

MarkLogic Intel Ops for ArcGIS

The Modern Intelligence Operations Solution

Esri and MarkLogic have collaborated to create an integrated Intelligence Operations solution featuring Esri* ArcGIS* and the MarkLogic® database to enable the ingest, storage, search and visualization capability for heterogeneous sources of information for all-source analysts.

At all echelons, modern intelligence operations push analysts to constantly switch back and forth between multiple systems to gain retrospective analysis and real-time situational awareness. GIS must support the integration of real-time information feeds, with the expectation of periodic analysis to generate timely, useful all-source intelligence products. GIS systems also provide context to rapidly evolving situations, which improves information quality and decision-making. However, the volume, variety, and complexity of data sources and real world events residing in multiple systems bring new challenges to GeoINT and all source analysts.

Challenges of Integrating Heterogeneous Sources of Data

- Inadequate resources to Process, Exploit, and Disseminate (PED) data
 - Data is frequently too exotic/specialized to be aggregated into a single view
 - Spatial analysis (proximity/density) does not always help, particularly when exploring/exploiting entity relationships
 - Information from tactical missions is obtained from a large variety of sensors and/or data sources which can only be exploited and visualized in purpose-built applications
 - No consistent model for representing activity and object or entity-based information, such as people, equipment, organizations, events, and timelines
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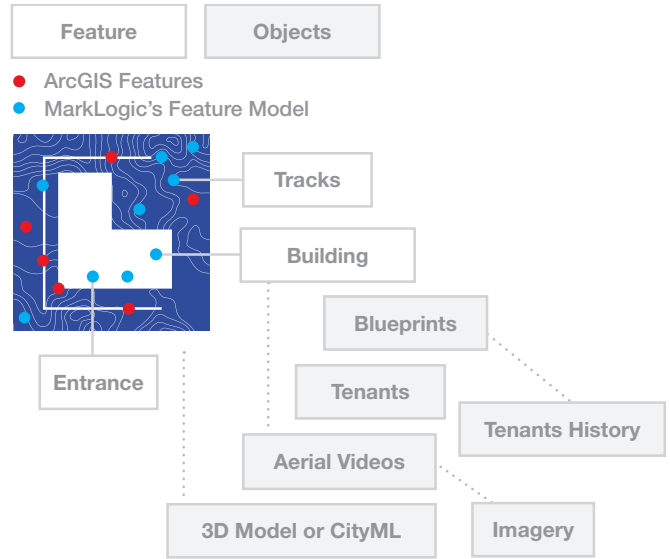
The Intelligence Operations Solution

The Intelligence Operations solution is a high-fidelity data integration framework capable of modeling variable, volatile, and real-time geographic information domains such as human geography, structured observation management, damage assessment, and disaster recovery. It provides organizations with a powerful way to drive intelligence operations convergence. The solution consists of the MarkLogic database to store, enhance, analyze, and disseminate dynamic geospatial features and things of life (i.e. “objects and entities”). It integrates big data in real-time to identify patterns, discover relationships, and reveal anomalies quickly to inform decision making at all echelons.

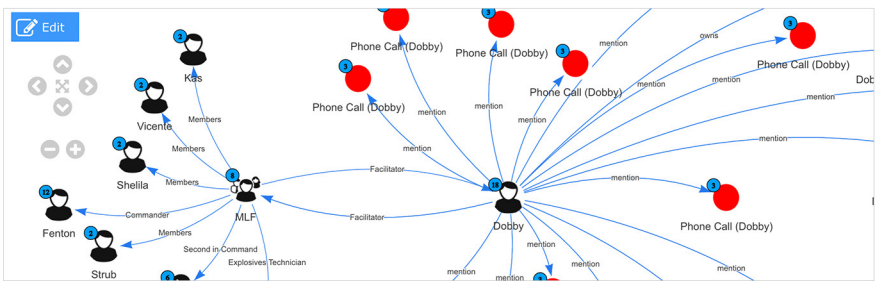
With our joint solution, a user can combine an object or entity with a geospatial feature – providing multiple ways to store data in geospatial context, while also associating temporal information, and semantic relationships. For example, a building of interest can be viewed as three objects: a building, a school, and a meeting place for “bad actors.” The geographic location for the building can be viewed as multiple points, lines, or polygons. A building that has multiple purposes can have information associated with a timeline that contain various organizations, people, and events. With the Intelligence Operations solution, multiple locations can be stored as features – along with objects, attributes, values, and metadata – in one flexible database.

- Table Features Represented as Geometry Layer Classes
- Geometries Stored in the Same Row as Structured Records
- Can Participate in a Structured Relational Schema
- Ideal for Entries with Relative Permanence
- Sophisticated Geometric Modeling Capabilities

- Polys (building)
- Lines (streets)
- Points (towers)



Information can be created or updated – without any downtime – to record real-world events as they occur and can capture the different states of geographic features and the objects and entities associated with them over time. When field teams realize a building is being used as a school during the day but a place where “bad actors” have their meetings at night, they can dynamically create observations to reflect that the building has two uses. Once the information is saved to the database, it is then available at any time to anyone with appropriate permissions. Analysts can move between maps, faceted search, link analysis, objects, and raw content – fluidly. They also have the advantage of highly scalable search, discovery, real-time alerting and data sharing, while having a new way to capture, exploit, and securely disseminate ad-hoc observations and knowledge. The Intelligence Operations solution delivers an accurate representation of the real world, increased trust and security, as well as significantly decreased cost of systems by combining file servers that store information about features and the geospatial system, and allowing analysts to directly capture and relate their geographic knowledge in one system – using the MarkLogic Server and Esri ArcGIS technology.



Search & analyze geospatial features along with entities (person, places or events) using facets, link analysis, maps, and details of an entity



About Esri

Since 1969, Esri has been giving customers around the world the power to think and plan geographically. The market leader in GIS, Esri software is used in more than 350,000 organizations worldwide including each of the 200 largest cities in the United States, most national governments, more than two-thirds of Fortune 500 companies, and more than 7,000 colleges and universities. Esri applications, running on more than one million desktops and thousands of Web and enterprise servers, provide the backbone for the world's mapping and spatial analysis. Esri is the only vendor that provides complete technical solutions for desktop, mobile, server, and Internet platforms. Visit us at www.esri.com.

About MarkLogic

For over a decade, organizations around the world have come to rely on MarkLogic to power their innovative information applications. As the world's experts at integrating data from silos, MarkLogic's operational and transactional Enterprise NoSQL database platform empowers our customers to build next generation applications on a unified, 360-degree view of their data. Headquartered in Silicon Valley, MarkLogic has offices throughout the U.S., Europe, Asia, and Australia. For more information, please visit www.marklogic.com.



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