Enduring Intelligence Automation

Enabling Innovation at Mission Speed

The amount of all source data – such as imagery and full-motion video (FMV) – has been rising over the past decade. Analysts are flooded with raw products and it is becoming harder and harder to keep pace. The consequences are grave – from reduced situational awareness to inadequate intelligence being propagated to the warfighters. Hiring more analysts may sound like the answer, but experts agree the projected growth of collection platforms will dwarf even the most optimistic staff increase.

In response to these challenges, the Defense Department has developed a task force to advance the use of artificial intelligence (AI) and machine learning in military intelligence. Initiatives such as Project MAVEN, Algorithmic Warfare Cross-Functional Team (AWCFT), Airforce Combat Cloud and Data-to-Decisions have been established and will be deployed in the field within a year. These projects will utilize AI to assist in various workloads, the first task being identifying objects and activities in full motion video. Theoretically, what used to take 80% of an analyst's time will now be performed by automation or AI – allowing the analyst to focus on creating better situational awareness.

> " The inability to manage, correlate, fuse and analyze every amount of increasing data results in waste of collection, lack of timeliness, missed indications and warning, and/or lack of relevance for decision-making."
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> Lt. Gen. John N.T. "Jack" Shanahan, Director for Defense Intelligence, Warfighter Support OUSDI
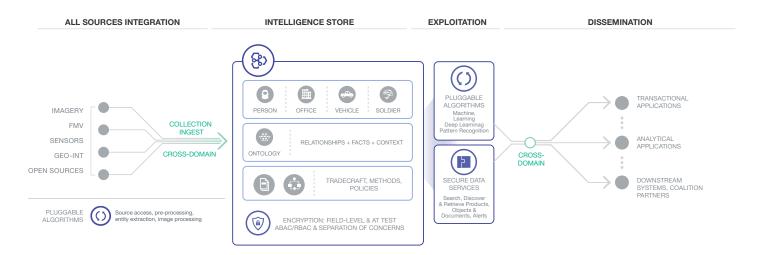
With new ISR sources over the years, new tradecrafts have been introduced but they require advanced processing and have generated new classes of workload: Activity Based Intelligence (ABI), Object Based Production (OBP), and Anticipatory Intelligence. Today's automation is proving to be difficult and has resulted in delayed deployment – each new algorithm needs to be fielded with a complex technology stack including security, data access, integration with downstream systems, and operational infrastructure, all while addressing cross domain challenges. At scale, this model is not cost-effective or sustainable. To operationalize AI across mission capabilities and realize the expected, innovation is needed.

The MarkLogic® Approach

MarkLogic can speed up the process of automation while reducing the costs. An operational capability deployed from the data center to the tactical edge has been developed on the MarkLogic server. This capability allows algorithms to access ISR sources and foundation objects, and securely disseminate their findings and products to analysis tools and downstream ISR and C2

systems. Implementing this solution allows creators of algorithms from industry and labs to focus on building algorithms to improve ISR processing – without reinventing the wheel to interoperate with existing operational capability, DIL environments, and cross-domain boundaries.

| ALL SOURCES INTEGRATION | INTELLIGENCE STORE | EXPLOITATION | DISSEMINATION |

Seamlessly access information from ISR Sources, Foundation Objects and Pre-Processed Sources
(i.e. the products/objects of other algorithms such as object detection) while continuously adding new algorithms.

Exposing all identified objects and activities with unified alerting, task-based areas of responsibility (AOR) and areas of interest (AOI) regardless of algorithms will improve dissemination and tipping & cueing. This capability also allows compounding the benefits of AI algorithms by sharing its output with other AIs. For example, automating and detecting moving objects in FMV is leveraged by AIs performing object identification.

MarkLogic is already supporting mission capabilities in the Defense Department and Intelligence Community. MarkLogic supports all source data *as-is* – allowing faster ingestion and easier data manageability. And, it lets you manage change and innovate as new agency needs arise, while staying operational and secure.

Benefits

Improved Tradecraft - Allowing industry and academia to quickly add new algorithms to build recognition patterns and create new intelligence by leveraging existing infrastructure improves flexibility and knowledge management. As new products are identified and created via automation, they become added to the mass of information, creating a smarter data set.

Mission Focus - Analysts will have more time to focus their efforts on advanced analytics to provide better situational awareness to the warfighter in a timelier manner. Secure dissemination of these new products, objects and activities can be performed with unified alerting and tasking based on areas of responsibility (AORs) and areas of interest (AOIs).

Increased Efficiency - The most current automation capabilities will consistently be available via processing, exploitation, and dissemination (PED) tools, which in turn increases analysts' productivity. Operationalizing AI across mission capabilities on one platform, with a single point of security and access logs, and deployed from the cloud to DIL environments drastically reduces cost and overhead.

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.

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