

Scaling Local Innovation into National Open Urban Data Infrastructure: The Coloring Ghana Initiative



AfricaGIS 2025



UN-GGIM: AFRICA
UNITED NATIONS
GLOBAL GEOSPATIAL
INFORMATION MANAGEMENT

S. A. Andam-Akorful,
Department of Geomatic Engineering, KNUST



International Federation of Surveyors
Fédération Internationale des Géomètres
Internationale Vereinigung der Vermessungsingenieure



KNUST
KWAME NKRUMAH UNIVERSITY
OF SCIENCE AND TECHNOLOGY

Urban Spatial Data Context in Ghana



Rapid urbanization
with limited
building-level data



Fragmented spatial
data across
agencies different
agencies



Weak integration of
spatial data in
planning



Need for open,
standardized data
systems at scale



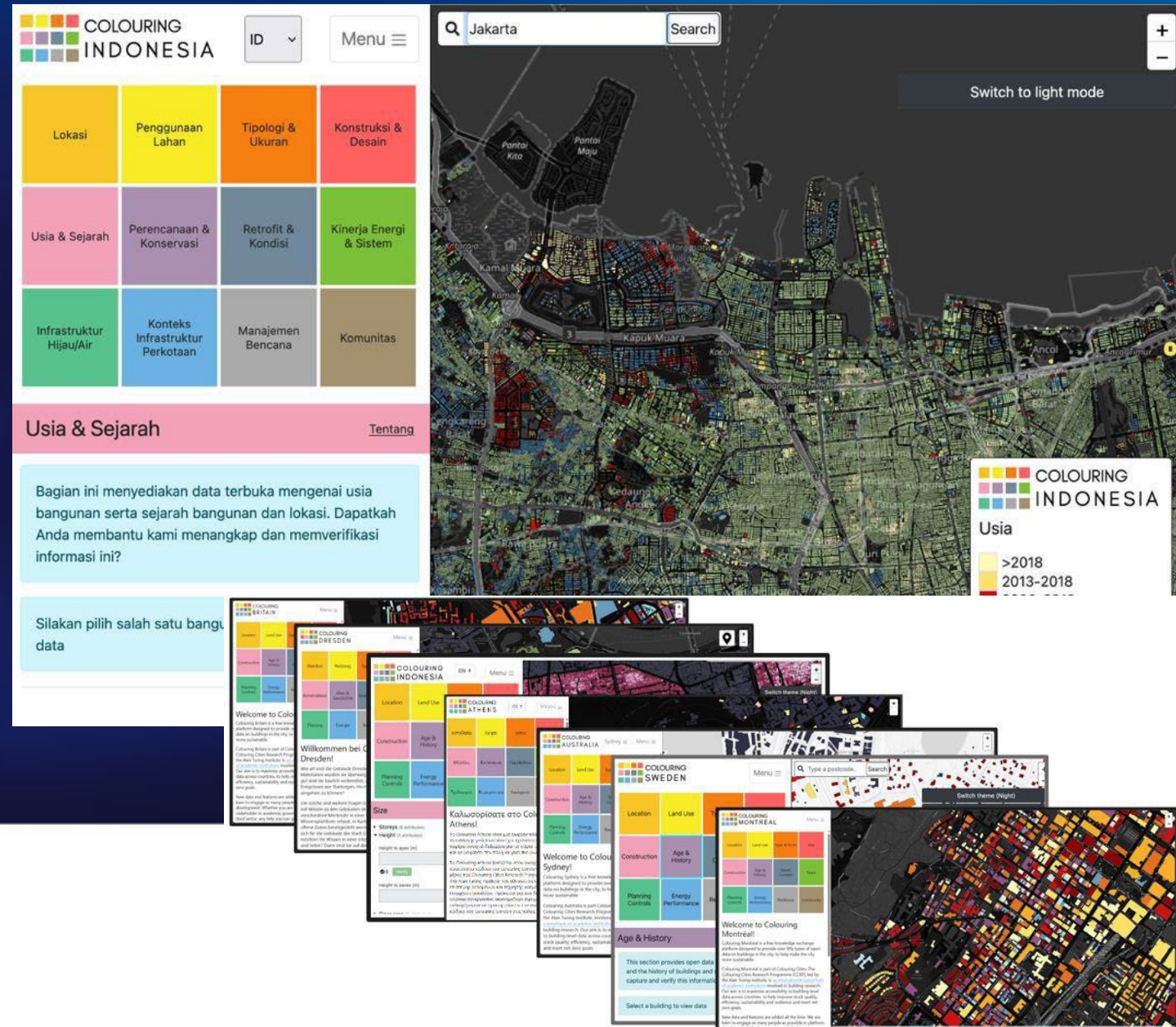
AfricaGIS 2025



UN-GGIM: AFRICA
UNITED NATIONS
GLOBAL GEOSPATIAL
INFORMATION MANAGEMENT

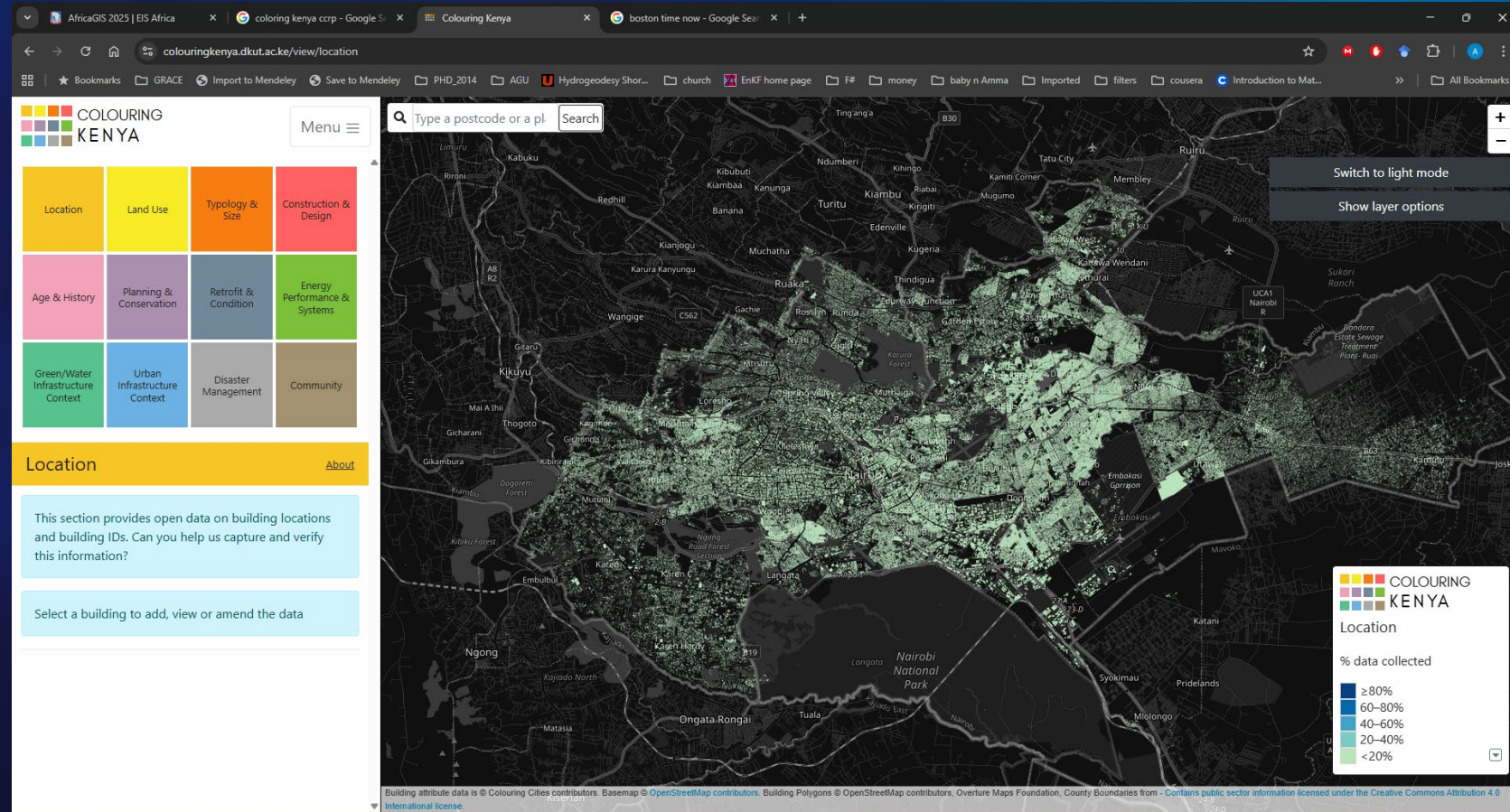
The Colouring Cities Research Programme (CCRP)

- Global, research-led open-data initiative
- 30+ countries, open-source, reproducible platform
- Decentralised governance, open standards, AI-ready
- Value-led & voluntary
- Supports SDGs, climate resilience, digital transformation



Coloring Ghana

- The second implementation of CCRP in Africa after **Colouring Kenya**
- A testbed for applying CCRP methods in a rapidly urbanizing Ghanaian/African context using students



AfricaGIS 2025



UN-GGIM: AFRICA
UNITED NATIONS
GLOBAL GEOSPATIAL
INFORMATION MANAGEMENT



Geospatial Survey Camp @KNUST



Traditional
Stools



OFORIKROM
MUNICIPAL



Survey Camp 2024

Economy

KNUST Geomatic Engineering students to develop maps for improved town planning

🕒 9 September 2024 5:53pm



MOST POPULAR NEWS

- Recruitment for Police, Immigration, Fire, and Prisons Services opens today: Here's How to Apply
- Prof. Gyampo demands retraction and apology from UG colleague over alleged defamatory comment
- 'Jet is back, but show us the proof' – PSB demands independent certification of Falcon Aircraft
- Birth certificate, Ghana card, and WASSCE certificate mandatory for 2025 Security services recruitment
- ECOWAS court dismisses former CJ Torkornoo's bid to halt investigative

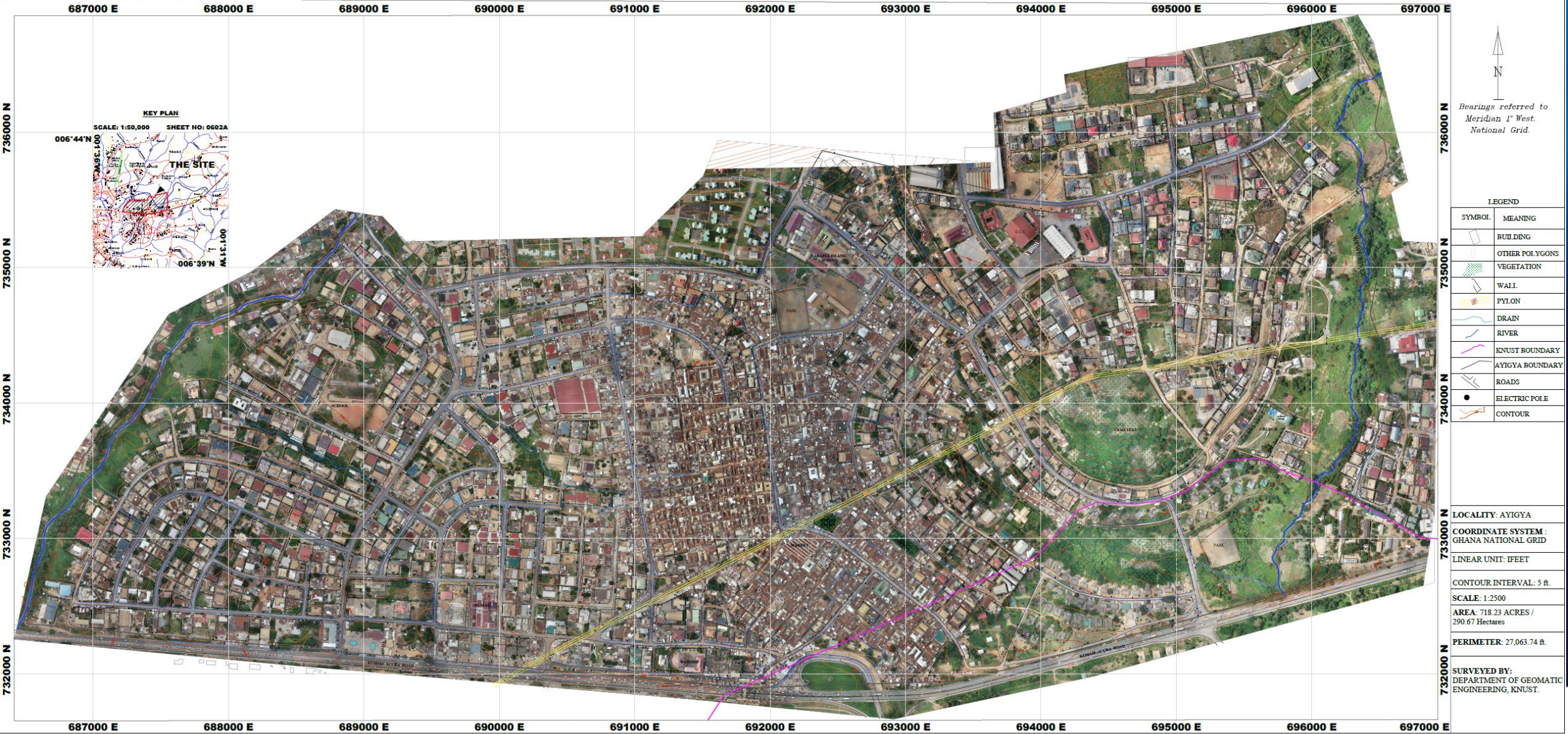


AfricaGIS 2025



UN-GGIM: AFRICA
UNITED NATIONS
GLOBAL GEOSPATIAL
INFORMATION MANAGEMENT

TOPOGRAPHIC MAP OF AYIGYA COMMUNITY



AfricaGIS 2025

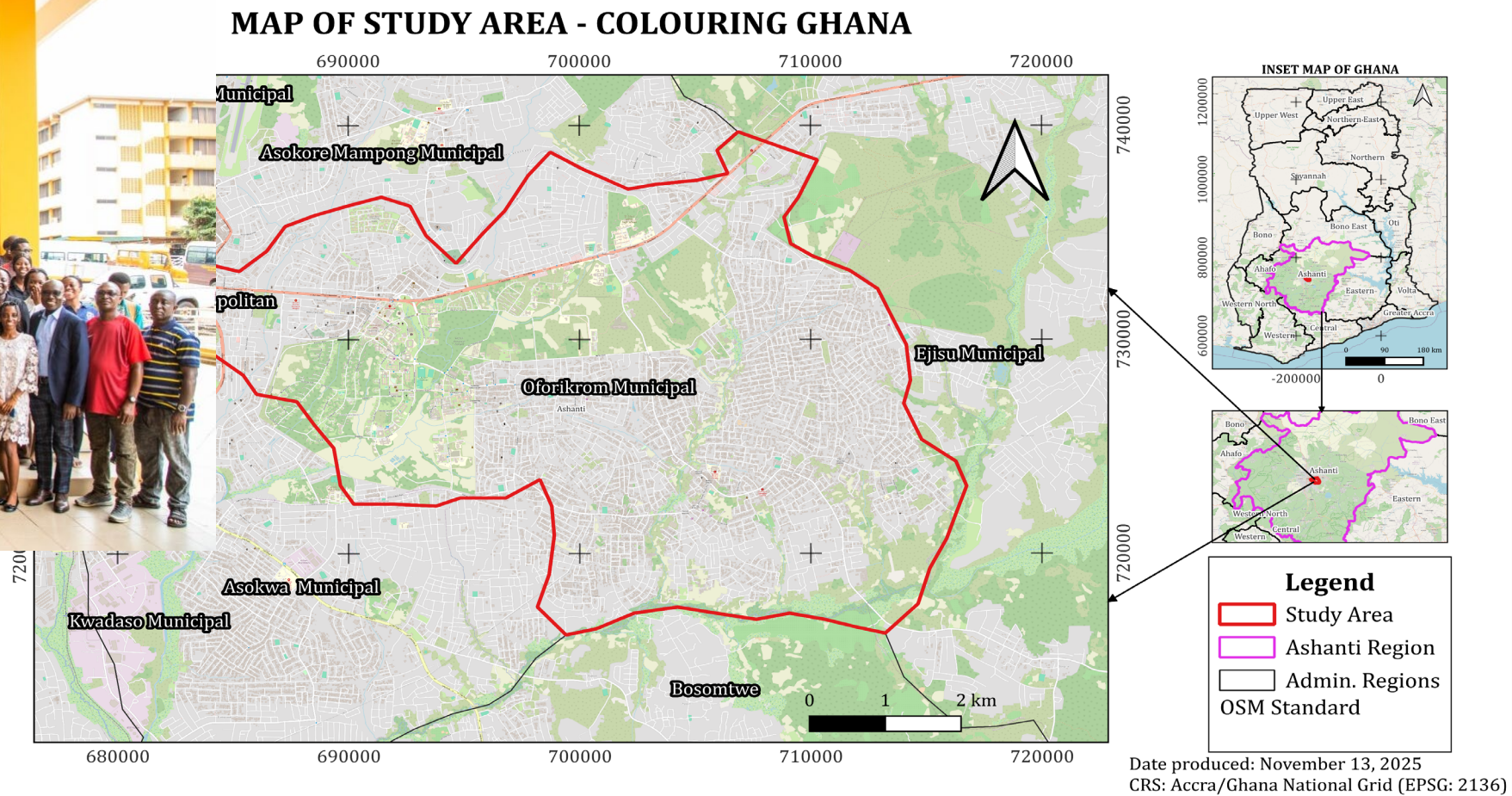


UN-GGIM: AFRICA
UNITED NATIONS
GLOBAL GEOSPATIAL
INFORMATION MANAGEMENT

Geospatial Survey Camp 2025 – Pilot Phase of Colouring Ghana



COLOURING
GHANA



AfricaGIS 2025



UN-GGIM: AFRICA
UNITED NATIONS
GLOBAL GEOSPATIAL
INFORMATION MANAGEMENT

Data Pipeline

- Grid design and team deployment
- GNSS + mobile GIS field collection
- Drone imagery acquisition
- AI-assisted building footprint extraction
- *Data cleaning & QA*
- *Upload to Colouring Ghana Platform*
- Municipal validation and feedback
- Publication on open platform



AfricaGIS 2025



UN-GGIM: AFRICA
UNITED NATIONS
GLOBAL GEOSPATIAL
INFORMATION MANAGEMENT

Envisaged Use for Oforikrom Municipal

- Settlement plans and layouts
- Updating of property rates and revenue registers
- Street naming & addressing improvements
- Enforcement of development control
- Flood modelling and disaster preparedness
- Infrastructure planning (roads, drainage, waste)



AfricaGIS 2025



UN-GGIM: AFRICA
UNITED NATIONS
GLOBAL GEOSPATIAL
INFORMATION MANAGEMENT

Coloring Ghana Interface



CITIES RESEARCH PROGRAMME



Coloring Ghana Interface



Menu ☰



Location

[About](#)

This section provides open data on building locations and building IDs. Can you help us capture and verify this information?

Select a building to add, view or amend the data



AfricaGIS 2025



UN-GGIM: AFRICA
UNITED NATIONS
GLOBAL GEOSPATIAL
INFORMATION MANAGEMENT

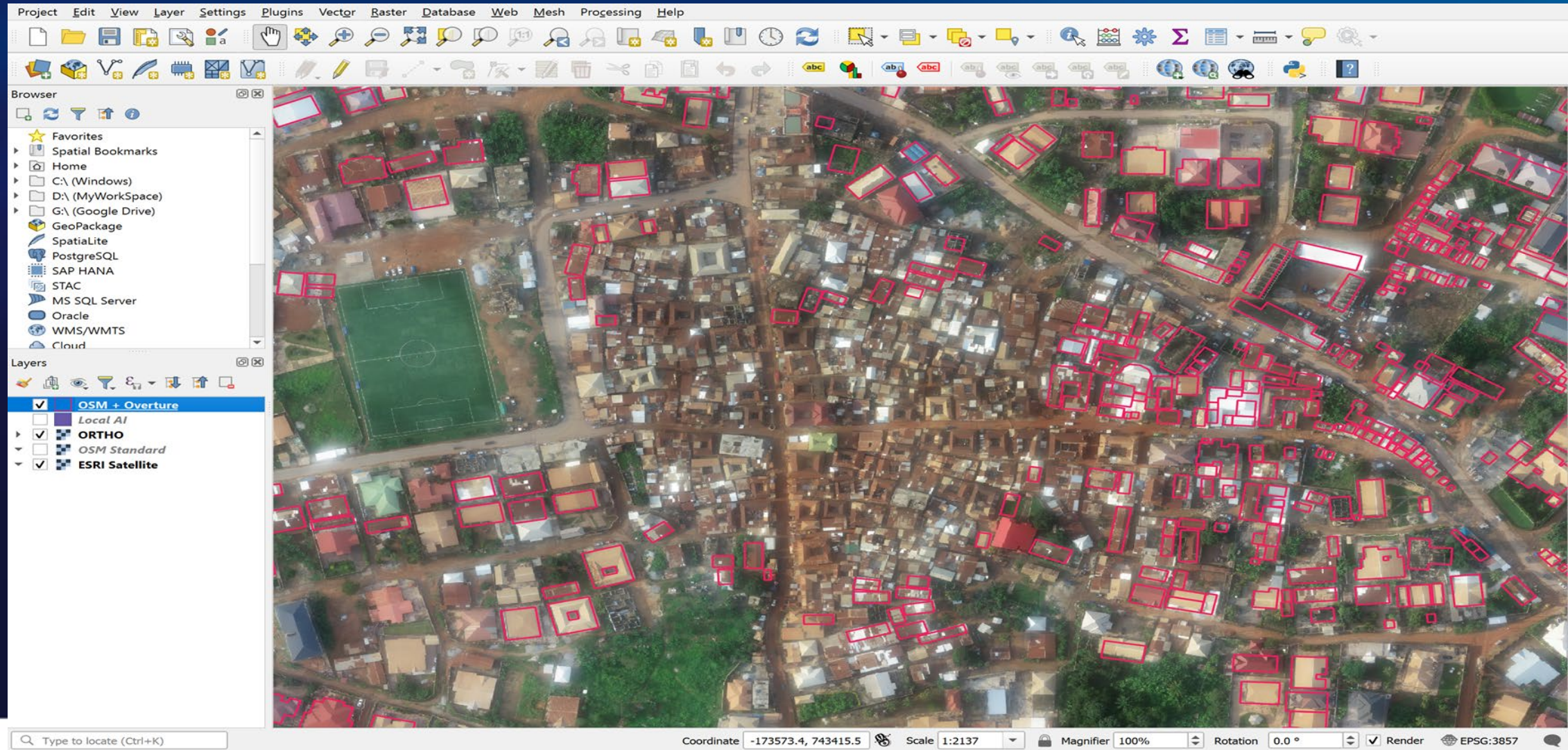


COLOURING
CITIES RESEARCH
PROGRAMME



Building Footprint Extraction

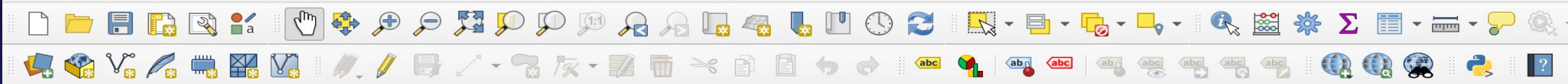
Global
AI
model
vs
Local
Model



AfricaGIS 2025



UN-GGIM: AFRICA
UNITED NATIONS
GLOBAL GEOSPATIAL
INFORMATION MANAGEMENT

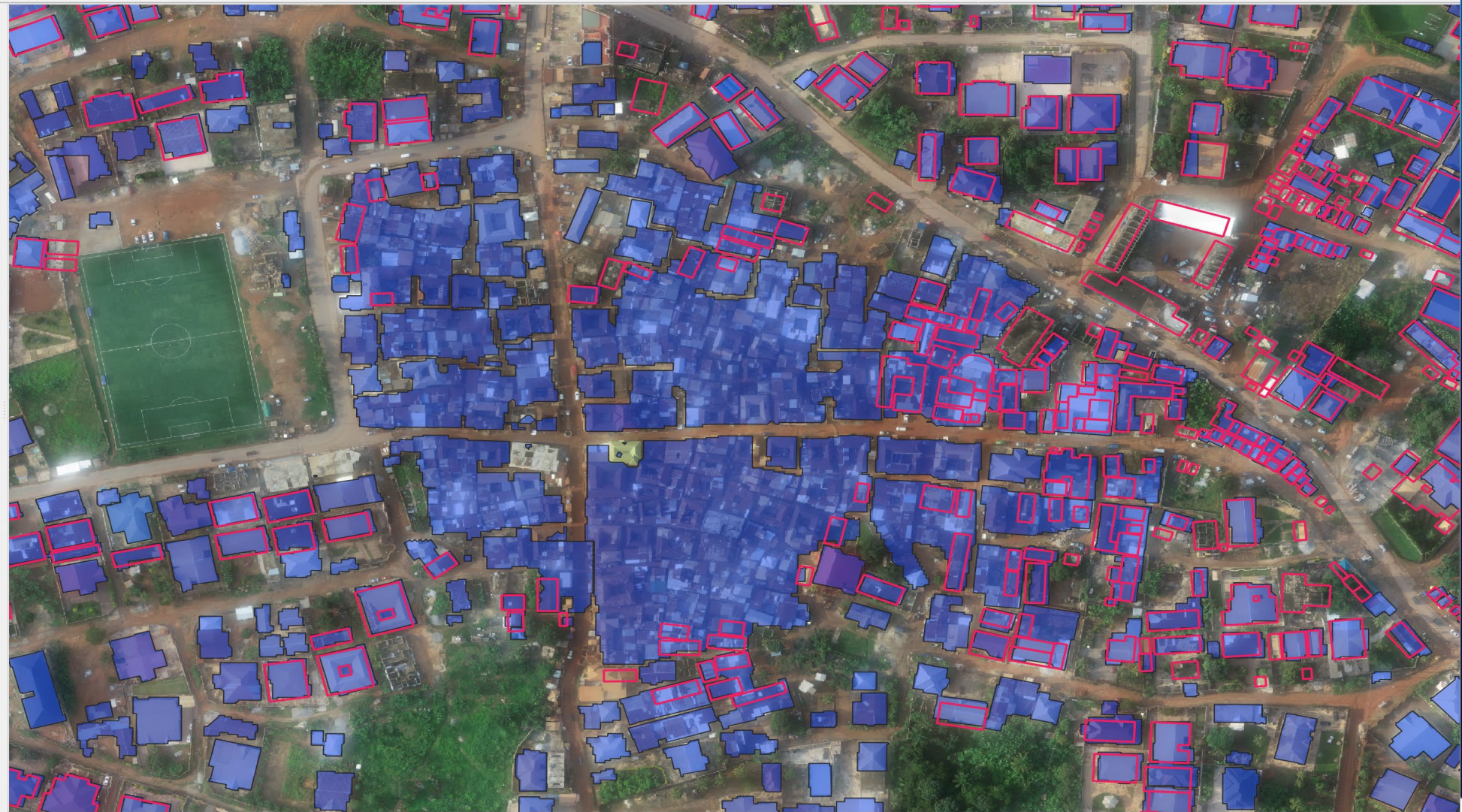


Browser

- ★ Favorites
 - Spatial Bookmarks
 - Home
 - C:\ (Windows)
 - D:\ (MyWorkSpace)
 - G:\ (Google Drive)
 - GeoPackage
 - Spatialite
 - PostgreSQL
 - SAP HANA
 - STAC
 - MS SQL Server
 - Oracle
 - WMS/WMTS
 - Cloud

Layers

- ☒ ☐ OSM + Overture
- ☒ Local AI
- ☒ ORTHO
- ☐ OSM Standard
- ☒ ESRI Satellite



Scaling Strategy

- **Phase 1 (2025–2026):**

- Oforikrom → Kumasi Metropolitan → Greater Kumasi

- **Phase 2:**

- Expand to other cities (Accra, Cape Coast, Tamale, Takoradi, Sunyani)

- **Phase 3:**

- Nationwide integration with LUSPA, GSS, Lands Commission

- **Long-term:**

- Coloring Ghana becomes a core digital public infrastructure layer.

- AI Agents for querying



AfricaGIS 2025

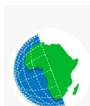


UN-GGIM: AFRICA
UNITED NATIONS
GLOBAL GEOSPATIAL
INFORMATION MANAGEMENT

THANK YOU



OFORIKROM
MUNICIPAL



AfricaGIS 2025



UN-GGIM: AFRICA
UNITED NATIONS
GLOBAL GEOSPATIAL
INFORMATION MANAGEMENT



COLOURING
CITIES RESEARCH
PROGRAMME

