

Causes of Replacing Geographical Traditional Mapping into New World Digital Mapping through Geospatial Techniques

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Abstract: Geographical traditional mapping means graphically representation of the earth's surface features on a flat surface or plain paper. This mapping technique used from prehistoric depiction of hunting and fishing. This old cartographic technique prepares maps for different purpose which is very helpful in any kind of discoveries, innovations and developments. But after a long period these maps becomes referenced data because in our dynamic world, many aspects of land cover and land use things on the earths are constantly changing over time to time. These analog mapping such as Topo sheets, wall maps, atlas.etc is facing problems of spatial-temporal changes caused by natural and human activities. They don't match the current condition of any area because they are out of date. We can't modify these changing aspects on analog or paper maps. To solve this mapping problem, geospatial techniques such as remote sensing, geographical information system, and global positioning system has been indispensable in digital mapping using data of aerial photographs, satellite imageries with very fine resolution. Using this data, digital maps are prepared with the help of new generation computer which have the quality of large data collecting, storing, manipulating, analyzing, displaying, and querying of geographically related information. Digital mapping monitor land use and land cover change, which has been seen in various fields such as meteorology, geology, forestry, hydrology, oceanography, environmental management, agriculture etc. and we can easily update this change in maps. That's why, digital mapping replaced geographical traditional analog mapping.

Keywords: Cartography, Remote Sensing, Geographical information system, GPS

I. INTRODUCTION

Geographical traditional mapping may be defined as cartography. Cartography is known as the art or science of graphically representing geographic and non-geographic features, usually on a flat surface as a chart or map. And a map is "A graphic depiction of all or part of a geographic realm in which the real-world features have been replaced by symbols in their correct spatial location at a reduced scale." (Clarke, 2001). every map perform two important functions, the first one is to storage medium for information and second is to help in understanding the picture of spatial patterns, spatial relationships and environmental complexity of the world.

Cartography, or map-making, has been an important part of the human history for a long time, From cave paintings to ancient maps of Babylon, Greece, and Asia, through the Age of Exploration, and on into the 21st century, people has created and using maps as essential tools to help them define, explain, and navigate their way throughout the world. Maps began as two-dimensional drawings but sometimes adopt three-dimensional shapes (globes, models) and be stored in purely numerical forms. All mapping work is manually done which is based on long term survey, accuracy of scale, projection etc. every

map provides following information about any objects or features are:-

- ❖ Where it is
- ❖ What it is
- ❖ When it is
- ❖ What is nearby
- ❖ In which direction
- ❖ How far away
- ❖ How they are related

This old cartographic technique prepares maps for different purpose which is very helpful in any kind of discoveries, innovations and developments. But after a long period these maps becomes referenced data because in our dynamic world, many aspects of land cover and land use things on the earth's are constantly changing over time to time.

Problems of Geographic traditional mapping or cartography are:

1. Represent the terrain mapped object on a flat media. It concern with map projections. Eliminating characteristics

of the mapped object that are not relevant to the map's purpose. It concern with generalization.

2. Out of date.(updating problem)
3. Expensive and time consuming
4. Spatial analysis by this is Time and energy consuming, slow
5. Display is Slow Tedious and time consuming
6. Storage problem
7. Maintains problem
8. Complexity of data retrieval
9. Overlay (expensive and consuming)
10. Data collection
11. Colours / patterns difficult to apply

These are the main causes which replaced the geographical traditional mapping into new word digital mapping. Cartography has been affected by the information revolution somewhat later than other fields. Spatial technology such as remote sensing, geographical information system, global positioning system and computer cartography. In map-making, technology has continually changed in order to meet the demands of new generations of mapmakers and map users. In the mid-to-late 20th century, advances in electronic technology have led to further revolution in map making. Specifically computer hardware devices such as computer screens, plotters, printers, scanners(remote and document) and analytic stereo plotters along with visualization, image processing, spatial analysis and database software, have democratized and greatly expanded the making of maps, particularly with their ability to produce maps that show slightly different features, without engraving a new printing plate.

Geospatial techniques are:

- I). Remote sensing II). GIS
III).GPS IV).Computer

These are the technique that makes mapping-digital, more effective, better display

II. REMOTE SENSING:

For digital mapping remote sensing provides data in form of imageries, Aerial Photographs. The basis for multispectral collection and analysis is that of examined areas or objects that reflect or emit radiation that stand out from surrounding area. Remote sensing data is acquired

by passive and active sensors. Once data is acquired, systematic and non systematic errors correct by geometric, atmospheric and radiometric correction.

III. GEOGRAPHICAL INFORMATION SYSTEM:

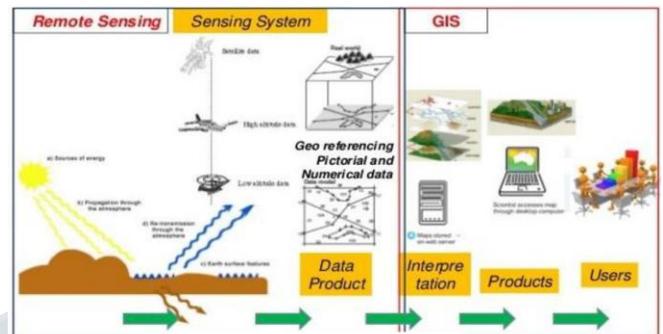


Fig.1. Remote Sensing and GIS process for digital mapping

A Geographic Information System is computer based system designed to store, retrieve, manage, display, and analyze all types of geographic and spatial data. GIS software lets you produce maps and other graphic displays of geographic information for analysis and presentation. GIS software produce maps and other graphic displays of geographic information for analysis and presentation. With these capabilities a GIS is a valuable tool to visualize spatial data or to build decision support systems for use in your organization. A GIS stores data

on geographical features and their characteristics. The features are typically classified as points, lines, or areas, or as raster images. On a map city data could be stored as points, road data could be stored as lines, and boundaries could be stored as areas, while aerial photos or scanned maps could be stored as raster images. Geographic Information Systems store information using spatial indices that make it possible to identify the features located in any arbitrary region of a map. For example, a GIS can quickly identify and map all of the locations within a specified radius of a point, or all of the streets that run through a territory.

IV. GLOBAL POSITIONING SYSTEM:

GPS receivers collect data from at least for Satellite revolving around the earth and calculate position in 3 dimensions. They provide coordinates or exact points of latitude and longitude direction from satellites. The

beginning point, entered via GPS coordinates, and the ending point, (address or coordinates) input by the user, are then entered into the digital mapping software.

V. COMPUTER CARTOGRAPHY:

The computer has revolutionized the ways of communicating and analyzing information about the world,

including decision-making. Geographic Information Technology (GIT) is now widely used for computer-assisted management and analysis of data concerning geographically related features.

VI. COMPARISON BETWEEN TRADITIONAL AND DIGITAL MAPPING

ACTIVITIES	DIGITAL MAPPING	Traditional mapping
PREPARATION	Initial version tedious to prepare but quick and efficient to monitor	Start from scratch every time
STORAGE	Digital Database Standardized and integrated, compact memory capacity	Different scales on different standards voluminous and bulky
RETRIEVAL	Quick retrieval	Paper maps and tables
UPDATING	Automatic search and replace by computer	Manual check and revision
OVERLAY	Systematically done Faster integration of complex, multiple spatial and non spatial	Expensive and time consuming

	data sets	
SPATIAL ANALYSIS	Faster	Time and energy consuming, slow
DISPLAY	Easier and faster to prepare Better quality	Slow Tedious and time consuming

CONCLUSION:

Geospatial techniques play an important role in digital mapping. Through this techniques representation of features .Every day spatial-temporal features are changing in the world. Traditional mapping become helpless in providing accurate and up to date information. Today's map users and map maker demand can be fulfilling by the way of digital mapping. That's why geographical traditional mapping changed in digital mapping.

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