

GEOGRAPHIC INFORMATION SYSTEMS; A TOOL FOR DISASTER MANAGEMENT.

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Summary

- *The need to preempt upcoming disasters, mitigate the effect of disasters, minimize losses and ensure most efficient utilization of resources before, during and after disaster calls for an effective planning, designing and implementing tool like **Geographic Information Systems**. This work describes Disaster Management and the efficacy of Geographic Information systems in managing Disasters. It is hoped that the processes described in this work will be effective in managing disasters in Nigeria, Africa and environ.*

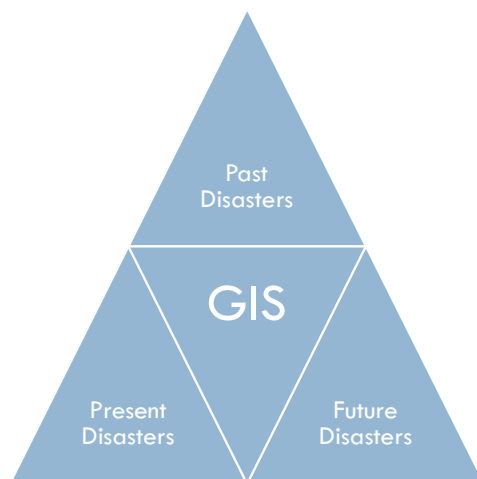
OVERVIEW OF DISASTER MANAGEMENT

- A disaster is a natural or man-made (or technological) hazard resulting in an event of substantial extent causing significant physical damage or destruction, loss of life, or drastic change to the environment (Wikipedia dictionary).
- In most underdeveloped, developing and some developed countries, disaster management is given a **reactive approach** rather than the required **proactive approach**.

OVERVIEW OF GIS APTITUDE

- Flood modelling and prediction, Disease mapping and prediction, Food security and environmental monitoring, Monitoring urban sprawl, monitoring volcanic eruptions among others are capabilities of a GIS. **To reduce vulnerability, minimize the impacts of hazards and enhance coping and adaptive capacity in the environment**, thereby putting in place rehabilitation processes that could rebuild resilience for the future; the knowledge, technology, expertise, institutional capacity and management skill available in GIS as **a system of Hardware, Software, Procedure, and organizational structure, used in the acquisition, storage, processing, analysis and presentation of spatially referenced data** has to be utilized.

GIS Disaster Management



Disaster Management; an interwoven process



Synopsis

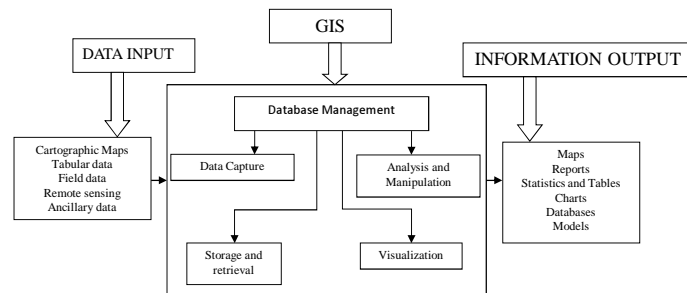
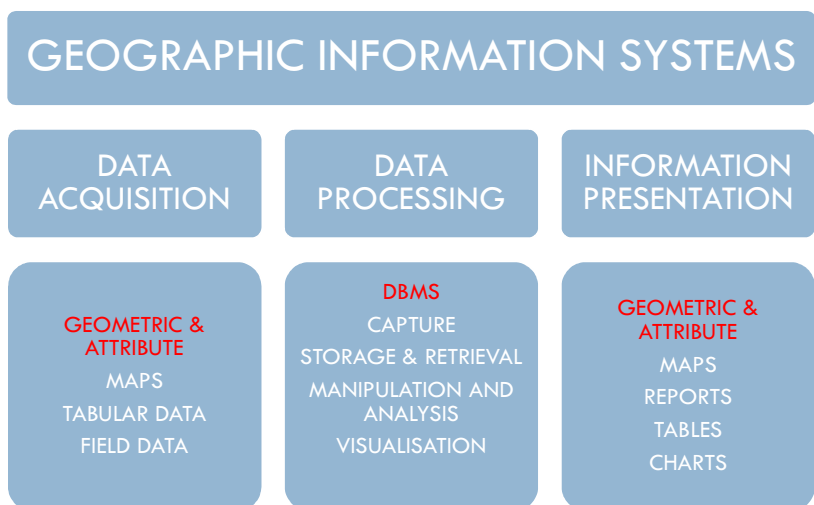


Fig 1: Synoptic of GIS in disaster management
Source: Otukei, 2008.

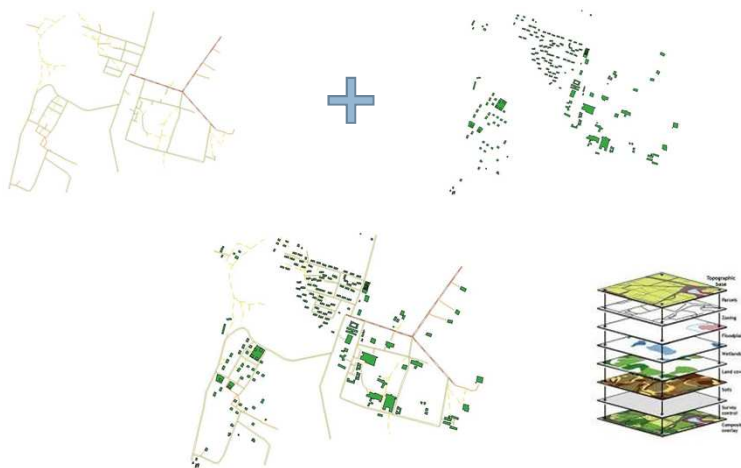
Synopsis of GIS in Disaster Management



What GIS does

Road Layer

Building Layer



Sample Questionnaire and Data Dictionary

Personal Data

1. Name:
Surname Other names

2. Mobile:

3. Gender: Male Female

4. Marital Status: Single Married Divorced

5. What is your official Status? Academic Staff Non Academic Staff

6. Department/Unit:

7. Rank/Post:

8. Block No: Flat No:

9. Number of People in your household:

10. What is the major source of water supply? (You can list more than one)
 Well Borehole Rainfall

11. What is your major source of Power supply? (You can list more than one)
 PHCN Personal Generator School Generator

12. How do you dispose your waste? Burning Recycling Refuse/Dump

13. What is the state of your flat? Good Fair Bad

14. Do you at anytime have to carryout repair work on your flat on your own? Yes No

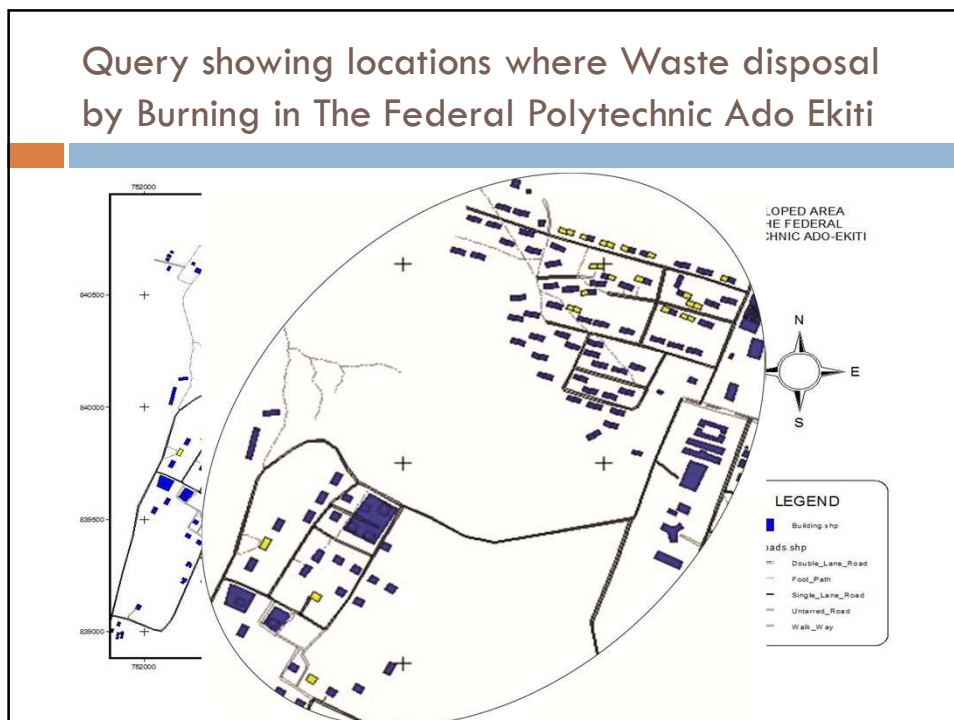
15. Have the flat being renovated by the school authority since you moved in? Yes No

16. How often is your flat renovated? Monthly Yearly Never

17. How will you rate the maintenance department on your request for maintenance in your flat?
 Excellent Good Fair Poor

| Attributes | Representation | Data Types |
|---------------------------|----------------------|------------|
| Name of Occupier | Name_of_occupier | Text |
| Mobile Number | Mobile_number | Numeric |
| Gender | Gender | Text |
| Marital Status | Marital_Status | Text |
| Official Status | Official_Status | Text |
| Dept./Unit | Dept_Unit | Text |
| Rank/Post | Rank_post | Text |
| Number of inhabitant | Number_of_inhabitant | Numeric |
| Source of water supply | Water_source | Text |
| Source of power supply | Power_Source | Text |
| Waste disposal method | Waste_disposal | Text |
| Flat ID | Flat_ID | Numeric |
| Occupier ID | Occupier_ID | Numeric |
| State of flat | Flat_State | Text |
| Repair Work on your own | Repair_Work | Yes/No |
| Flat renovation by school | Reno_School | Yes/No |
| Time of flat renovation | Reno_Time | Text |
| Maintenance department | Maintenance_Rating | Text |

Query showing locations where Waste disposal by Burning in The Federal Polytechnic Ado Ekiti



CONCLUSION

- Data is the fundamental component of any tool, Geographic Information System offers the integration of all other types of data on its spatial data; hence a diagrammatic, yet comprehensive approach is obtained for decision making.

CONCLUSION

- All Geographic Information Systems; no matter what it was, is and/or going to be designed or implemented for, will in a way or some ways solve disaster related challenges.

RECOMMENDATIONS

- The efficiency of a GIS is dependent on the comprehensiveness, consistency and integrity of its database. Therefore joint effort is to be made by government, organizations and individuals towards the creation of disaster relevant geodatabase, so as to create a disaster free environment.
- All disasters as well as their effects on man and its environment can either be prevented or reduced. Disaster management programs are developed by analyzing information. Therefore, in planning against disasters; Government, Organizations and Individuals are implored to implement GIS tools in their approaches.



**Thank you
for listening.**