

# What are you looking for?

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GIS data has made search functions more spatially aware and contextually relevant across industries, leading to more informed decision-making and efficient operations.



GIS is revolutionising industries by enabling more informed property searches, optimising retail locations, aiding in environmental conservation, and enhancing the tourism experience

Search functions in geographic information systems (GIS) are designed to deal with geospatial data, information about real-world locations related to geography, allowing users to query and retrieve information based on geographic criteria.

“Examples include searching for a specific location, identifying areas that meet certain conditions (like proximity to certain features), or analysing spatial relationships and patterns,” says Brian Civin, chief sales and marketing officer at AfriGIS. “Integrating search functions into GIS enables more nuanced and context-specific information retrieval, making GIS a powerful tool for spatial data analysis and decision-making.”

Within GIS, various types of queries are used to extract and analyse spatial data. Attribute queries involve searching for features based on specific attributes in the dataset, such as cities with a population over 100,000. Spatial queries focus on the geographical aspects, like identifying rivers within a certain distance from a city. Query by Example (QBE) allows users to provide a data sample which is used by the system to find similar data. SQL queries, using Structured Query Language, enable complex data retrieval based on detailed criteria and relationships within the data. These querying methods support diverse applications from urban planning to logistics.

## Supply chain management

GIS enhances efficiency through route optimisation, facility location planning, and logistics management. By analysing geographical data, companies can identify the most efficient and cost-effective transport routes, reducing travel time and fuel costs. This is crucial for on-time deliveries and overall customer satisfaction. GIS also assists in determining optimal locations for warehouses and distribution centres by considering factors like proximity to key transport links and market demand.

## **Banking and Insurance**

Banks and insurance companies leverage GIS for risk assessment, branch location planning, and market demographics analysis. It enables them to assess geographical risks, such as natural disasters, which can impact loan and insurance underwriting. GIS also aids in identifying the best locations for new branches by analysing demographic data and market trends, optimising their services for target customer groups.

“By attaching neighbourhood-level demographic data to customer profiles, banks can segment and manage their customers more effectively,” Civin says. “With mergers and acquisitions, GIS is used to analyse the geographical suitability of branch networks, which supports strategic planning and regulatory compliance. GIS also assists in analysing the location of bank branches in relation to market conditions, aiding in performance prediction and decision making.”

## **Real estate and urban planning**

GIS data enhances property search functions by incorporating geographic criteria. “It allows buyers to search for properties based on their closeness to amenities like parks, schools, or public transport,” Civin adds. “These more informed and targeted property searches cater to specific lifestyle preferences.”

GIS is instrumental in land use analysis, infrastructure planning, and environmental impact assessments. Planners use GIS to identify optimal locations for development, considering factors like population density, natural resources, and existing infrastructure.

“This helps to create more sustainable and efficient urban spaces, that consider long-term community needs and environmental sustainability,” Civin says.

## **Retail and business location analysis**

In the retail sector, GIS data significantly aids in selecting optimal locations for new stores or facilities. By analysing customer demographics, businesses can identify areas with their target market, ensuring better customer engagement.

GIS helps in understanding competitor distribution, enabling businesses to choose locations with less competition. Traffic patterns analysis, another important GIS function, assists in selecting locations with high visibility and accessibility, key for attracting customers. This enables retailers to make strategic, data-driven decisions for store location, enhancing their market presence and profitability.

## **Environmental management**

Environmentalists use GIS to monitor land use changes over time, helping them understand human impacts on landscapes. This data is essential for identifying areas where ecological restoration is needed.

GIS aids in tracking wildlife habitats and helps in identifying habitat fragmentation and loss due to urban development or other factors.

“By assessing environmental damage through GIS, conservationists can prioritise areas for protection and develop effective strategies for ecosystem conservation and restoration, ensuring that interventions are both timely and geographically targeted,” says Civin.

## Tourism and hospitality

GIS data allows customers to access location-based services, providing recommendations for hotels, attractions, and restaurants based on their current location. GIS also aids in navigation, guiding tourists through unfamiliar areas and enhancing their travel experience.

## Telecommunications

GIS is crucial for network planning and maintenance. It helps companies determine the most effective locations for installing new towers, ensuring optimal coverage. GIS also plays a key role in analysing existing coverage areas, identifying gaps, and planning expansions or upgrades to the network.

By significantly enhancing search capabilities, GIS technology provides precise, geospatially informed search results, leading to more accurate and efficient decision-making. It's an advancement that demonstrates GIS's integral role in modern, data-driven industries.

## About AfriGIS

AfriGIS is the leading geospatial information science company in Southern Africa that specialises in location-sensitive data and solutions. It provides customers across the board with a suite of web-based tools and APIs to connect to, enhance, and enrich their own data with location intelligence, insights, and trusted data. The organisation was founded in 1997 and celebrates more than 25 years in business. It is a level 1-certified broad-based black economic empowerment (B-BBEE) business, with more than 100 employees, in Pretoria, Durban and Cape Town in South Africa, Dublin in Ireland, and Dhaka in Bangladesh.

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