

Digital Mapping and GIS-Driven Feeder Road Network Database Management System for Road Project Planning and Implementation Monitoring in the Feeder Road Sector

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THIS IS A DFR PROJECT FUNDED BY DFID

THE PURPOSE IS TO DEVELOP A GIS-DRIVEN NATIONAL FEEDER ROAD DATABASE FOR PLANNING, DEVELOPMENT, AND MAINTENANCE OF FEEDER ROADS



The scope of the inventory and mapping covers all engineered and unengineered Feeder Roads in each district.

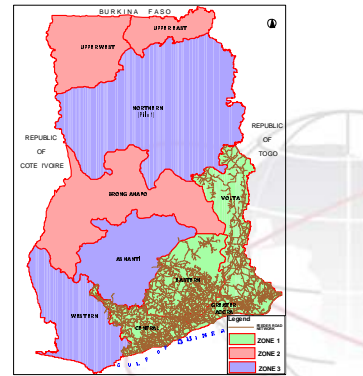
The process starts with District Assembly Consultations.

The consultations involve the use of existing District Feeder Roads Maps as reference for sketching in, all the missing roads that are not on the map with the participation of all stakeholders in a "mass-mapping" exercise

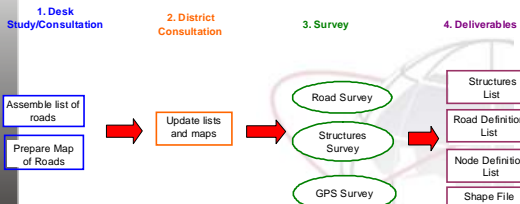
The output from the consultation is an up-to-date sketch map of all the engineered and unengineered roads in the district.



PROJECT AREA - ZONE 1

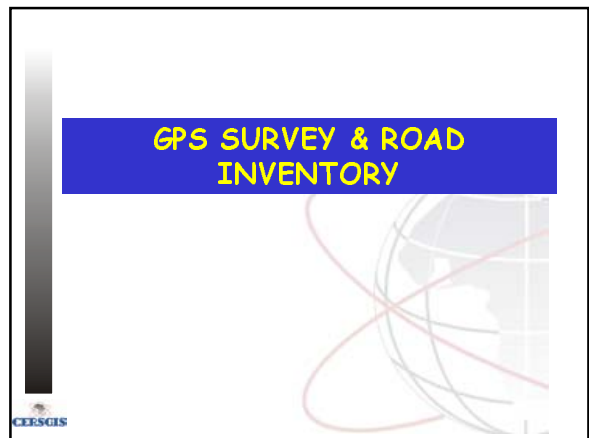
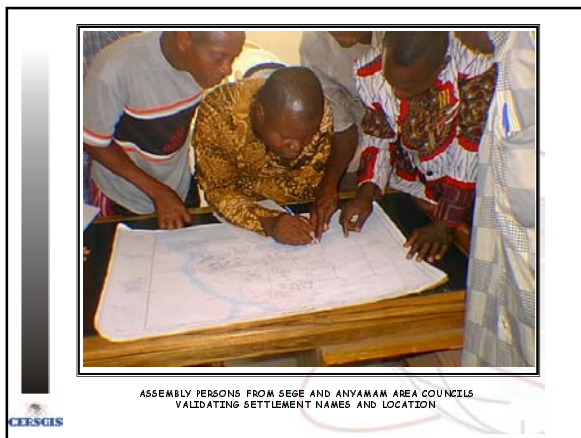
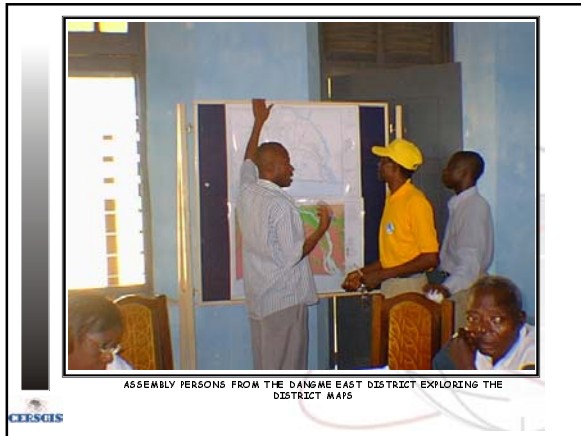


Survey Process



DISTRICT CONSULTATION





Captured Features:
 Road segments,
 Culvert/Bridges
 Infrastructure Facilities
 settlement locations

Data Capture Equipment:
 Trimble Pro XR GPS receiver
 with sub-metre accuracy.

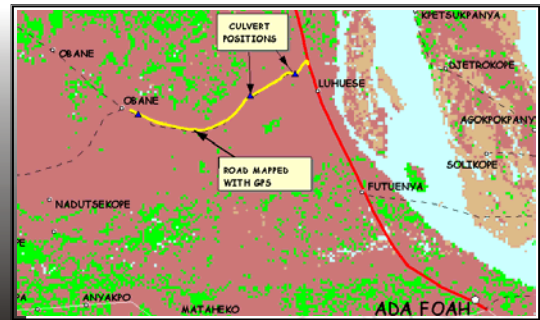
Mode of Data Capture:
 Road segments - line mode
 Drainage structures - point mode
 Infrastructure facilities - point mode
 Settlement locations - point mode



GPS SURVEY

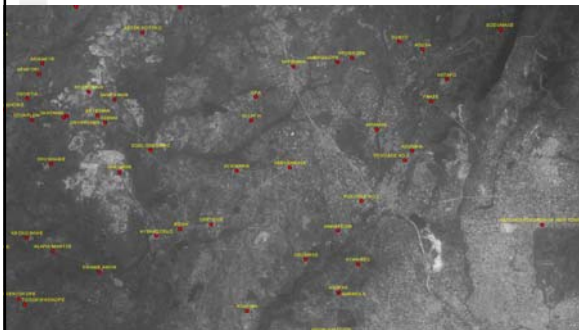
The feeder road network is mapped with a "mobile" GPS receiver, recording coordinates of:

- Roads
- Settlements
- Bridges
- Culverts
- Schools
- Health Facilities
- Water Points
- Public buildings



OUTPUT OF GPS SURVEY OF LUHUSE TO OBANE ROAD SUPERIMPOSED ON A CLASSIFIED SATELLITE IMAGE

SPACE IMAGES FOR ROAD IDENTIFICATION



ATTRIBUTES OF ROAD INVENTORY

1. Date
2. District No.
3. Road No.
4. Start Node Name
5. End Node Name
6. Start Chainage
7. End Chainage
8. Functional Class I/C/A
9. Engineering Class E/P/N
10. Road Width
11. Pavement P/U
12. Surface R/G/S/C
13. Side Drains L/U
14. Topography
15. Roughness G/F/P
16. Camber G/F/P
17. Drainage G/F/P
18. Traffic H/M/L



ATTRIBUTES OF DRAINAGE STRUCTURE INVENTORY

1. Date
2. District Code
3. Road No.
4. Start Node Name
5. End Node Name
6. STRUCTURE No
7. River Name
8. GPS Northings
9. GPS Eastings/Westings
10. Chainage (km+m)
11. STRUC TYPE (eg BC, SB, CP)
12. SIZE (mm) n / dia, n / W x H
13. LENGTH (M)
14. Headwalls (0/1/2)
15. Structure Condition Rating (1-5)
16. Notes




DATABASE DEVELOPMENT

SUMMARY - Zone 1


At the end of the survey:

Engineered Roads	8,814 km,
Partially Engineered Roads	1011 km
Non-Engineered Roads	1879 km
TOTAL	11,703 km



CONCLUSIONS

- GPS/GIS/RS are essential tools for capturing, updating and visualizing road network data for efficient road maintenance planning and management
- GIS provides the platform for the creation and manipulation of a spatial database for visualizing road attributes such as, surface type, surface condition, traffic volume and any other road related attributes
- The participation of local people in the capture of road related data is essential for ensuring data integrity







Thank You.

