Base Mapping for Counties

A Case Study of Nanyuki Town
Who Is Ramani?

• Ramani is the Swahili word for ‘Map’
• Airborne Survey, GIS and Mapping company
• 20 years experience operating across Eastern Africa
## Project Objectives

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<th>Spatial Base Mapping</th>
<th>Specific Goals</th>
<th>Additional Goals</th>
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<td>To carry out a pilot project that includes the creation of a detailed Spatial Base Map of Nanyuki Town</td>
<td>To understand the benefits of base mapping for affordable housing programs and the creation of a Land Information Management System (LIMS).</td>
<td>To promote and understand the benefits of base mapping for the effective management of counties</td>
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What is Spatial Base Mapping?

- Spatial base mapping is the development of background and reference data to enable additional information to be overlayed.
- Base mapping varies in scale, levels of detail and accuracy depending on methodology.
- Base Mapping can be national, regional or for small urban areas.
- In this case base mapping was done over 60sqkm of Nanyuki town.
So how we do it?

- Ground Control Network
- Aerial Photography & LiDAR
- Data Extraction into GIS
Deliverables

Aerial Imagery – 10cm
LiDAR Point Cloud
Digital Terrain Model
## Deliverables

- **GIS Layers**

<table>
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<tr>
<th>Infrastructure</th>
<th>Settlement</th>
<th>Drainage &amp; Hydrology</th>
<th>Vegetation</th>
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<tbody>
<tr>
<td>Road centerlines</td>
<td>Buildings</td>
<td>Major rivers</td>
<td>Agricultural land</td>
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<tr>
<td>Road Edges</td>
<td>Physical boundaries (Hedges and fences)</td>
<td>Minor rivers</td>
<td>Forestry</td>
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<tr>
<td>Railways</td>
<td>Streams</td>
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<td>Fallow land</td>
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<td>Power poles</td>
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<td>Full Hydrology model</td>
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<td>Powerlines</td>
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<td>High-voltage lines</td>
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Base Mapping for Affordable Housing

• The base mapping is used to help to understand the existing housing situation in order to form a strategy

• Base mapping can be used for identification of suitable sites for development

• The data can be used for feasibility studies without additional on the ground costs
  • Suitability Analysis
  • Risk Assessment
  • Environmental Impact Assessment
  • Infrastructure availability
  • Access to infrastructure and public services
Base Mapping for Land Management

• Cadastral data is often not georeferenced, or poorly georeferenced and base mapping assists in identifying the location of the land parcel
• The base map provides location reference for all parcels, without the basemap the parcels could appear to be at a random location
• Thus, the accurate base data uplifts the quality of the LIMS
The cadastral plans - scanned
Cadastral plans georeferenced against the aerial imagery and base maps
GIS Database of Land Parcels created
Cadastral GIS Database overlayed on aerial imagery
A cadastral Database overlayed with the Base maps
What are the other Benefits of Accurate Base Mapping

- Spatial Planning
- Revenue Collection & Identification
- Transport & Infrastructure
- Street Addressing
- County Asset Management
- Property Valuation for Tax Purposes
- Agricultural Management
- Disaster Management
- County Asset Management
Spatial Planning

• Base mapping is critical in the development of the County Spatial Plans

• Since the base map is a representation of what is on the ground, planning of town expansion and re-zoning can be made from this information
Revenue Collection & Identification

- Identification of revenue sources can be identified and managed
Street Addressing

• Correct street addressing is critical for administration
• The base maps can enable a systematic approach to addressing
Agricultural Management

• Where, what and how much does the county produce?
County Resource Management
Transport & Infrastructure

• Provides the as-built information for asset management
• Future infrastructure expansion and development will use data for design and budgeting.
Similar Projects Carried Out

• Base mapping of Kisii Town for the SUED Program
• Base mapping of 7 Centers in Wajir Town
• Base mapping of Kericho and Eldoret Town for Spatial Planning
• Base Mapping of Lamu Town for Spatial Planning (KOICA)
Questions?

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