

From Analog to Digital

Modernizing Operations for Mapping Needs of Kenya

Kenya, an East-African country nestled between Lake Victoria and the Indian Ocean, is known for its wildlife, culture, and dramatic landscapes. Ranging from tropical forests and beaches to arid deserts and grasslands, each of these landscapes contains a diverse set of resources and supports an abundance of wildlife – both of which are important to the country's sustainability – but can also make it a challenge to map.

Survey of Kenya, established in 1903, is responsible for the mapping needs of the entire country. As part of the Ministry of Lands & Physical Planning, Survey of Kenya employs approximately 1,500 personnel across eight divisions: Land Survey; Cartography; Geospatial Data Management; Photolithography; Photogrammetry; Hydrography; and the Geodetic, Technical, National and International Boundaries.



Survey of Kenya focuses on assisting the government with the establishment of boundaries, adjudication of land, mapping of resources for exploitation or conservation, and hydrographic surveys in support of the shipping lines. They provide data to government bodies, universities and research institutions as well as creating maps for the general public.

With so many varied responsibilities, it was vital that Survey of Kenya modernize their services, processes, and tools to keep pace with the evolving capabilities of geospatial technology and better meet mapping needs to support operations and decision-making within their country.

Time-Consuming Data Production

Survey of Kenya had been using an outdated and time-consuming analog mode of producing and consuming geospatial data, which was tedious, complicated, and limiting in scope. The organization lacked the ability to collect, process, analyze, and interpret data strategically.

In order to upgrade their systems, processes, and tools to become more agile, accurate, and productive, it was necessary to modernize the operations – a daunting task for a country with such a diverse landscape.

To accomplish this, several immediate needs had to be addressed. First, as with many national mapping agencies, Survey of Kenya manages terabytes of data, including constantly updated aerial photography, satellite imagery, LiDAR data, and vector data sets. They needed a way to store, secure and locate all of this data online.

Next, they wanted to modernize operations by implementing Digital Photogrammetry workstations with 3D capability to support fast data capture for over 50 photogrammetrists.

In addition, for aero-triangulation processes, Survey of Kenya had to rely on third-party organizations, such as local universities, to make the observations for them. Also, the old machines could not be serviced and sometimes failed to start, resulting in slow progression of work.

Efficient Photogrammetry Workflows

Survey of Kenya chose Hexagon's Geospatial division because they could provide powerful and sufficient solutions to meet their requirements.

To address the storage issue, Survey of Kenya implemented an online cataloging system using ERDAS APOLLO. With this system, all of their data is stored and accessible in one system. Capabilities include performing spatial and metadata searches, and delivering the data both through streaming and clip, zip, ship mechanisms. Access to the data is managed through role-based permissions.

To support the photogrammetric operations, the organization selected a variety of photogrammetry, terrain editing, and remote sensing tools, including IMAGINE Photogrammetry, IMAGINE AutoDTM, IMAGINE Terrain Editor, ERDAS IMAGINE, Stereo Analyst for ArcGIS, Terrain Editor for ArcGIS, Feature Assist for ArcGIS, and ORIMA.

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Survey of Kenya was able to convert from 6 analog photogrammetric workstations to 32 digital photogrammetric workstations for faster data capture. Not only did this sharpen the accuracy of their operations, but their productivity increased significantly, while their response time to requests from other departments improved.

Also, after this implementation, Survey of Kenya can perform aero-triangulation easily using the system on their own, without relying on third-party organizations.

Trusted Partner

Oakar Services, Hexagon's Nairobi-based distributor, carried out installation of the software and assisted in setting up the photogrammetry lab and providing Survey of Kenya with strong confidence through their support, troubleshooting, and answers to technical queries.

"Hexagon's Geospatial division and their partner Oakar Services made it easy for us to embrace this new technology," said Cesare Mbaria, Director of Surveys. "They helped us make the transition smoothly and continue to offer us world-class support."

Mapping Kenya Effectively

Since the implementation, Survey of Kenya has improved both the speed and convenience of their data production and exchange.

As with many national mapping agencies, they manage terabytes of data, including constantly updated aerial photography, satellite imagery, LiDAR data, and vector data sets. ERDAS APOLLO allows them to easily catalog, archive, and deliver their data.

With the help of Hexagon's geospatial products and support and training from Oakar Services, Survey of Kenya is able to meet all mapping requirements for the sustainability of the country.

Contact us

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Our technologies are shaping urban and production ecosystems to become increasingly connected and autonomous — ensuring a scalable, sustainable future.

Hexagon's Geospatial division creates solutions that deliver a 5D smart digital reality with insight into what was, what is, what could be, what should be, and ultimately, what will be.

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