Location Intelligence Is More Than a Map

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For most business intelligence (BI) professionals, maps are becoming an increasingly common way to view data in a dashboard or report. However, most BI professionals have yet to be exposed to the full power of location intelligence, and that’s a shame. But I’m hoping to change that.

In July, I immersed myself in the world of location intelligence at the Esri International User Conference in San Diego, California. I’ve been in the BI field for more than 20 years, so attending my first Esri conference was an eye-opener. Not only are the exhibits full of fascinating geographic displays, more than 15,000 people attended the event. That puts any BI event to shame.

For my BI brethren, location intelligence is the newest moniker for something that used to be called spatial analytics, geographic information systems (GIS), or just mapping software. Location intelligence creates maps that enable users to view the relationship of objects in space and perform a variety of spatial calculations, such as, How long will it take to drive from Detroit to Cleveland? or What percentage of high income customers are located within a 15-minute drive of this store? or What’s my risk exposure to a hurricane that plows through Dade County, Florida?
Parallel Worlds
Like business intelligence, location intelligence supports analysis and decision making. But for the past 20 years, these two data-centric disciplines have forged independent but parallel paths. Only now are they beginning to converge.

After my presentation at the conference, one attendee asked, “Why hasn’t location intelligence taken off in the business intelligence community?” My first response was that a majority of BI shops have been consumed trying to get adoption for basic reporting and analysis applications and only now are ready to incorporate new capabilities such as location intelligence, predictive analytics, and unstructured data.

But later I realized that the BI community has already embraced location intelligence, at least the mapping part of it. During the past 10 years, most BI professionals have spent significant time learning how to display the shape and content of data in visual form, using charts and graphics, including maps. Meanwhile, BI vendors have invested heavily in beefing up the visualization capabilities of their tools and adding new charting components, including maps. To BI professionals, maps are now an integral charting component of any BI portfolio.

The Intelligence in GIS
But location intelligence is more than just a map with dots on it. Location intelligence is a full-fledged analytical system. These so-called geographic information systems specialize in storing and manipulating spatial data, which consists of points, lines, and polygons plotted as coordinates in space.

Each spatial object can be imbued with various properties or rules that govern its behavior. For example, a road (i.e., a line) has a surface condition and a speed limit, and the only points that can be located in the middle of the road are traffic lights. Spatial engines can then run complex calculations against coordinate data to determine relationships among spatial objects, such as the driving distance between two cities or the shadows that a proposed sky scraper would cast on surrounding buildings or RFID tagged products that move beyond a specific area (e.g., geofencing). In essence, a GIS is an object-oriented analytical system that models things in space.

So without access to a GIS, analytically driven organizations miss valuable insights. Until recently, most spatial analysis was conducted by a handful of GIS specialists working in the bowels of a company who imported business data into GIS to create spatial models. But now, spatial insights can be delivered to all users via GIS-enabled applications, including BI, ERP, and CRM. And GIS providers, like Esri, can publish GIS applications to the cloud, allowing users to access interactive maps via web browsers.

Integration with Business Intelligence
In the BI world, the first step toward converging location and business intelligence is plotting business metrics on a map. Like other types of visualization, maps bring data to life and make it easier for business users to identify the significant trends and issues contained in most reports and dashboards. But location intelligence goes beyond basic geographic displays; it delivers interactive spatial models that correlate business data on a three-dimensional surface.

For example, BI users might use interactive maps to sift through hundreds of variables to optimize the siting of new stores, dealerships, branch offices, factories, drill heads, or pipelines. Or they could use maps to view how the buying habits and demographics of customers located around stores have changed over time. Facilities managers could use interactive maps to plot the optimal evacuation routes from any point in an office building or estimate the physical and financial impact of a bomb that explodes outside their building at various distances. Insurance agents could use GIS-enabled BI tools to simulate what they would have to pay policyholders whose homes are damaged by a hurricane, based on the wind speed and path of the oncoming storm.

Finally, the explosion of mobile devices, such as smartphones and tablet computers, places a premium on integration of business and location intelligence. For example, mobile dashboards will notify plant managers about the status of poorly performing machines as they walk a factory floor or alert store managers about stock-outs as they move through the aisles. Mobile dashboards will deliver to executives and salespeople a 360-degree view of a customer as they approach the customer’s site. The use cases are endless, and organizations will discover new ones once they GIS enable their BI applications.

Integration Options
Integrating BI and GIS applications is not as hard as it once was. GIS vendors now offer rich REST-based web services APIs to integrate GIS with other applications. And some, like Esri, now offer cloud-based GIS services so you don’t even need to own a GIS to benefit from GIS functionality.

As a result, BI vendors are integrating greater GIS functionality into their applications. A decade ago, BI vendors delivered static, graphic maps that customers could overlay with dots. Many now embed GIS shapefiles that enable BI users to plot business data on standard baseline maps and support basic GIS functionality such as zoom, hover, drill, and synchronized filtering. And a few interface directly with GIS, allowing BI report authors to easily add custom maps and more sophisticated GIS functionality to reports and dashboards without having to write code.

Summary
As BI shops seek to infuse reports and dashboards with better visualization and more analytics, it’s imperative that they explore the rich opportunities afforded by location intelligence. GIS integration is a simple way to add more robust analytical capabilities to run-of-the-mill reports and dashboards.