



HEXAGON

White Paper

Unlocking the Potential of Your Location Data

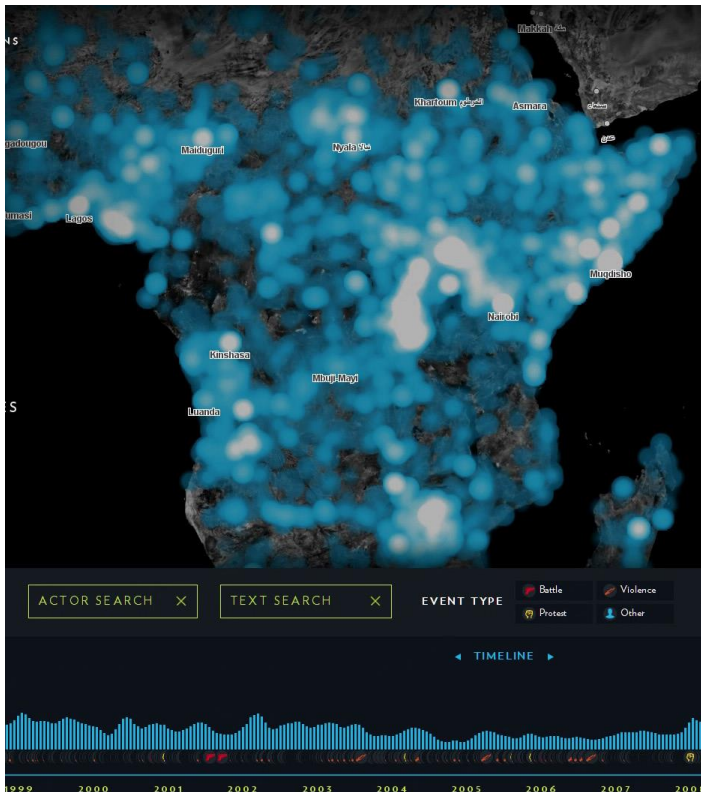
18 April 2019



Everything is Collecting Data

Over the past two decades, modern businesses have become increasingly skilled at data collection. As IBM has often been keen to point out, 90% of all human data has been produced in the past two years, with this showing no sign of slowing down. If anything, the rate of data collection is increasing exponentially.

Over six billion connected devices are in use across the globe today, a number set to be dwarfed soon by the 22.5 billion devices that Gartner predicts will be in use by 2020.



Luciad technology can handle massive data sets, like 50 years of newswire data, and provide users with intuitive visual analytics tools to make sense of it

Everything from cameras to lightbulbs are now connected to the internet and sending endless streams of data straight into the servers of businesses both large and small.

This includes data sources that were once static. Satellites, for example, were previously a static data source, outputting imagery at set intervals every few weeks. This is no longer true – with thousands of satellites in orbit and with the explosion of open source earth observation imagery, the rate of updates has increased from weeks, to days and even hours.

Sharing a Key Characteristic

The vast majority of all of this data shares one key characteristic – it has a location.

Social media posts can be located with geotags – the Internet of Things is given structure through location data and public transport can be pinpointed by connected sensors. This data is of immense value. Using people flow data from sensors and cameras, urban planners can shape a city around the movements of citizens in order to make shops and services easier to access. Location data from drones can be utilized by air traffic management systems in order to prevent collisions. Data from public transport can be used to



identify inefficiencies and allow operators to ensure that customers are not caught up in delays or service stoppages.

Our Dynamic Environment Requires More

Despite these potential benefits, however, the majority of organizations are not fully able to unlock the power of geospatial big data.

Only 23% of organizations are utilizing location-based data, per a Gartner study in 2015, despite the fact that the majority of business intelligence (BI) platforms come with some form of geospatial capability.



Luciad technology has revolutionized people flow analysis by providing a powerful platform to visualize and analyze sensor data of thousands of visitors across weeks and months

This has two implications. First, it implies that organizations are unaware of the potential of geospatial big data because of a lack of internal specialist geospatial analysts. Second, it implies that the systems currently used by organizations are unable to meet the complex demands of dynamic data. These solutions still retain the DNA of analytical systems developed in a time when data was known, and of fixed size, and so they expect data to be served in set formats at fixed sizes. This creates additional costs, both in terms of time and in money, creating situations where organizations may be willing to take advantage of location data but are



unable to do so. Nor are they designed to cope with the newest frontiers of data collection, as the formats used by devices on the Internet of Things remain in flux.

This is a universal challenge facing data rich organizations, and a difficult one to solve. It requires a fundamental shift in the ways in which we think of data and data analysis. Today we are still operating in a more or less static environment when it comes to data primarily because that static paradigm has worked for so long. While static data can be accommodated by analytics platforms, building new systems to analyze emerging data sources prohibitively increases time to market and can lead to the accumulation of unwieldy systems as sources of data multiply. However, end users are now working in a dynamic environment, attempting to gain insights and make decisions in real time to maximize revenue, without the specialist expertise or tools needed to do so or the ability to wait for new solutions to come to market.

These difficulties can have a massive impact on traditional market leaders. Look at how players like Airbnb and Uber have upended traditional hotel and taxi businesses by creating geo-focused applications.

They proved that when companies invest in and use solutions designed to unlock the potential of geospatial big data, then new ways of monetizing their data and strengthening relationships with end users will appear.

Real-World Examples of Integrating Dynamic Data

To take advantage of these opportunities, however, we must enter the dynamic space. By combining geospatial analysis with dynamic data, many Hexagon Geospatial customers have successfully applied Luciad Portfolio capabilities to their operations.

EUROCONTROL, an aviation safety organization, has greatly improved flight plan management by integrating dynamic data to their processes. In the past, airline dispatchers developed flight plans in the hours before flights occurred. Once these plans were filed and the pilots were briefed, the dispatcher moved on to the next flight plan and pilots were effectively left to manage the flight on their own. However, aviation has become increasingly dynamic. Previously, EUROCONTROL used to inform operators of airspace changes upwards of a day in advance. Now operators might be notified hours before changes occur, and this is set to decrease to only tens of minutes if not less.

Lufthansa Systems developed LIDO 4D flight planning system as a solution for the increasing availability of georeferenced data that needs to be dynamically integrated into flight plans. They approached the issue by enabling a 180° change in the role of the dispatcher. Their system is able to connect to and process data in real time, allowing for the automation of flight planning. In turn, dispatchers become reactive problem solvers, making alterations when problems are encountered and sharing these changes with the pilot.

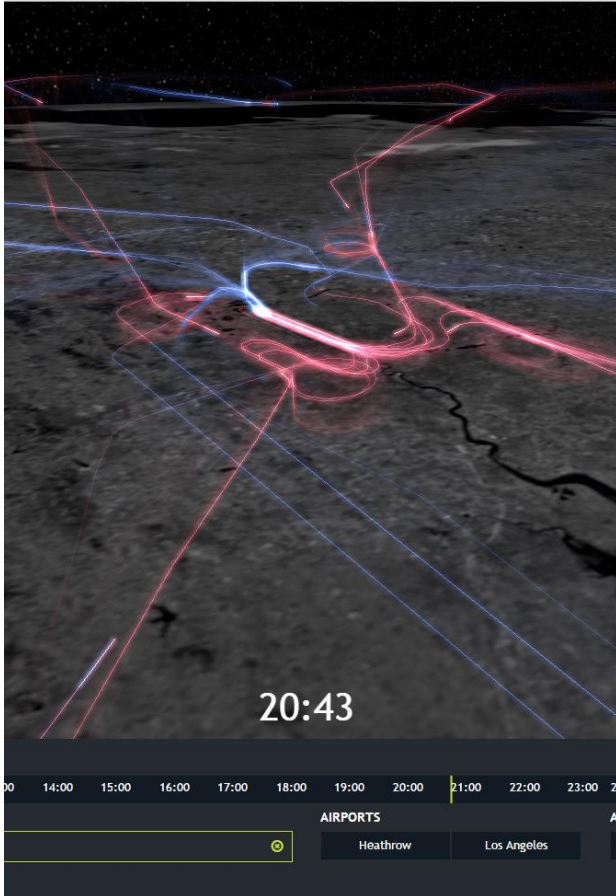
SitaWare is a command and control product that provides the same geospatial data for planners and commanders using desktop computers as for Warfighters in the field using mobile phones. This geospatial solution for Systematic has also recently been adopted by the U.S. Army. As with LIDO 4D, planners can quickly update actors as situations develop, maximizing the use of geospatial data and ensuring that everyone involved in an operation is provided with situational awareness even in rapidly evolving situations.

Social Insight by Sc2 Corp combines social media analysis with geospatial analysis by utilizing the geotags found on most social media content. This use case of dynamic data can also provide powerful opportunities for monetization. By placing this content in the world and tracking it in real time, the flow of trends across the world can be tracked, allowing organizations to predict the behavior of social media users and improve services and products by adapting them to these trends and behaviors.

OpenValue, who developed a bike share scheme in Paris, combined the location data from the bikes and stations to show where bicycles were accumulating and where empty spots were accumulating, at both local



levels and city-wide levels. From this data, OpenValue developed predictive analytics capable of optimizing the supply of bicycles and ensuring that customers were able to find bikes and stations as needed.



By analyzing incoming and outgoing patterns in 4D with Luciad technology, users can gain insight into flight congestion and reveal the many holding patterns. Such insight drives business decisions, in this case, planning of a third runway at Heathrow Airport in London.

Where data might have previously sat unused or required the creation of a bespoke system, it can now provide a tangible increase in the safety of operations, situational awareness, and business agility.

These kinds of solutions provide significant advantages for the organizations using them, by unlocking the power of dynamic big data through the use of geospatial technologies.

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About Hexagon

Hexagon is a global leader in digital solutions that create Autonomous Connected Ecosystems (ACE). Our industry-specific solutions create Smart Digital Realities™ that improve productivity and quality across manufacturing, infrastructure, safety and mobility applications.

Hexagon's Geospatial division creates solutions that visualize location intelligence. From the desktop to the browser to the edge, we create ACE that bridge the divide between the geospatial and the operational worlds.

Hexagon (Nasdaq Stockholm: HEXA B) has approximately 20,000 employees in 50 countries and net sales of approximately 4.3bn EUR. Learn more at [hexagon.com](https://www.hexagon.com) and follow us @HexagonAB.

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