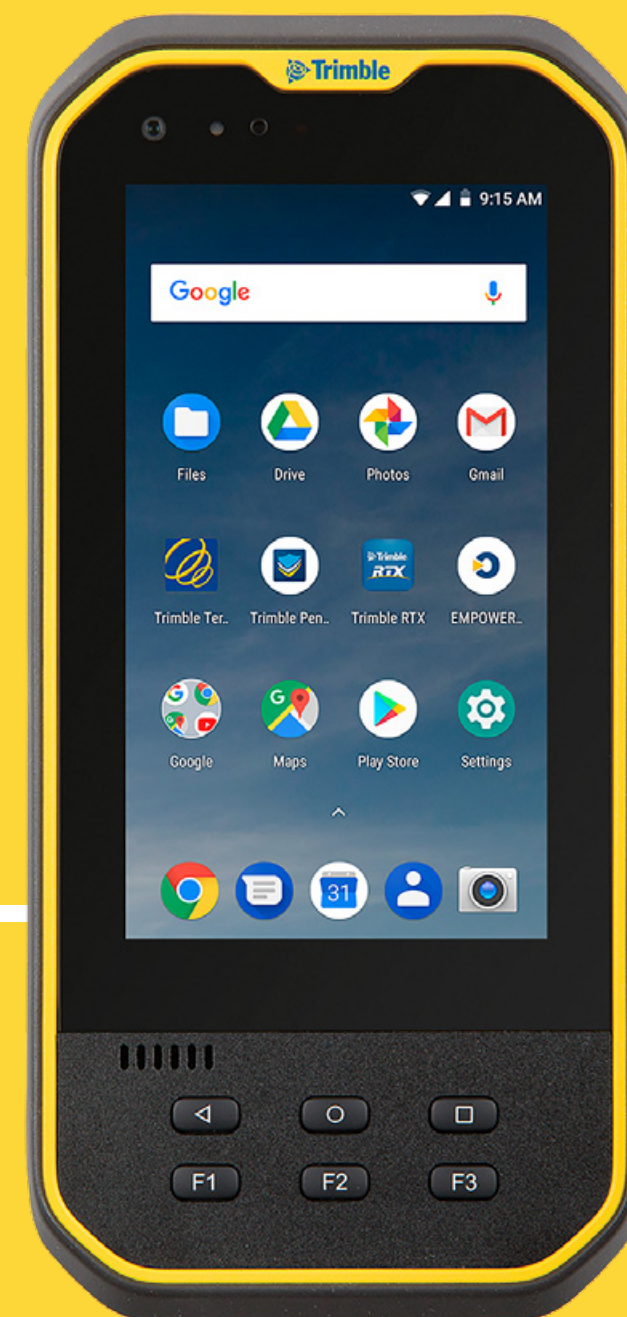
Configurable

Adapt dashboards to specific audiences, events, and situations. With multiple structure and a variety of design options, configuration is streamlined and straightforward.

Fully integrated with ArcGIS

ArcGIS Dashboards leverages all your ArcGIS data and takes it further with the ability to bring in data from other sources, including real-time feeds, to give additional context and scope. ArcGIS Online gives you full control of sharing your dashboards so you can decide who sees them—your team, your organization, or even the public.

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Normad 5

Handheld Data Collector

An easy-to-use handheld for the professional field worker

2-4 m
GNSS Accuracy

Android 9.0
Operating System

12.7 cm/5"
Screen Size

A fully-rugged mobile computer designed to make your professional work life easier, productive and more efficient.

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PROCESS, ANALYZE AND SOLVE PROBLEMS WITH SAR DATA

ENVI® SARscape®

ENVI SARscape is designed for those who are knowledgeable about SAR data and processing and enables users to modify parameters to create the exact products they need

Data support and processing

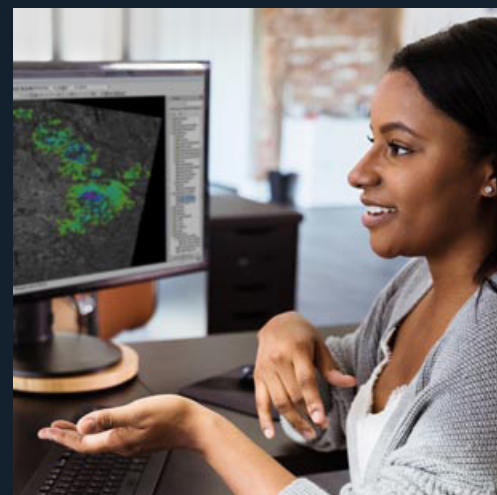
ENVI SARscape works with all commercially available SAR data as well as many non-commercial SAR data sets including Sensor Independent Complex Data (SICD). ENVI SARscape works with any size data and has automated tools to quickly and easily prepare SAR data for viewing and further analysis. A lot of time and effort can be spent making SAR data ready for analysis.

Maximize the benefits of amplitude and phase

SAR data provides not only amplitude or the intensity of the backscatter response but also phase, which allows for measurement of height and displacement – a unique benefit to SAR. ENVI SARscape has tools to extract information from both the amplitude and phase, which enables users to fully utilize all aspects of SAR data to increase knowledge about areas of interest.

ENVI® SARscape® Analytics

ENVI SARscape Analytics is the “grab and go” version of ENVI SARscape. It provides easy-to-use workflows for some of the most common SAR processing applications and presents them in a simple way to users. These streamlined tools can be accessed in the ENVI toolbox and ENVI Modeler as well as ArcGIS Pro, and do not require you to be an expert in SAR to run them.



WingtraOne GEN II

The next level of drone worksite reliability and mapping versatility with an oblique payload leading the way.

100'000
user flights

6 years
of ongoing testing and
improvements

40+
software releases



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ARCGIS EDUCATIONAL PACKAGE FOR KAAF

Supporting KAAF University with ArcGIS Educational Package for Teaching and Research Purposes.

Sambus Geospatial Limited, a Geographic Information System (GIS) and mapping company, supported the Geomatics Department of the KAAF University College, located in Kasoa Central Region of Ghana, with an ArcGIS Educational Package on Thursday, 29th of July 2021. The ArcGIS Educational Package comprises a suite of apps to support teaching and research activities in the department. In addition, ESRI resources such as ArcNews, Map Books and ArcUser Magazines were also provided. This formed part of the company's Corporate Social Responsibility in growing the teaching and learning of GIS.

KAAF University College is affiliated to the Kwame Nkrumah University of Science and Technology (KNUST), the Ghana Institute for Management and Public Administration (GIMPA), and the University of Development Studies

(UDS) with the accreditation to offer programs leading to the award of Bachelor of Science degrees in Civil, Geomatics, Mechanical, Electrical & Electronic Engineering, Construction Technology, Computer Science, Nursing, Midwifery and Business Administration since 2007.

Present at the presentation were, Ing. John Nana Otchere, the Dean of the Engineering Faculty, who received the package, Mr. Franz Okyere (Head of Geomatics Engineering Department), Mr. Samuel Nkpeebo Donkor (Nursing Department), and Mr. Joseph George Davis (Head of Computer Science Department). Ing. John Nana Otchere expressed his gratitude for the donation and stated that the software package will go a long way to enhance teaching, learning, and research work in the Geomatics Engineering Department and the entire faculty altogether.



Sambus Geospatial Nigeria Presents Food Relief Items to Internally Displaced Persons- IDP Camp in Abuja

Sambus Geospatial Nigeria visits Internally Displaced Persons Camp- IDP for a charity donation to support people affected by the insecurity crisis in the nation. This was done to commemorate World Humanitarian Day on Thursday 19th of August 2021. Humanitarian Day is an international day mapped out to honor humanitarian personnel and those who have lost their lives working for humanitarian causes. It is marked each year to support the cause of humanitarian activities.

Sambus Geospatial Nigeria visited the IDP Camp located at Durumi in Abuja with food relief items to support the livelihood of the displaced person living in the camp to commemorate World Humanitarian Day.

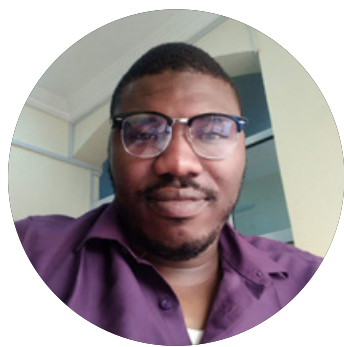
Durumi IDP Camp began in 2014 after an attack on the villages in northeast Nigeria by a terrorist group Boko Haram. The camp accommodates nearly 2000 people who have fled from their hometowns into the city. The camp chairman Mr. Ibahim received the donated items presented by Precious Chinwe Aniekwenwa the communications and CSR officer on behalf of Sambus Nigeria.

Others present were a few of the camp occupants and the members of the Sambus Nigeria team Olumide Ogungbemi from the research team, Obinna Mbere-de and Samuel Andrew Tokpaf from the technical sales team who were present to support the children through educating them on relevant subjects.

The camp chairman Mr. Ibahim expressed his appreciation stating that the camp has survived this far through such charity donations and sacrifices and hoped that things would get better for the nation. He thanked the Sambus team for their act of kindness.



Facility Mapping of Infrastructure



This project aims to display the powerful use of Esri GIS Software for mapping Ajaokuta steel rolling mills.

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The precise location of every aspect of infrastructure, from what is underground to what is overhead, is easier to discern and understand using geospatial information and technologies. Fortunately, tremendous advances in geospatial technologies have made these tools far more powerful, accessible, and usable—many of which have been driven by the commercial sector, including Esri.

Using technologies such as intelligent, real-time GIS and GPS maps to prioritize, plan, and execute new infrastructure projects can help public and private infrastructure investments be more efficient and reduce waste.

Maps made with GIS, GPS, and aerial imagery can be quickly created and updated. They also usually include detailed information not only about current and planned infrastructure improvements but also about the contexts in which they are being implemented. For example, if a local government wants to see all the potholes in its downtown area mapped out, it can use GIS to do so—and then add useful data layers like traffic flow and pavement type to figure out what's causing them and how to prevent them in the future. To improve project planning and operations, these maps can be shared digitally across sectors.

The Study Area

Ajaokuta Steel Company is Nigeria's leading steel company. Guided by a philosophy to produce safe, sustainable steel, it is the leading supplier of quality steel products in all the major economic sectors including the construction, packaging, and wire drawing/nail making industry. ASCL operates in all the major markets in Nigeria and employs about 3000 people.

The Federal Government of Nigeria established the Nigerian Steel Development Authority (NSDA) in 1971 through Decree No. 19 in order to advance the development of the Nigerian Steel Industry. NSDA carried out detailed market studies and investigations on the availability of local raw materials.

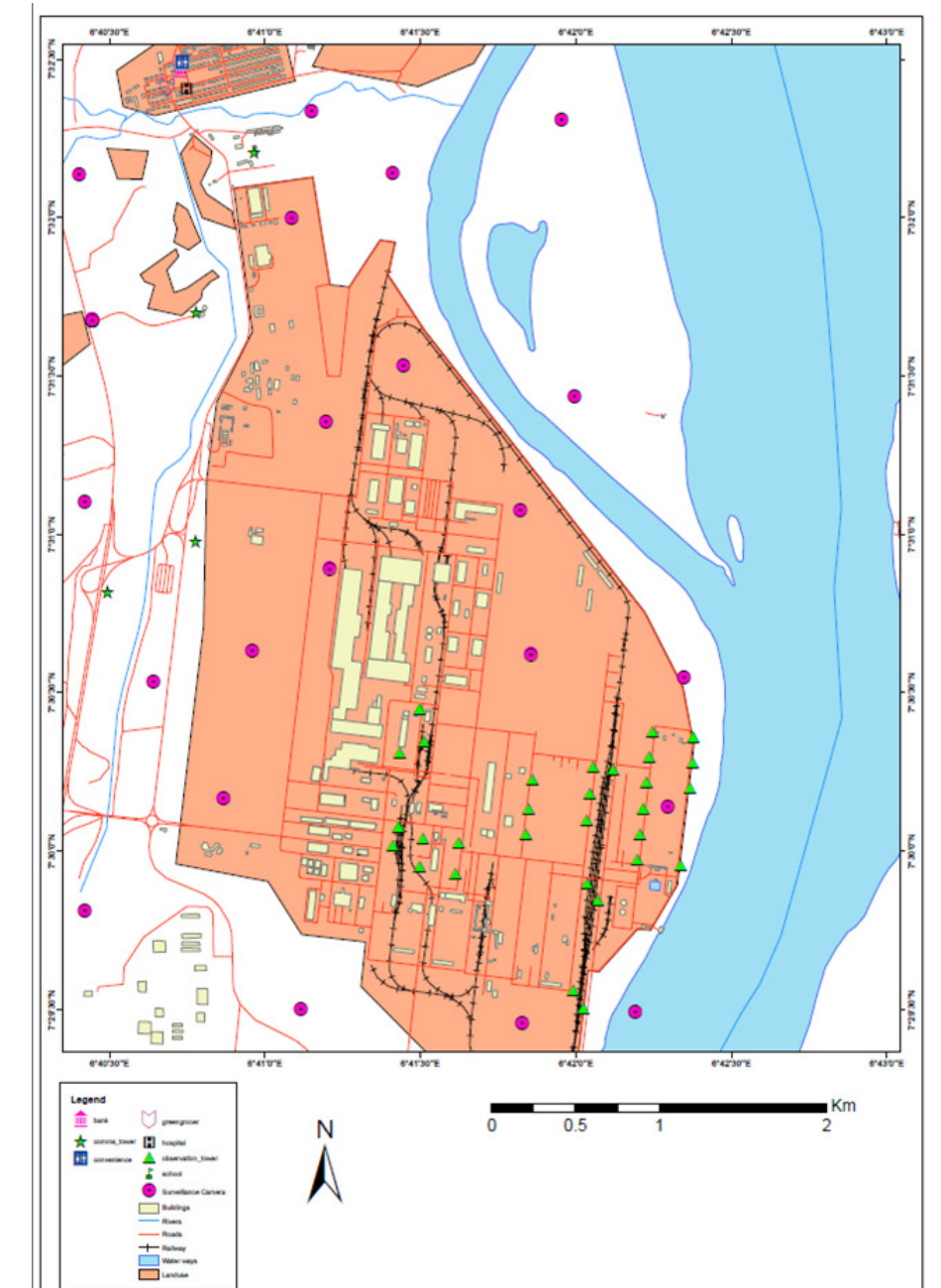
The Preliminary Project Report (PPR) of 1974, the Detailed Project Report (DPR) of 1977, and the Global Contract (1979) for construction of the steel plant at Ajaokuta were all commissioned and executed during the NSDA period. The NSDA was thereafter dissolved through decree; No. 60 on the 18th of September 1979. This decree also created Ajaokuta Steel Company Limited, ASCL being the successor of NSDA.

The Ajaokuta integrated steel complex was conceived and steadily developed with the vision of erecting a Metallurgical Process Plant cum Engineering Complex with other auxiliaries and facilities. The complex is meant to be used to generate important upstream and downstream industrial and economic activities that are critical to the diversification of our economy into an industrial one. Ajaokuta Steel Plant is therefore aptly tagged as the "Bedrock of Nigeria's industrialization".

The project was embarked upon as a strategic industry, a job creator, and a foreign exchange saver and earner. It was envisaged that the project would generate a myriad of socio-economic benefits and increase the productive capacity of the nation through its linkages to other industrial sectors. It would provide materials for infrastructural development, technology acquisition, human capacity building, income distribution, regional development, and employment generation.

While the project would directly employ about 10,000 staff at the first phase of commissioning, the upstream and downstream industries that will evolve all over the nation will engage not less than 500,000 employees.

The plant by 1994 was reckoned to be at 98% completion in terms of equipment erected. Some completed units of the Plant operated at different times but had to shut down due to the non-availability of funds.



GIS FOR ASSET MANAGEMENT

Geographic Information Systems (GIS) have greatly become beneficial as an underpinning and qualifying technology within most sectors and especially within the area of business intelligence. Research proves that the expenditure assembled to integrate GIS in assets monitoring has proven to be cost effective as it generates a better return on investment for users within this field.

Assets can be simply explained as resources or items of value which belongs to a company or an organization. The meritorious management of resources is vital in standard workflows, both in the office and on the field. GIS has made it possible to monitor the deployment of assets or resources in one place for optimal utilization and maintenance updates

In deciding on investment strategies, asset management and analysis can be used to give account of resource conditions to enable decision makers to focus on what to invest in. Almost every business manages and locates assets because it is a very important challenge for them, whether large or small. Usually, businesses wasted labor, struggled to keep up with deadlines and made their clients displeased due to inappropriate resource allocation and mismanagement, slowing down their productivity in the process. There is more to asset management today than just counting equipment and recording numbers into a registry or a balanced sheet.



Appreciating the value of an asset, helps organizations to save money spent on resources as they reap the benefits that comes with it greatly.

Today, the new developments in GIS infrastructure have enabled companies to better organize their assets at the core by creating a region to log, display and allocate every information about asset in permutation with any form of conservation or updates needed. With the application of GIS, companies are able to track operations as they maintain the asset strength. GIS has the ability to analyze and collate different types of assets to uncover correspondence, drawbacks and patterns. In effect, asset features such as materials, spatial location, just to mention a few can be preserved and optimized.

In transport asset management, time and money can be saved by automating mapping. Specialized maps can be developed to display the situation of assets and an organized outline of locations. It also has need of appreciable performance of workers. Smaller time can be less spent in making a retaliation to data requisition, thus allowing professionals to spend more time in the analytics and acknowledgement of conditions and asset trends.

Smart maps and dashboards can be utilized by inventive supervisors to establish an expansive perspective of their assets. Habitual functions such as maintenance and a few others can be enhanced by Location intelligence. With real time monitoring and big data logic, businesses can prioritize on every occurrence that is of significance to them to enable them find better solutions at the right time.

In as much as asset management is assisted by GIS, it also invents and aids other GIS applications for Works in the public like infrastructure assets, street maintenance among others.

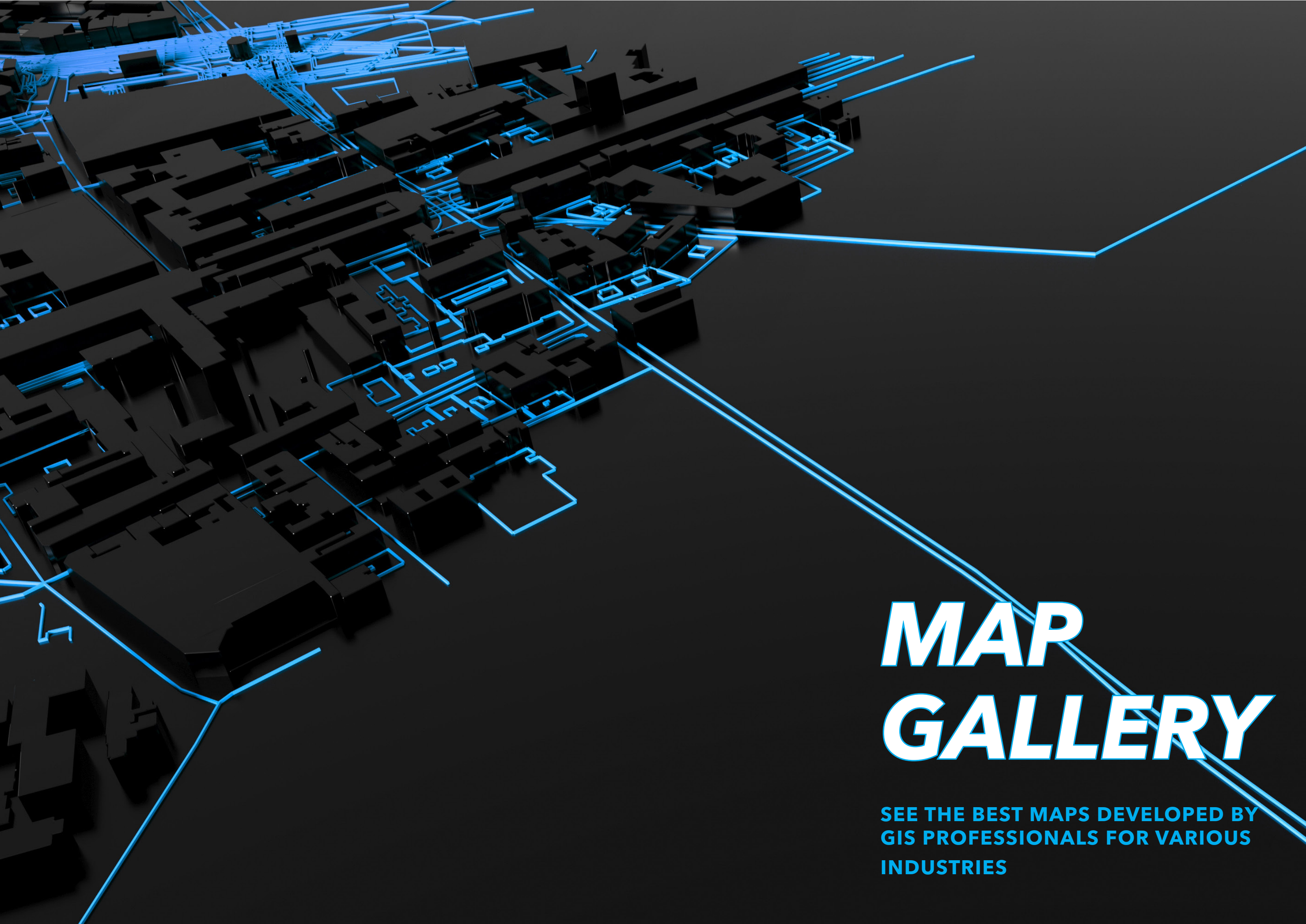
Project maintenance and repairs are necessities in societies to enable better efficiency. GIS has made it simple for handling assets, while it ensures that work orders elicited from factors like public safety, are being analyzed, by using precise data produced by workers. Upgrading how GIS is manipulated can broaden reach. Fieldworkers and the office professionals can have a connection with the use of specific ArcGIS software developed to function on mobile devices, which helps to create a seamless interaction among users and also share results in the form of maps and analytic dashboards.

Some webapps and analytic tools in the ArcGIS Suite can be utilized to store records for track of maintenance schedules, when the maintenance is performed or executed, the time spent between repairs and also how long assets have been utilized. This enables organizations to maintain assets at a lower cost as compared to replacing tools.

The goal for utilizing location intelligence in asset management, is to make the data of facilities available through easily operated systems, enabling organizations to account for all of its assets, while eliminating ghost resources in a company's inventory. By ensuring that decision makers have access to the data needed, especially from the preliminary process, it can be assured that facilities and assets would be maintained over time, consequently improving productive speed in the process.

Read the latest articles developed by Sambus Geospatial on various industry specific topics.

Visit www.sambusgeospatial.com



MAP GALLERY

**SEE THE BEST MAPS DEVELOPED BY
GIS PROFESSIONALS FOR VARIOUS
INDUSTRIES**



FCTA Bridge Rehabilitation

Jabi Mall Bridge Project



ENVIRONMENTAL IMPACT ASSESSMENT (EIA) OF A PROPOSED BRIDGE REHABILITATION IN JABI FCT

Depending on the type of assessment being conducted, EIAs can take many different forms. Environmental Impact Assessments are designed to protect the environment while also allowing local planning authorities to make informed decisions when granting project planning permission. It should also ensure that the public has early and effective access to decision-making processes.

The regulations lay out a process for determining which projects should be subject to an Environmental Impact Assessment, as well as assessing, consulting on, and making a decision on projects that are likely to have significant environmental impacts.

This demo project shows the capability of the ArcGIS Software in the automation, design and development of a model that could be used in EIA processes. This project employs the use of EIA model to generate an Environmental impact Assessment bridge rehabilitation report.

The software also generates enhanced site analysis description results which are quite usable for site engineers and stakeholders alike.

Software

ArcGIS Pro 2.8.1

Data Source: Esri Basemap | Authors' Data

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ASSET MANAGEMENT FOR WATER UTILITIES

Asset management involves achieving the least cost and least risk of owning and operating assets over their life cycle while meeting service standards for customers. Consequently, utility managers need to put in place policies, plans, and strategies. They must also develop and implement a suite of processes that cover asset acquisition, operation, maintenance, overhaul, and disposal. Asset management also means applying tools that help make these processes effective, such as setting service levels, computing life-cycle asset costs, maintaining an asset register, monitoring asset condition and performance, and carrying out risk analysis of possible asset failure. Asset management for water utilities is more complex than for most other sectors because of the number, variety, age, condition, and location of assets; the magnitude of asset investment; and the difficulty of inspecting and maintaining buried assets. This complexity is often compounded by lack of finance, information, and skills that can impede acquiring, commissioning, maintaining, overhauling, and replacing assets at the optimum time.

Asset management is impossible without the support of good asset records (usually known as an asset register or asset database). This requires investing in robust processes for consistently collating and recording information; gathering past data; establishing an asset classification method; and investing in a computer system that contains a number of key modules to allow, for example, planning and acquisition of assets, maintenance of records, and scheduling of asset replacement.

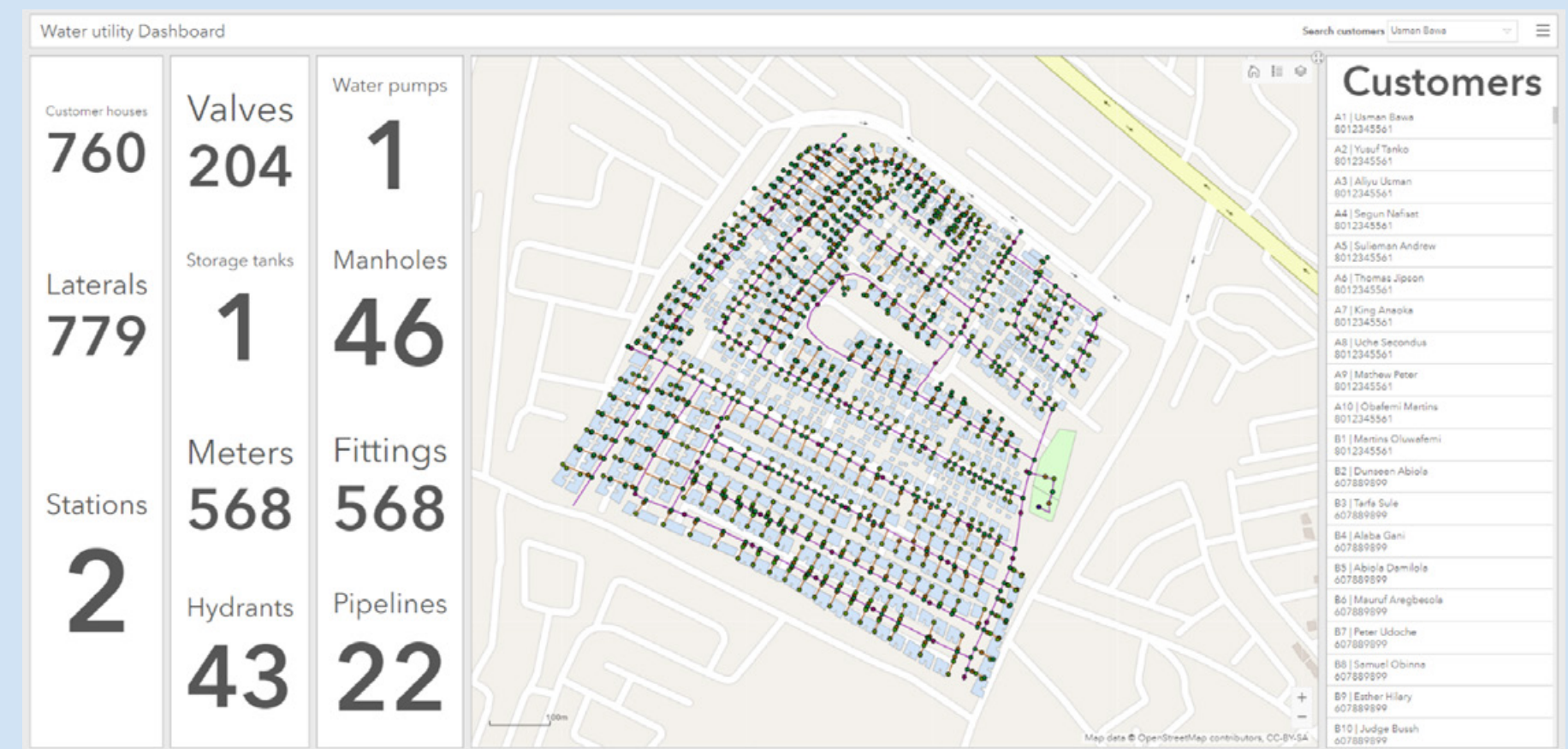
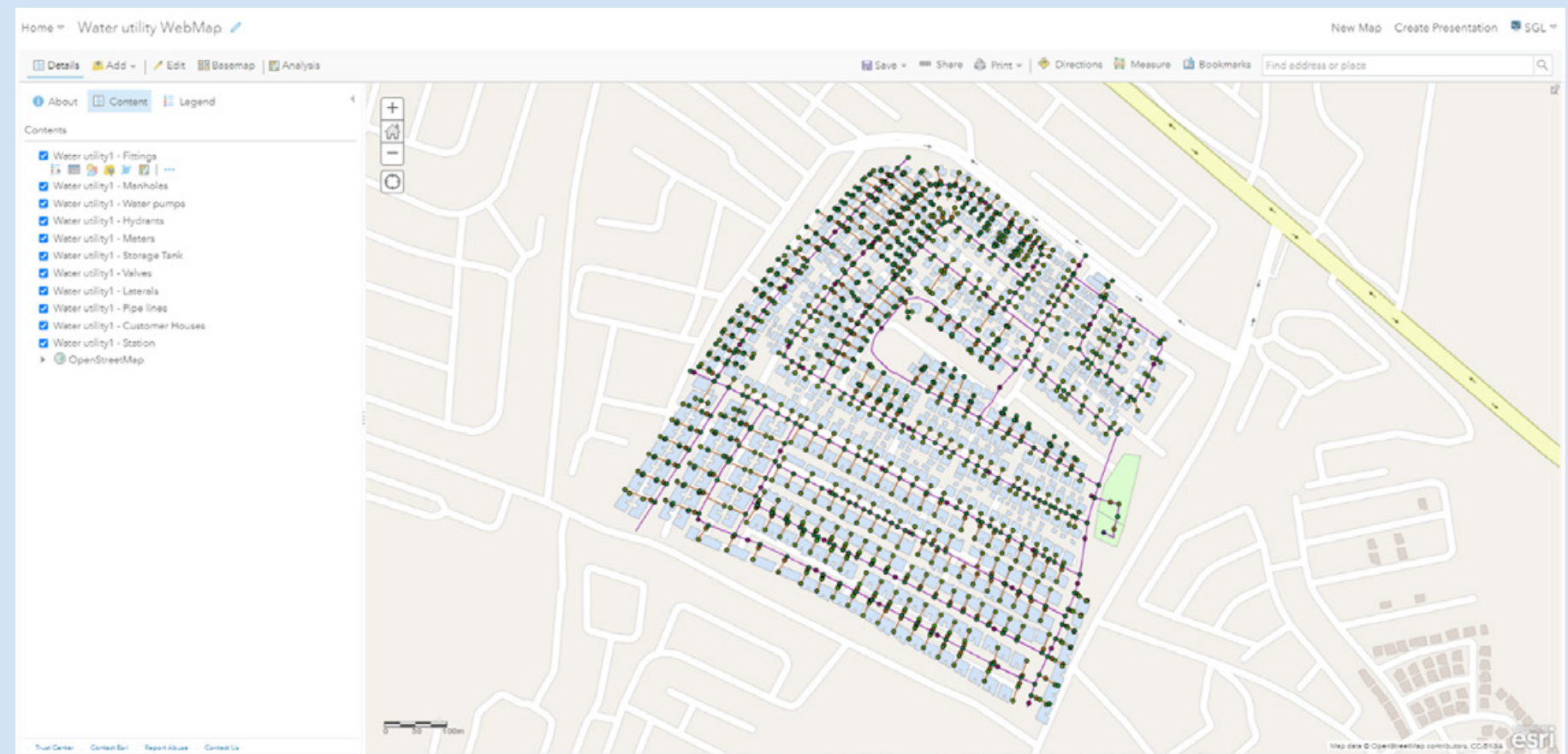
Asset record systems include card indexes, spreadsheets, customized software from major vendors, or computer applications developed in-house. Customized vendor systems may be the most cost and time-efficient option. Vendors have invested considerable funds to develop their asset systems, which are integrated with other systems such as financial, customer services, maintenance, and GIS.

Software

ArcGIS Pro, Survey123, ArcGIS for workforce

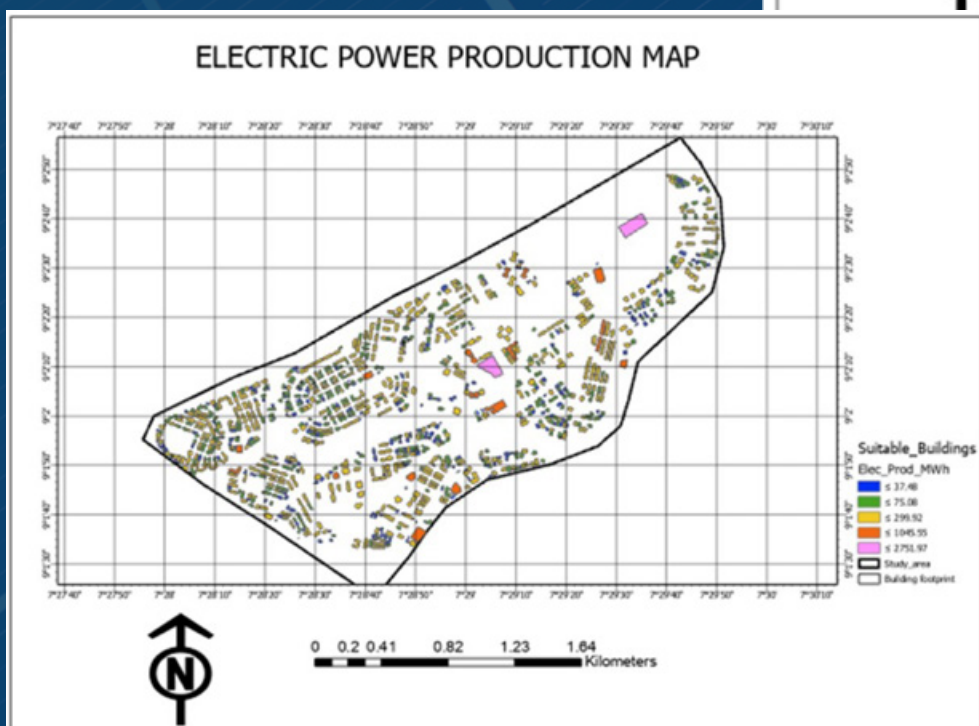
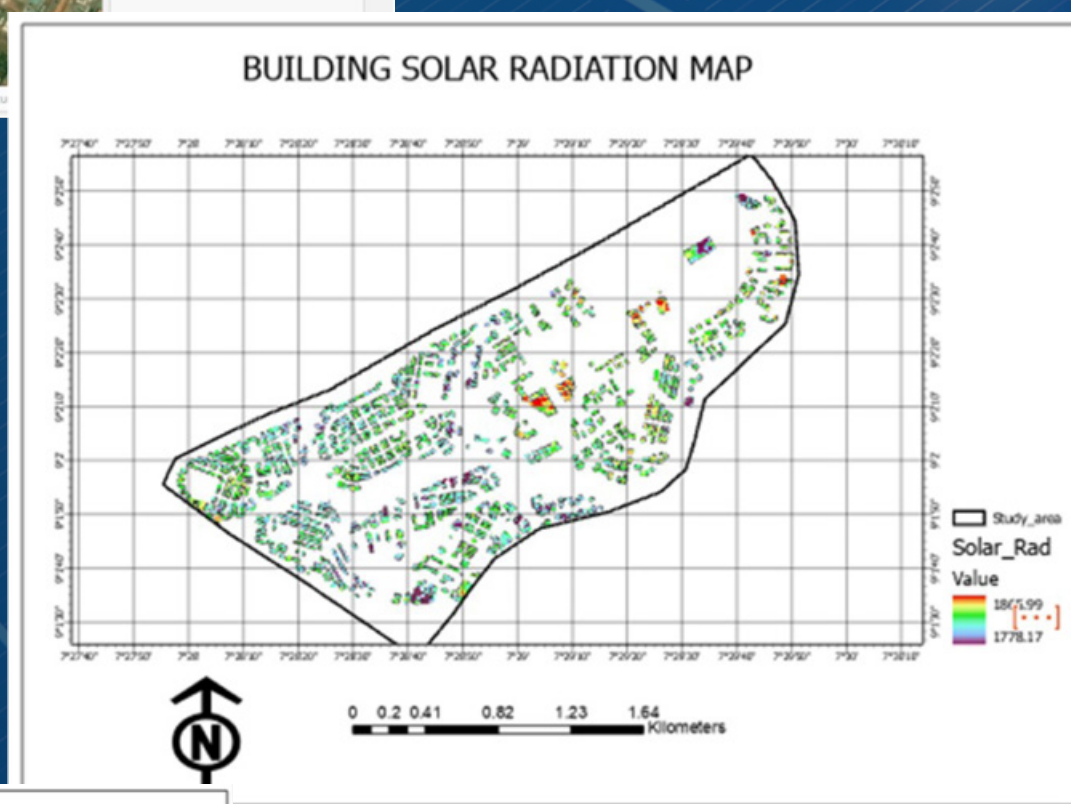
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In the process of mapping solar radiation of an area, open the Geoprocessing tools toolbox and search for Area Solar Radiation. This tool is under Spatial Analyst tools which derives incoming radiation from raster satellite imagery surfaces. In the Area Solar Radiation tool, raster elevation data, DEM image (2016) of the study area is chosen as the input raster. The process is streamlined to the building footprint alone by mask it with building footprints in the study area



► The solar radiation raster as derived from the tool uses watt-hours per square meter as its unit of measurement. For easier measurement, the values of the raster layer were converted to Kilowatt-hours per square meter (kWh/m²) using raster calculator tool.

ESTIMATION OF SOLAR POWER POTENTIAL USING GIS

GIS as a system containing hundreds of tools to analyze, manipulate, assemble, and store spatial attributes can enhance estimation of solar power potential of an area. This project determines how much solar radiation each rooftop in a neighborhood within Abuja metropolis, FCT, Nigeria receives throughout the year 2016. When the Solar power for the rooftops were generated, the suitable rooftops can then be generated based on the area of the rooftops for optimum Electric power solar panels installations. The amount of electric power each of the suitable building rooftops can generate is the estimated.

Identifying Suitable Rooftops

There are several criteria to identify suitable rooftops for solar panels, part of which are slope, orientation and the minimum amount of solar radiation received. In this project, the slope condition regarded to be suitable for solar panel configuration are slopes of 45 degrees or less, as steep slopes receive less sunlight. To do this, I created a slope raster layer and used it in extracting solar radiation that suites the said condition. The direction/ orientation is also an important factor for suitable rooftops of panel configuration. Suitable rooftops should not face north, as north-facing rooftops in the northern hemisphere receive less sunlight. To determine rooftop orientation, aspect raster layer was created using Aspect under Spatial Analyst Tools. For solar panels are to be installed, rooftop surfaces should receive at least 800 kWh/m² in solar radiation. Con tool under Spatial Analyst Tools was used to remove the solar radiation lesser than 800 kWh/m². The total sum of electric power that could be generated in the study area in the year 2016 was estimated to be 116,634.94 MWh

Software

ArcGIS Pro 2.7
Spatial analyst Extension
Data Source: High Resolution Satellite Image - Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

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A

ARCHITECTURE

GIS IS HELPING **ARCHITECTURE, ENGINEERING, AND CONSTRUCTION (AEC)** FIRMS BUILD SMART COMMUNITIES AND ASSETS FOR THE FUTURE BY UTILIZING CONTEMPORARY LOCATION INTELLIGENCE SOLUTIONS TO IMPROVE WORKFLOWS, BRING CONTEXT TO PROJECTS, AND INCREASE COLLABORATION THROUGHOUT PROJECT LIFE CYCLES.

Location-based workflows founded on GIS technology is able to harness its power to make projects easy to plan, design, build, and operate. Learn more on GIS for AEC at www.esri.com/en-us/industries/aec/

E

ENGINEERING

C

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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 service Team 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.

