

LOCATION INTELLIGENCE; BEGINNING OF USER-BASED GIS

Location Intelligence is a requirement for today's business, organizations, local government, policy makers, Entrepreneurs.

by Manas Kumar Jha



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Analysis of Primary to secondary data, Journey from Paper Map to digital form, GIS industry has come a long way. Spatial and Non-spatial Data acquisition and its analysis was part of GIS-based studies. However, now a day's availability of location data is more common due to the usage of GPS enabled Mobile Phones. There is a huge location data available which is being utilised now a day for various analysis purposes. These real-time databases help in resolving various issues that were found impossible earlier. As a best practice location intelligence is being replicated with more user-friendly technologies that can be effective and analyse the

real-time spatial data with valuable business insight.

What is Location Intelligence?

When Internet-based geographical search engine return with rich and analytical data as per user requirement, the system can be called intelligent. Location Intelligence is a map based and data-rich intelligent system, which provides information about a geography or target area. It perhaps helps policymakers, young entrepreneur largely in taking decisions that need logical and rich data analysis results. Now a day the available open source search engine or map service providers have

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enough data that can be linked with a coordinate for geographical analysis.

However, in the growing digital world enormous information or data sources is still untouched which can be linked or made available for public usages. One of the best examples of location intelligence is identifying options of Hotels through various online service providers who have enormous information available for hotels that are linked with geographical maps. A user must identify the coordinate and do smart analysis as per their requirement. Here it is to be noted that amongst all information available for hotels, geographic/location-based information play a major role in effective decision making for users.

It was rightly quoted by Robert Williams that 80% of the information needs for local government and policymakers are related to geographic locations only. As compared with temporal analysis of data for research work, location intelligence is using the same GIS methodology to analyse the temporal data along with real-time information from various sources. These sources are Internet-based search engines, navigational devices, sensors etc. In the coming future GIS analysis will be more intelligent and user based where a user will perform smart analysis of geographical data for day-to-day usage. It will limit the role of GIS professionals to prepare and arrange the primary GIS data into the required format. Developers and analyst will link all these information into a readily available format that can be used by the end user for day-to-day decision-making. This intelligent system will not restrict the users to understand GIS and usage of traditional software before analyzing the data.

In the growing digital world analyzing data with a location context can change it to information and can be linked with various

location-based analysis. Hence, Location Intelligence is a requirement for today's business, organizations, local government, policy makers, Entrepreneurs.

Next section will explain the details about usage of location intelligence which overcomes major challenges while making a location-based geographical analysis.

Location Intelligence and End of GIS; A Myth

Environmental Impact analysis is one of the major studies that is being done before citation of the industry to understand the potential impact on the environment, population, a nearby area, Flora and Fauna. This analysis has various segments and requires a site visit and generation of various primary data. When all these primary data analyzed in a context of Impact on Environment, it becomes important information's, which is utilized for decision-making. Here all acquired information and its impact is associated with a particular location or geographic area only. Changes in location may require repetition of effort in generating primary data to make it readily available for impact analysis.

Likewise, for EIA as mentioned above, formulating any business ideas or prior impact analysis may require rich sources of accurate spatial data and authenticated source of non-spatial data. The concept of location intelligence is based on readily available primary sources of data that may or may not be coming from a homogenous system for analysis.

Intelligent analysis requires a good and authentic source of Primary data. Until the system is linked with rich sources of accurate spatial and non-spatial data the analysis result may not be useful. In absence of the accurate spatial data and authenticated non-spatial data, the result may be spurious. Hence to produce such good quality of spatial data and linking the same

with the authenticated information sources GIS-based analysis is very much required. This information can be linked and used for preparing user-friendly location intelligence system. In coming era, more need of user-friendly location intelligence interface will explore various other GIS-based analysis, which is limited up to the research and academics only. Growing need of location intelligence in parallel open the opportunity for GIS professionals to generate more primary data and make it ready for usage in Intelligent systems as a secondary data.

Usage of Location Intelligence

There is no limitation on the usage of an information. Based on interpretation and context it can be used in various decision making. Likewise, usage of Location Intelligence cannot be limited to the certain area of interest and based on the context it can be used in various decision making. One of the best examples of effective decision-making is in the inception of business idea where decision makers can have a preliminary study about the feasibility of business, possible challenges and mitigation strategy before landing up in deep study.

a) In Research and higher studies

Availability of various primary data linked with intelligent analysis system can help students largely in their higher studies. Predictive analysis of climate changes, temporal studies of natural disaster and correlating the same with a current real-time environmental parameter can be used for preparing environmental alarm system for the disaster-prone area. The real-time data in combination with streaming of temporal data can be used in multiple ways in higher studies.

b) Health Sector

Health care system in Developing countries is facing major challenges such as providing better health services, Physical health infrastructure, skilled workforce, surveillance of disease etc.

Here location intelligence can be used to understand the availability of health services with reference to population. Real-time data and map can help decision makers to understand and surveillance of disease that is affecting a particular area. Based on the real-time information adequate material, infrastructure or skilled workforce can be deployed in such area before the disease became epidemic.

c) Real Estate

Site selection requires preliminary analysis of site via physical presence, however, using the real-time data and various thematic maps can help the decision makers to analyse the potential sites to develop it for real estate. Here rich sources of accurate spatial data and accurate sources of non-spatial information plays a major role.

d) Agriculture

In developing countries like India, the major reason behind the failure for the participation of private players for crop insurance is lack of real-time agriculture database and intelligent system to analyze the same. By Location intelligence the participation of Private players may get increased for crop insurance, agricultural loan based on the analysis of geography, the pattern of farming, real-time market database

etc. GIS-based decision support system can be required across the country where each panchayat will participate by providing the information of expected agricultural productivity. The input of this information can be then utilized by the intelligent interface for spatial and non-spatial query building. Here Location intelligence can help decision makers in;

- Analysis of the type of crop, Agriculture products.
- Analysis of location of agriculture products across the country.
- Analysis of probable quantity of products.
- Analysis of estimated quantity vs produced quantity.
- Analysis of root cause analysis for low productivity.
- Analysis of high productivity and preparation of case study for awareness among other farmers at different location.
- Analyzing the demand and supply curved (Based on the temporal study).
- Analyzing the quantity that can be exported by maintaining demand and supply in country.
- Analyzing the selection of crop in next season.

e) Government and Policy Makers

Data used by Government and policy makers contains 80% of the information's that belongs to a location and hence location

intelligence plays a vital role for policymakers in effective decision-making. Currently, in developing countries, spatial and non-spatial data available for government agencies are based on their sectors and in segments. Even the real-time data that is being generated for environmental information, transportation etc. has no mechanism of linking the same with each other. Every segment needs separate analysis and hence not user-friendly for predictive analysis. Location Intelligence, if applied shall use all the information available, link it with the real-time information, and provide an intelligent interface for the user to analyse the same.

Conclusion

GIS professionals for various analysis used spatial Information or Geographic data extensively. Majority of the studies is having dependencies on highly expert GIS professionals who were utilizing the dedicated software to study and analyze the same. Now a day for location intelligence the available primary data i.e. spatial and non-spatial information's available on various open sources website, dedicated sector wise website along with the real-time data is being linked with an intelligent user-based interface where a user can perform predictive analysis using the same. These user-friendly interfaces will restrict the dependency on GIS experts and professionals to perform various analysis and help decision makers to have quick inputs on decision-making information.

There is a huge possibility where dependency of a user on location intelligence will grow in near future. In parallel, it will also create demand for accurate spatial data to be produced by GIS professionals. As the accurate spatial data and authenticated Non-spatial data is the key for future location intelligence.

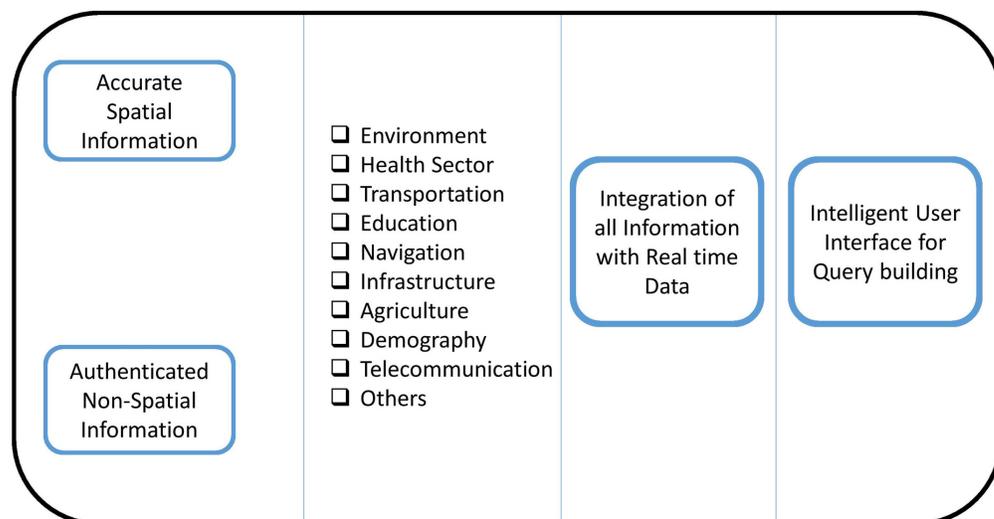


Figure 1: Usage of Location Intelligence