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Village level Information System of Shahapur Taluka using GRAM++ GIS software

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Abstract: GIS handles geographic data along with data about the people, places, including the socio-economic data. The real value of GIS is its problem solving capability. It can be used in micro-level, regional level and at macro-level as a planning tool. GIS can provide solutions for better resources management and the protection of environment. If we have clear objectives, authentic database, focused time scale and effective communications, then GIS implementation will definitely be successful. GIS is a vibrant, active and rapidly expanding field generating considerable private and public interest. GIS technology has been quick to adopt recent technical innovations such as internet, World Wide Web, PC and mobile computing technologies.

I. INTRODUCTION

The ultimate purpose of GIS is to support decisions. With relevant datasets organized as layers in a stack, decision makers can use the software and the databases to make effective decisions. For example one can identify suitable areas in a village where paddy can be cultivated by combining layers such as soil, slope, rainfall, water sources, existing land use practices, and socio-economic parameters and so on. GIS software can by itself be used to create the cadastral/village level maps, information systems at village level or aggregate them into block/district/state levels. Potential applications of GIS include, apart from creating datasets, periodic updating of databases, watershed management, site suitability analysis, planning for optimal utilization of scant resources, wasteland reclamation, simulation of major projects that impact large geographic areas to assess their impact on the ground before taking suitable decisions, and so on. One can also use GIS to map urban slum areas and obtain information about each dwelling to record the education levels of each person living there, health details, school drop outs, water and sanitation facilities, and so on. This information can then be used by slum rehabilitation authorities in municipalities or by statutory bodies.
The paper talks about the information system developed using GRAM++ GIS Software for Shahapur Taluka, Maharashtra, India. The GIS system developed has Taluka Boundary, Lakes, Railways, Roads and Village Boundary for Shahapur Taluka.

A. About GRAM++ GIS software

Geo-Referenced Area Management (GRAM++) is India's first fully indigenously developed GIS software at the Centre of Studies in Resources Engineering; IIT Bombay This is a highly capable GIS tool that facilitates a wide range of operations such as map database creation, query and retrieval, analysis, and visualization. This software has been applied to a wide range of real life applications such as district and local level planning, optimal site selection, urban slum information systems, sustainable agriculture, rural development indicator creation etc. that have a lot of relevance in the realm of micro- and macro-level planning.

II. APPLICATIONS OF GRAM++ GIS

GRAM++ was actually used for a wide range of applications. This could be grouped under several categories:-

A. Rural Development
B. Optimal Site Selection
C. Watershed Management
D. Wasteland Reclamation
E. Map Database Creation and Periodic Updating
F. Resource Planning
G. Creation of Information Systems
H. Village-wise
I. Block-wise
J. District-wise

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K. State-wise

III. METHODOLOGY

In order to develop GIS system for Shahapur Taluka, first step was carried out to convert hard copy map (received from MRSAC) of Shahapur Taluka to digitized map which was done using Map Edit module of GRAM++ GIS software.

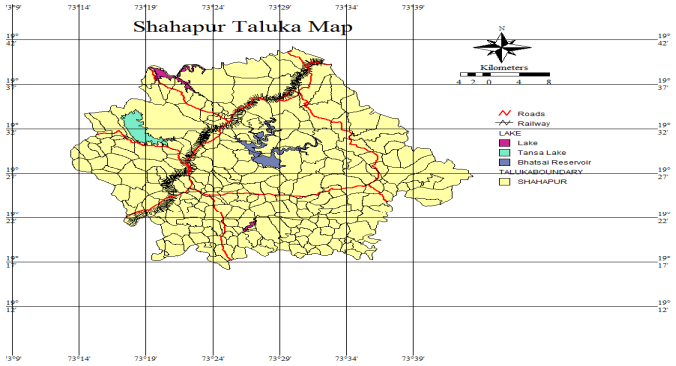
In digitization of map there ae four steps to be followed. The first step is to register the map by giving the origin of the map and putting the tic marks. This procedure is done only once when the map is registered after that in other sessions of digitization or editing, registration is not required. The second step is to digitize / vectorize the map and the third step is to run operations in which clean, form polygon, label polygon. The fourth step is to attach the database to the map. The map attached with the database is useful in Vector Analysis module. Also, the map can be rasterized, if the map is to be taken into raster format and analyzed.The co-ordinates that were used to register the Shahapur Taluka Map were taken from Google Earth based on the matching boundaries.

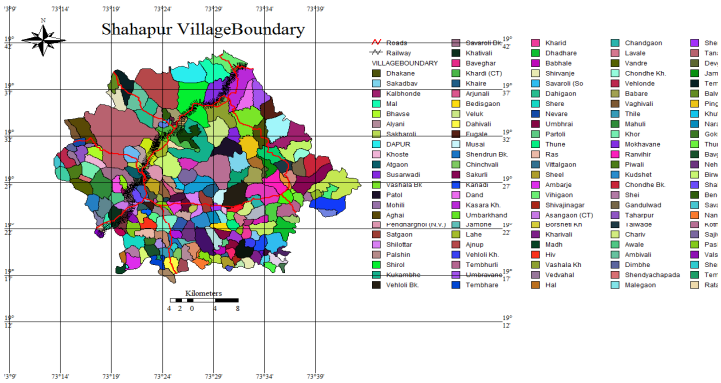
A. The co-ordinates used are

1) Latitude:- 19d 16m 54sLongude: - 73d 19m 41s
2) Latitude :-19d 19m 54sLongitude: - 73d 36m 40s
3) Latitude:- 19d 40m 56Longitude: - 73d 29m 56s
4) Latitude:- 19d 33m 54Longitude: - 73d 14m 06s

Further village wise population details collected from Shahapur Tahsil Office were also link to the final digitized map of Shahapur which was displayed using vector analysis module of GRAM++.

IV. RESULT





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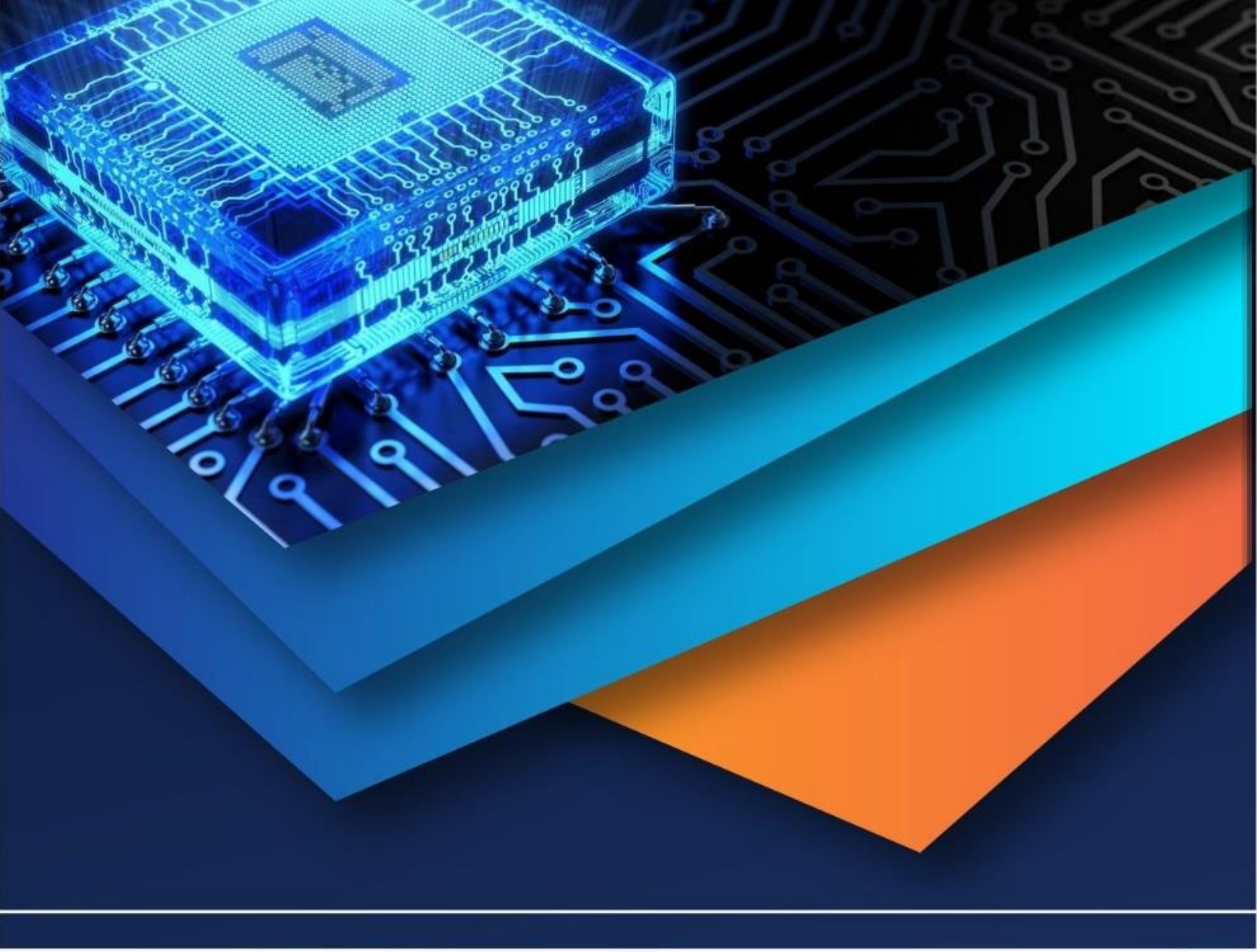
V. CONCLUSION

The map prepared for Shahapur Taluka using GIS software can give on click information about the villages, lakes and higher level rail-road detail about the Taluka.

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