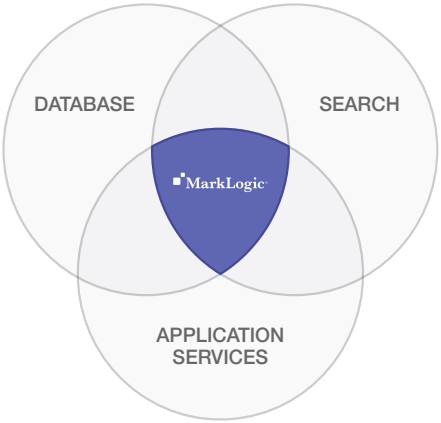
MarkLogic®

SOLUTIONS

MarkLogic Solutions for National Security

Warfighters, intelligence, border control, and law enforcement organizations can't control or even predict what data they will need for their mission. For these groups, data is highly variable, arrives unpredictably, and is in volumes for which legacy relational database management (RDBMS) platforms were never designed.

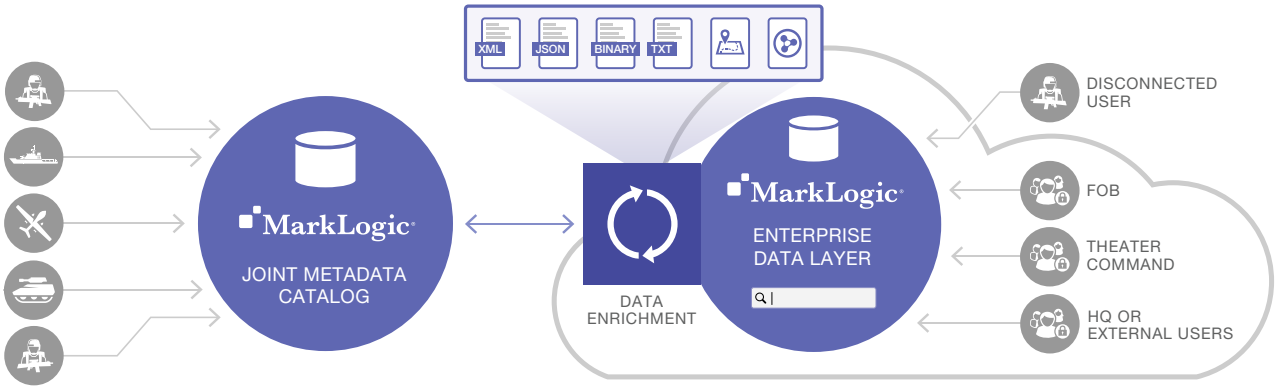


Building on the MarkLogic® Enterprise NoSQL database platform, we and our partners are able to help customers harness big data – and enable superior information fusion, search and alerting, and intelligence production and dissemination. Our innovations reduce non-recurring engineering and the operations and maintenance costs associated with the old way of designing, deploying, and operating Command & Control and Intelligence, Surveillance & Reconnaissance (ISR) systems.

At the heart of our National Security capabilities is our enterprise-grade database platform, which brings together search and database together along with application services. MarkLogic has many significant attributes which differentiate it from other platforms, including compartment security, flexible replication, geospatial index, and built-in semantics and triple store, all in an ACID-compliant scale-out architecture. These features provide our customers functionality and data integrity to meet the most demanding mission and enterprise requirements.

Data Layers

Metadata catalogs and data layers are the foundation of the national security solutions that MarkLogic and our partners provide to our customers. A data layer allows one or more communities-of-interest to share information from different and evolving data sources – as well as the persisted records, objects, and intelligence products created on top of the content. The data layer is a bridge between information silos.



Link Analysis, Geospatial Intelligence Systems (GIS), Timeline, and other analysis tools provide valuable discovery, analysis, and intelligence product development. But they were designed and developed without considering that they had to be interoperable with other tools. Each is the center of their universe. The same can be said with most case management systems used across intelligence, public safety, and law enforcement. Regarding case-management data management approaches, this can work effectively if your investigation is starting with a body, a detainee, or something concrete – around which you are capturing a routine set of information.

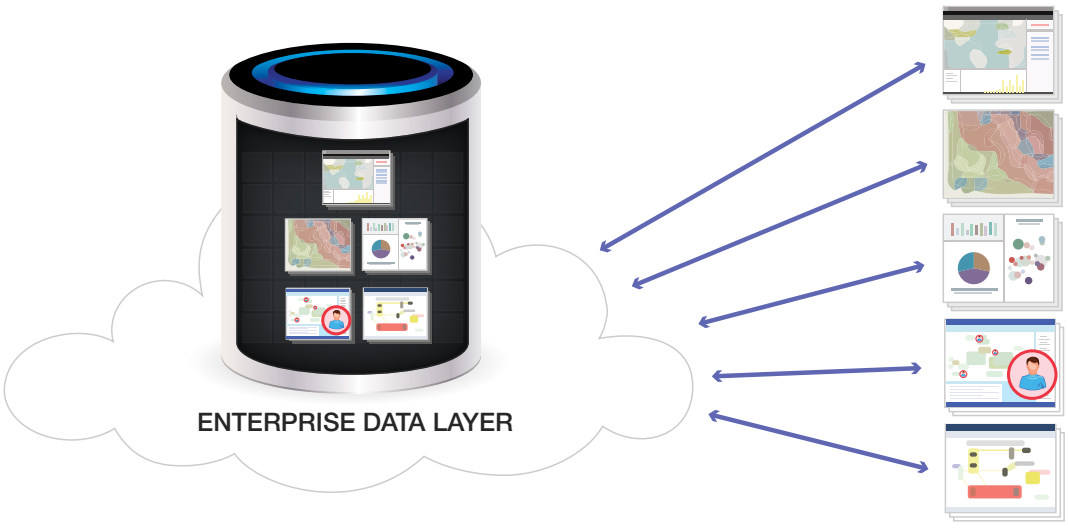
However, as terrorism, trans-national organized crime, human smuggling and trafficking, and cyber-crime dominate defense and security missions, existing system architectures predicated on structured and predictable data don't meet organizations' needs. Also, these legacy systems typically are tightly-coupled applications with application-specific data-stores. With MarkLogic, customers are able to readily integrate heterogeneous, changing data and implement infrastructure, platform, and data-as-a-service models. This reduces the effort and resources needed to transition to cloud architectures while delivering a more flexible and coherent data model. The motivations to adopt this open model are multiple:

1. By uncoupling the app from the backend via web services, the community gets better flexibility to move between different analytical tools.

2. By creating a data layer, the community benefits from reduced non-recurring engineering as well as ongoing operations and maintenance costs associated with bringing on new tools, along with the storage, compute, and networking costs associated with fielding each system.

3. Flexible data services provide better support for information sharing between users, communities of interest, and organizations.

The MarkLogic-powered Enterprise Data Layer supports the management, timeliness, scalability, performance, and reusability of the data created in analysis and case management tools. And, once the data layer has been established, new solutions can be readily deployed to better exploit the data in service to the mission.



A common data layer, with applications decoupled from their own data stores, provides national security organizations with required end-user productivity – without sacrificing the needs of the enterprise.

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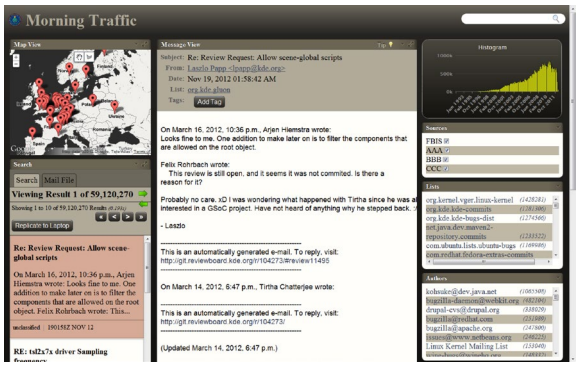
Solutions

Customers turn to MarkLogic when they are fed up with the complexity and cost of adapting RDBMS and simple key-value stores to mission requirements built around variable and volatile content. Data layers allow them to build out applications in days and weeks that used to take months and years. These include secure military messaging systems, Mobile Operations for information sharing across detached user communities, augmented GIS, and Object-based Intelligence & Production systems to support key use cases such as watch-listing, human geography / socio-cultural analysis, battle damage assessment, news monitoring and exploitation, and field-based geospatial data capture.

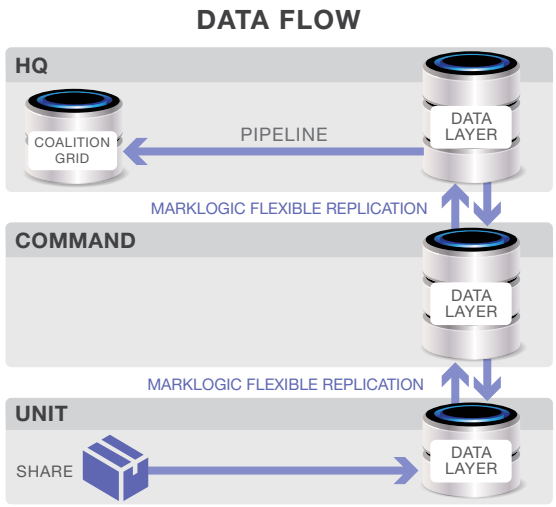
Military Messaging

Secure military, intelligence, and/or diplomatic message management systems can be found around the world. These secure and frequently compartmented environments are different from day to day email. They need to support very large volumes of messages and attachments, are tagged for classification, community of interest, releasability, topic, geo code, as well as time/date. These systems are the backbone for sharing information amongst communities-of-interest especially in watch room environments. MarkLogic provides powerful alerting, saved searches, tear-line, and the ability for users themselves to set up communities-of-interest around special projects, task forces, and other dynamic issues.



Mobile Operations

Special Operators need to have the same contextual, temporal, geospatial, and link/node capabilities that their counterparts at higher echelons have come to expect, plus the ability to author, comment, and tag documents in the field. MarkLogic Mobile Operations is an integrated solution that is deployed at HQ, fusion centers, 2-man carry transit cases, and simple laptop computers. It provides multi-lingual document ingest, search, enrichment, and visualization capability to disconnected users. Movement of data between detached users and higher echelons is facilitated via pull techniques, to allow the operator maximum control over the utilization of their communication channels. Utilizing a rules- based master/slave architecture, MarkLogic supports synchronization of All-Source data at scale and delivery in multiple packages to meet storage and user load requirements.



Geo-Based Intelligence

GIS systems were built around a highly relational model. This was acceptable for the kinds of features historically associated with map layers – features that are permanent, structured, and easily fit in a set of coordinates. However, this model cannot accommodate the complexity and pace of real-world events and fast-moving data – such as analysts' need to capture, exploit, and disseminate ad hoc observations and knowledge. MarkLogic allows users to bring hard-to-manage heterogeneous content such as timelines, organization charts, events, social media, contacts, structured observations, etc. into the GIS environment. Helping organizations to bring together variable and volatile data with GIS is a unique capability for MarkLogic.

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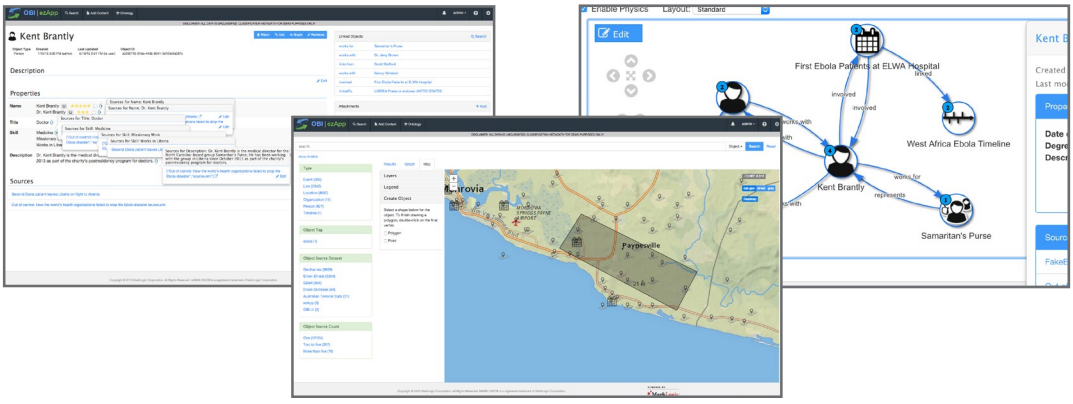
Object-Based Intelligence & Production

The MarkLogic Object-based Intelligence (OBI) solution is an analytical framework capable of surfacing actionable insight from an ocean of noise. It leverages the data assets held in the Enterprise Data Layer, and places intelligence in context by answering Who? When? What? and Where? It provides analytical tradecraft tools and a data model required to store, enhance, and disseminate and analyze dynamic intelligence products. It supports contextual descriptions of high-volume All-Source content across domains, and provides a flexible mechanism to create, navigate, and manage relationships between objects and their various attributes.

The MarkLogic OBI solution enables a wide variety of defense and security use cases. For example, it is being used to support long-running investigations and watchlisting. The schema-agnostic Enterprise NoSQL platform lets organizations rapidly gather massive amounts of information from multiple sources, manipulate the data in real-time, then securely disseminate it in ways that are tailored to a team or individual's mission. MarkLogic lets organizations relate and enhance the heterogeneous content and data that does not fit well in a relational database management system or a search engine.

Other use cases supported by the MarkLogic OBI solution include:

- **Human geography / human terrain analysis.** The OBI solution provides greater insight to analysts, by delivering timely and contextual information that incorporates socio-cultural data gathered from subject matter experts.
- **Battle damage assessment (BDA).** A BDA application built on the MarkLogic OBI framework allows the operator or analyst to describe and relate the impact of kinetic or non-kinetic strikes on a particular location, building, or equipment.
- **News / events monitoring and exploitation.** Unstructured open source data can be readily incorporated into the data layer, where the OBI solution extracts useful information, puts it in geospatial and temporal context, and delivers it to the appropriate users.
- **Imagery/GIS products catalog.** Anyone from analysts at HQ to special forces in the field can benefit from immediate access to geospatial intelligence that is relevant to their area of responsibility.
- **GIS field production.** Whether for preparation of the battlespace, targeting, or analysis, with an application built on the MarkLogic OBI framework a GeoINT or All-Source specialist can quickly describe and relate a location, the structures, people, organizations, businesses, and the activities in limitless detail.



MarkLogic OBI allows individuals and organizations to create, discover, edit, and semantically relate objects - transforming how organizations share and produce critical information

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Proven Success

MarkLogic has been cited by multiple industry analysts as a leader in the operational and NoSQL database markets. We and our partners have deployed data integration, search, discovery, analysis, and content delivery solutions to some of the largest organizations in the world. These organizations need the unique combination of reliability, flexibility, and security that only the MarkLogic Enterprise NoSQL platform can provide.

About MarkLogic

For more than a decade, MarkLogic has delivered a powerful, agile, and trusted Enterprise NoSQL database platform that enables organizations to turn all data into valuable and actionable information. Organizations around the world rely on MarkLogic's enterprise-grade technology to power the new generation of information applications. MarkLogic is headquartered in Silicon Valley with offices in Boston, Chicago, Frankfurt, London, Manila, Munich, New York, Paris, Singapore, Stockholm, Sydney, Tokyo, Utrecht, and Washington D.C.

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