

S&P Global Platts Insight

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S&P GLOBAL PLATTS
GLOBAL ENERGY AWARDS
Celebrating 20 years

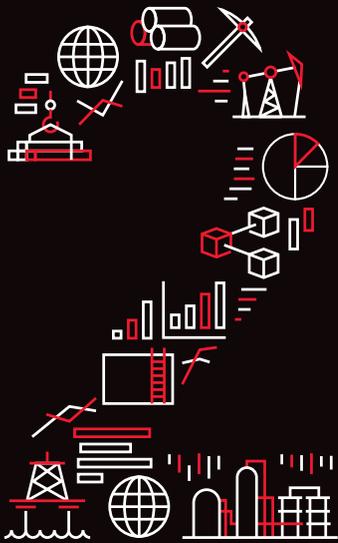
The five themes
to watch next year

US midterm
elections:
energy impact

How blockchain
could disrupt
commodities

Disruptors,
dealmakers and
new developments

Looking ahead to



Locating competitive advantage with geospatial data

By Nate Haskins



Geographic information systems (GIS) offer a framework for understanding information in relation to its physical location in space. GIS technology today takes us far beyond traditional cartography to providing key dimensions of location and interconnectivity to every data point. New GIS tools and techniques help organize layers of spatial data with related attributes, empowering users to better understand the physical world.

Of course, businesses and investors have long employed data to inform decision making. And for the majority of that history, primary analysis was performed by interrogating clues from the recent past, from the rearview mirror. What were profits like last year? What was the yield from the last production run? Which suppliers delivered for us last quarter? Those who best quantified outcomes exploited an information advantage and were rewarded.

Today's technology produces data that reveals far more rich, detailed insight into both economic activity and financial results than ever before – much of it with a spatial component.

Connected devices track our location and behaviors; internet-of-things sensors are infiltrating commercial and consumer goods; more satellites are launched

every year, with increasingly powerful imaging capabilities. Pair this explosion of data with the plummeting cost of storage and awesome processing power delivered through cloud computing, and there is massive potential for the creation of new information advantages.

GIS technology today takes us far beyond traditional cartography to providing key dimensions of location and interconnectivity to every data point. But data in isolation has limited value. It's when disparate data sets are combined that new, actionable insights are delivered. Data science techniques such as machine learning and deep learning are being used to correlate massive, previously intimidating data sets, allowing them to be used in new and creative ways – often, ways that were not necessarily intended when the data was produced. Operators and investors alike are now

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using data in alternative ways to create predictions and inform decisions. Those who harness the best predictions in their operations will find an edge, and data is the fuel.

Nowhere has technology had a larger influence on what is possible than in the field of GIS. Bryce Space & Technology recorded a 53% increase in satellites launched between 2012 and 2016, with an average of 144 launches per year. Advances in imaging and radar deliver higher resolution outputs and three-dimensional renderings, in some cases independent of cloud cover. As a result, we can now understand the location of ships, levels of reserves in oil terminals, forest health, construction progress, impact of natural disasters, car and foot traffic, and much more, in near-real time.

What advantages can be created using this new data? Let's look at a few examples applicable to energy companies and other sectors.

Understanding oil supply

Businesses are using new data to understand the massive, complex global oil markets. Machine learning techniques can be used on imagery to estimate weekly crude oil inventories otherwise not reported, while monitors on tankers reveal proximity to ports and refineries.

Together with an understanding of refining capacities, this data offers a timely view into global supply. Layering on advanced demand forecasts accounting



for weather, economic growth and consumption trends, traders are gaining new predictive insights into the future price of petroleum products.

Maximizing the impact of renewables

Advances in photovoltaics, wind turbine efficiency and large-scale battery storage efficiency have increased the viability of renewable power sources. GIS data is being employed to inform site selection to maximize impact.

For example, imagery can be used to identify areas with high recurring solar exposure, suitable slope and terrain, and proximity to low-voltage transmission lines, roads and populated areas, while avoiding conservation areas. Machine learning algorithms can be used to identify the pitch and surface conditions of commercial roofs, identifying the best candidates for rooftop commercial installations.

Similar conditions apply to the siting of wind farms using factors such as typical wind speeds and directions. All of those are helping bring down the cost of renewable power and accelerating the shift to clean energy sources.



Improving insurance underwriting

Savvy insurance companies are improving their underwriting practices using detailed imagery. An understanding of changing climate, as well as forestation and underbrush levels, helps predict the likelihood of wildfires. Detailed topographical analysis dramatically improves upon ancient or incomplete flood zone maps previously used to price flood insurance products.

In both cases, GIS is becoming an intrinsic part of risk modelling which gives insurance companies the knowledge to price the policies according to the risk they are undertaking.

Mastering local markets

Businesses now use GIS to answer the question of “what do my markets look like?” by building custom demographic tapestries within drive time areas around their locations.

Demographic information, including historical and projected data, combines with road infrastructure and traffic data to define detailed trade areas for

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analyzing market potential, market penetration, and competitive threats. Gaps and overlaps in market coverage drive decision-making for closing or opening additional locations.

Every industry is now a technology industry, and every company a technology company. Your grocer, your cabbie and even your local pizza shop all use data to tailor and promote services, identify prospects, and inform their strategy. If you run into a company not thinking of itself that way, my guess is that it won't be around for long.

Those who master this information first will be rewarded. Are you leveraging data fully, or are you destined for irrelevance? ■

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