WILL SPATIAL INTEGRATION TAKE GEOSPATIAL MAINSTREAM?

ADVANCES IN TECHNOLOGY ARE TRANSFORMING GEOSPATIAL, POTENTIALLY MOVING IT OUT OF ITS SILO AND INTO THE MAINSTREAM AT LAST. BY **MATT SHEEHAN**

Increasingly, in the geospatial world, we hear experts use the term inflection point. This denotes a turning point or dramatic change. Often it is associated with an event – something that triggers that change. In this article, I will discuss the future path of the geospatial industry, and the potential importance of spatial integration to drive wider adoption.

Advances in technology are transforming geospatial. Three core areas stand out:

Data collection

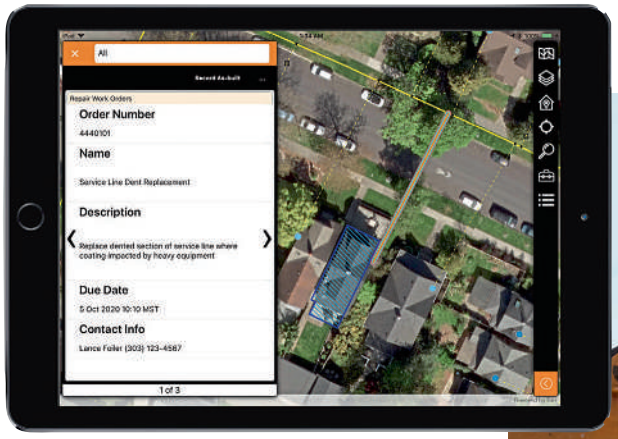
Advances in sensor technology, notably miniaturisation, have created a tsunami of new geospatial data. Manual data collection is being replaced by fast, accurate, automated data collection from a multitude of sources: Satellite, aerial, terrestrial outdoor/indoor and underground radar. This is new multi-dimensional data – two-dimensional, three-dimensional, and real-time four-dimensional.

Data processing and analysis

Artificial intelligence (AI) and machine learning (ML) are much discussed. As we produce more data, processing and analysis has become ever more difficult. Manual methods are being replaced by automation. Geospatial data can be very difficult to process and transform from a raw state to useable. AI/ML is helping. Processed geospatial data can provide organisations a new level of knowledge and insight. AI/ML powered analysis are proving invaluable.

Data interaction and access

Cloud computing has provided a way for organisations to manage their digital resources remotely. That means data can be accessed anytime from anywhere. Easy access has led to increased attention on user interaction. Many have promoted the idea of: "Frictionless insight which provides the most appropriate output based on the question." In other words, easy to use (non-expert) applications which may, or may not, include a map. This wave of innovations



has helped drive new conversations around digital twins, digital reality, real-time data about people and places and the Internet of Things (IoT). Geospatial is at the heart of these conversations.

GEOSPATIAL AS AN ENTERPRISE SOLUTION

Yet as geospatial technology rapidly advances, the business of geospatial lags. In many organisations, geospatial continues to be confined to departmental use only. Most often that is the mapping or GIS department. The geospatial industry continues to be challenged to the improve the understanding of the value of location data to the enterprise. That is data and software, which is used to satisfy the needs of an organisation, rather than individual users or departments.

In an effort to convey both uniqueness and enterprise value, a new geospatial vernacular has appeared including location intelligence, and location analytics. But mainstream understanding and wider enterprise adoption continues to be elusive. Geospatial remains a niche.

SPATIAL INTEGRATION

Integration means combining or connecting. In software terms, that can often involve platforms, and creating synergy between complementary systems. Spatial integration is one example of this type of connectivity. It extends systems by adding spatial capabilities. As an example, SAP is used as a business system by utilities, and serves as the heartbeat for everything asset management related: billing, materials etc. GIS, on the other hand, provides the where, context of surrounds and connectivity of assets.

Geospatial systems are location-focused. They store location-based data; distributed asset data for example. They also provide services and algorithms which process location data and provide outputs, or answers to specific questions. Business systems include Enterprise Resource Planning (ERP), Customer Relationships Management (CRM), Enterprise Asset Management (EAM), and Supply Chain Management (SCM) respectively. Many have been designed to help manage organisations. They contain data and workflows focused on management tasks. Location is not the focus, but one key part of a bigger whole.

For utilities, spatial integration combines core asset data and workflows contained in business systems, with the where and location-based relationships of geospatial systems.

There are two types of spatial integrations: Light and deep. Deep integration takes place at the data level. It was once complex, which limited the number of implementations. Technological advances have greatly simplified this process. Potential deep integration use cases abound including situational awareness, risk assessment, enterprise data synchronisation and currency, change management and much more. There has been a big push by enterprises to get the most out of their existing systems. As a result, the demand for integration, in particularly spatial integration, has been increasing.

Light integration most often occurs at the client level. It is a simple, yet powerful integration. Enterprise asset management (EAM) has been a particular focus for spatial integration solution providers, with emphasis on mobile.

LIGHT SPATIAL INTEGRATION FOR MOBILE ASSET MANAGEMENT

Mobile asset management provides a good example of spatial integration. EAM is software focused on the management of the maintenance of physical assets throughout their lifecycle. EAM is used to plan, optimise, execute and track activities associated with an asset. Most often mobile asset management apps are connected to a GIS, an EAM or an expensive custom solution respectively. Asset management can be far more powerful and cost-effective when it integrates in-house EAM and GIS systems.

As an example, many organisations leverage both SAP and ArcGIS. Often, these platforms live in separate departments: commonly IT and mapping respectively. SAP contains EAM software. Work orders are at the heart of this solution. ArcGIS contains the where of the asset, and thus work order. Light spatial integration brings these platforms together; a single interface into two powerful yet complementary systems.

Lemur from Critigen is an example of a new breed of light mobile spatial integrations. A single window for field staff to view and interact with both SAP EAM and ArcGIS. Lemur combines an interactive ArcGIS map with SAP EAM work orders. Data is both pushed and pulled respectively from each system.

Light spatial integration for mobile asset management allows field-based staff to perform core duties more effectively, by leveraging existing enterprise systems.

SPATIAL INTEGRATION AND THE FUTURE OF GEOSPATIAL

Enterprise customers are increasingly looking to make better use of the technology they have in-house. GIS has long been viewed as mapping software. The industry has struggled to shake off that label. Wider enterprise adoption of GIS and geospatial technology has thus been slow. Spatial integration offers an opportunity to widen the use of geospatial by extending the capabilities of business systems such as SAP. Light mobile integration provides a single view into these complementary systems and is increasingly becoming popular with field staff for asset management. Deep integration offers an enormous array of possibilities to geo-enable workflows across organizations.

Time will tell, but spatial integration may well prove important in the mainstream adoption of geospatial data and technology.

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