# COGILITY

Cogynt.ai
Decision Intelligence Platform

Summary

Government and enterprise's adoption of big data and streaming technologies demand a new category of decision intelligence (DI) applications to inform critical decision making. These DIapplications fuel today's situational awareness, operational efficiency, and risk management initiatives. Many organizations invest in a multifaceted set of event streaming, real-time analytics, decision support, and business process integration technologies that are the foundation of a decision intelligence platform (DIP) architecture. Attempting to build DI applications with a fragmented set of DIP tools leads to significant development, resource, and performance costs. Organizations need a scalable, integrated platform that simplifies DIP management and expedites DI application delivery. This approach increases development efficiency, fortifies predictive analysis, and optimizes analyst, data scientist, and engineering resources.
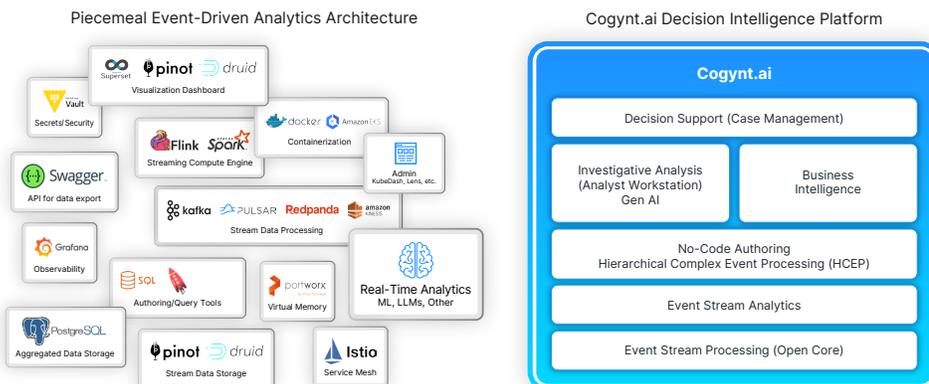
Piecemeal architecture versus Cogynt.ai Decision Intelligence Platform

Challenge

DIP infrastructure and skilled engineers are the cornerstone for modern DI application development. However, an in-house method using piecemeal toolsets to support DIP creates ongoing complexity, efficiency, and operational challenges. As engineers and data scientists develop and extend DI applications, expanding data sources, creating and improving analytic models, and integrating findings into existing workflows becomes burdensome to enhance and maintain. Worse, the process underutilizes analysts, the subject matter experts (SMEs) that are requesting DI applications for their stakeholders. They are not directly working within the modeling environment. This disconnect between engineers, data scientists, and analysts undermines the development of accurate models, prolongs application delivery, and increases costs.

Benefits

- Gain real-time, predictive, and actionable intelligence regardless of data volume and diversity, pattern complexity, or scale

- Accelerate decision intelligence application delivery with increased development and operational efficiencies

- Make faster, informed decisions with greater consistency, accuracy, and confidence

- Detect and respond to high-consequence threats (and opportunities) proactively and effectively

- Optimize SME, business analyst, and data scientist expertise and utilization

- Streamline tailored intelligence usage across teams and decision makers with assured oversight and auditability

- Enrich the operational intelligence of external applications

- Increase analyst investigative analysis and case workflow efficiency

Solution

Cogynt.ai is a decision intelligence platform that offers the most comprehensive, versatile, and simplified means to deliver continuous decision intelligence for decision support automation. The platform integrates event streaming, advanced analytics, no-code modeling, and intelligence augmentation. Applying an expert based AI approach, Cogynt.ai enables analysts and data scientists to directly design models, examine results with full traceability, and optimize outcomes. This streamlines DI application delivery while reducing release cycles, engineering overhead, and expenditure. As a result, organizations can transform massive, diverse data into predictive and actionable decision insight — in real-time and at enterprise scale.

Accelerate Your Competitive Edge

Cogynt.ai, powered by event streaming and behavioral analytics technology, enables organizations to gain high-confidence predictive insights required to make rapid, informed decisions — continuous decision intelligence that accelerates an organization's competitive edge. The DIP simplifies deployment, creating, publishing and refining models, ingesting data sources, and processing event streams. It automates visualization, investigation, workflow, and integration processes.

Analysts and data scientists use Cogynt.ai's no-code authoring environment to easily map data sources and create models with full data lineage. Cogynt.ai makes even the most difficult real-time analysis possible with its patented Hierarchical Complex Event Processing (HCEP) technology. The HCEP engine works seamlessly to detect and track complicated patterns of behavior — even if occurring infrequently or evolving over long periods of time. The system publishes the resulting insights to external systems and provides contextual notifications to analysts within the Analyst Workstation.
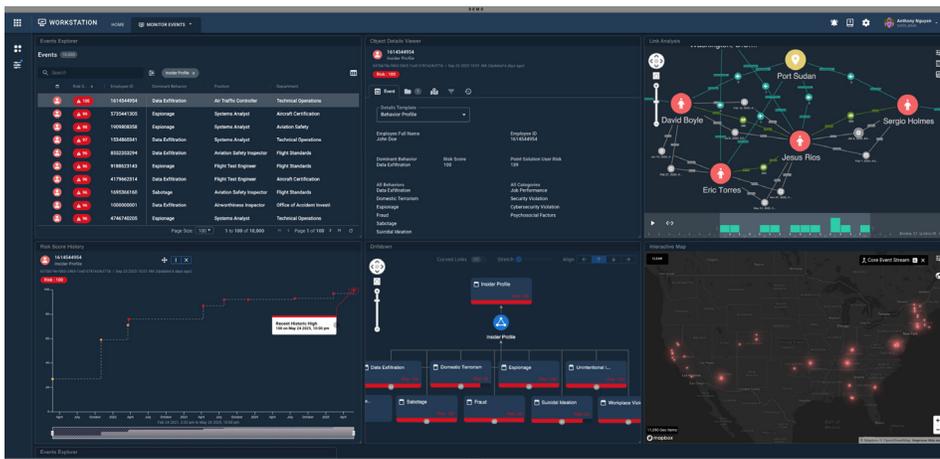
Analyst Workstation: customizable, interactive dashboards with analysis widgets

Using Analyst Workstation, analysts can visualize, examine, and review findings and deliver timely, high quality DI products to their stakeholders. Extensive case management functions that boost analyst productivity include workflow customization, case assignment, delegation, assessment, annotation, collaboration, and reporting. A built-in Superset Tool provides BI dashboard features that facilitate immediate performance and management oversight.

Highlight Capabilities

Decision Intelligence Platform
Offering a complete DIP, Cogynt.ai integrates and augments event streaming, advanced analytics, investigation, visualization, and case workflow. Simplified model authoring and production expedites DI delivery, without requiring Flink, Kafka, and Pinot expertise, and reduces engineering overhead.

No-Code Model Authoring
An intuitive, self-documenting model authoring environment enables SMEs and analysts to easily define data schema mapping, event patterns, and computation logic used by HCEP.

Advanced Behavioral Analytics
Cogynt.ai's patented HCEP provides a simple, yet sophisticated method to analyze multifaceted patterns within diverse, high-volume event streams in real time to determine insights.

Applied Expert AI and Gen AI
Cogynt.ai's expert based AI approach enables SME expertise to become machine-speed analytics to yield insights with full data lineage. Forthcoming AI LLM use will enhance source data assessment, authoring, and workflow experiences.

Workstation
Seamlessly disseminate intelligence into existing workflows with customizable dashboards, widget tools, and BI data visualization, reporting, findings enrichment, and collaboration.

Flexible Data Ingestion
Easily define streamed or batch ingestion of structured, unstructured, database, and AI data sources.

Business Process Integration
Integrates with other applications and artificial intelligence systems to ingest data or send actionable intelligence.

Proven and Scalable
Uses Apache Software Foundation technology and is cloud-scalable to meet high-volume data ingestion and complex analytic processing demands.

Decision Intelligence Platform for Continuous Decision Intelligence

Cogynt.ai's comprehensive DIP platform delivers continuous intelligence using proven, open-source technology. The cohesive platform leverages Cogility's patented behavioral analytic, no-code authoring environment, and extensive investigation, visualization, and workflow capabilities. Operating at cloud-scale to meet big data, complex DI problems, Cogynt.ai streamlines deployment in an organization's virtual private cloud (VPC) within leading cloud service providers.

Cogility Cogynt.ai DIP

Event Streaming | Expert AI and Gen AI | Behavioral Analytic | No-Code Authoring | Repurposeable
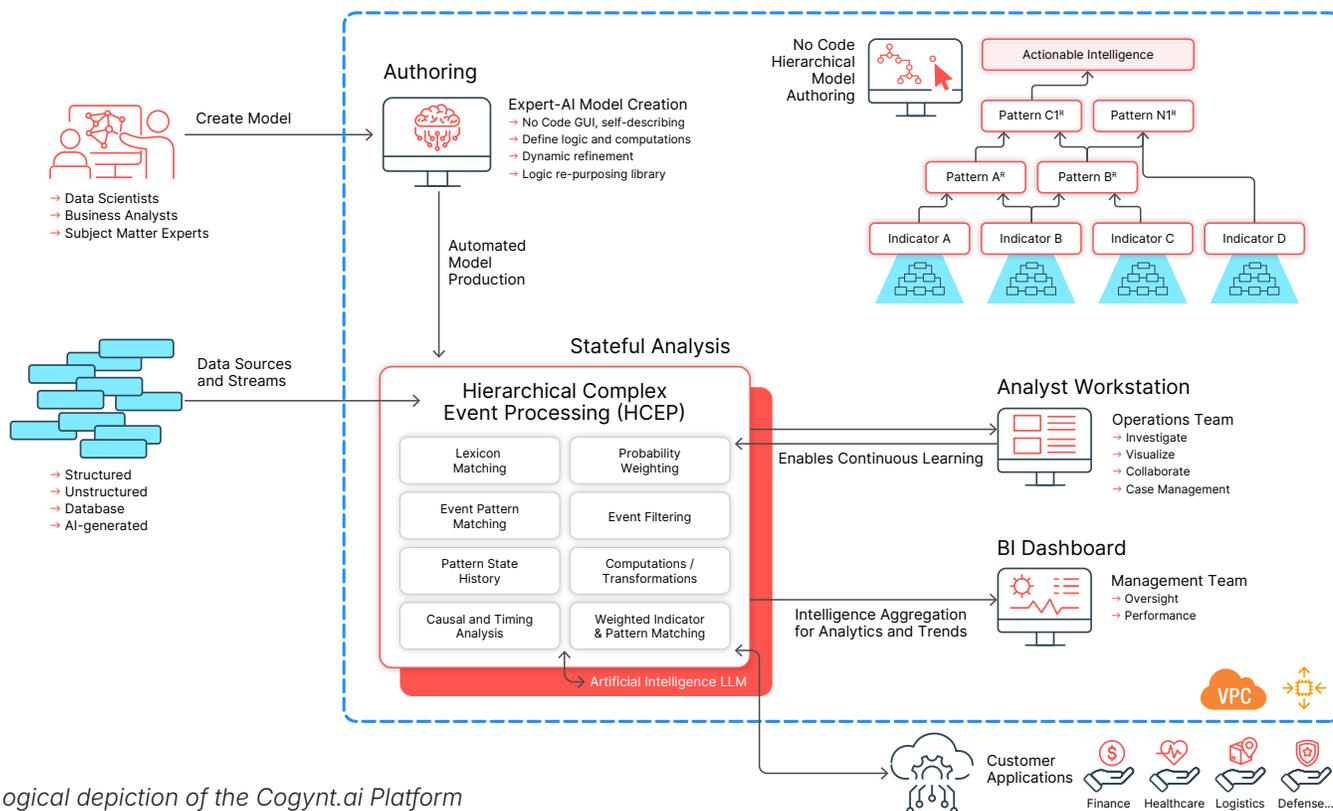
Logical depiction of the Cogynt.ai Platform

Cogynt.ai's components and their role within a DIP architecture include:

- **Data Sources:** Streaming or batched data, including structured, unstructured, database and AI-generated data, are ingested via Apache Kafka connectors.

- **Cogynt.ai Authoring Tool:** Used by the analyst to define/ manipulate lexicon, event patterns, computation logic, and risk models that comprise the Expert AI modeling created within a no-code GUI. Developed models are automatically produced for use in the HCEP engine.

- **Cogynt.ai HCEP Analytic Engine:** Models are automatically configured within HCEP to produce analytic results that are streamed from Apache Flink to Apache Kafka and Apache Pinot for analytics and visualization. Results are displayed in the Workstation and Superset tools.

- **Analyst Workstation:** A dynamic and interactive user interface enabling the analyst to view insights, examine with widget apps, and trace predictive findings. Workstation enables the analyst to assess and add notation, as well as invoke extensive case management workflow features.

- **Artificial Intelligence LLM:** Forthcoming AI LLM will further enhance analyst experiences.

- **Superset Dashboard:** Provides overall performance and program oversight within a BI dashboard and enables access to any other preferred dashboards through Cogynt.ai's open system architecture.

- **Applications:** As an open system, Cogynt.ai insights can be shared with any event driven system or application.

Intuitive Interfaces for the Entire Team

Whether you're developing models, examining findings, sharing insights, or enabling workflow, Cogynt.ai has a visual user interface optimized for the task at hand.

Authoring Tool

Cogynt.ai's Authoring Tool is no-code design environment to create, update, and deploy models. Reduce your modeling effort to define and map source data with automated schema discovery (Kafka). A rich library of computations and calculation functions offers virtually unlimited options for real-time data analysis. Built-in safeguards such as automatic consistency checks help reduce processing errors.
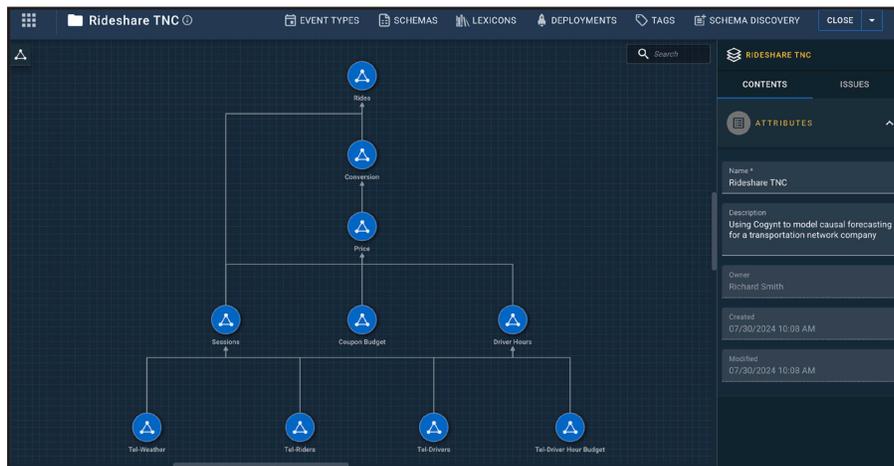
*Cogynt.ai No-Code Authoring Environment*

Analyst Workstation

Analyst Workstation facilitates reviewing model results, sharing intelligence findings, facilitating action, and gaining operational oversight. Robust visualization and widget-based tools let analysts see the entire picture from any angle. Analysts can easily annotate and enrich cases. Case management features streamline line management and collaboration workflow. Built-in dashboards and report writing capabilities make it easy to convey intelligence insights in multiple formats.
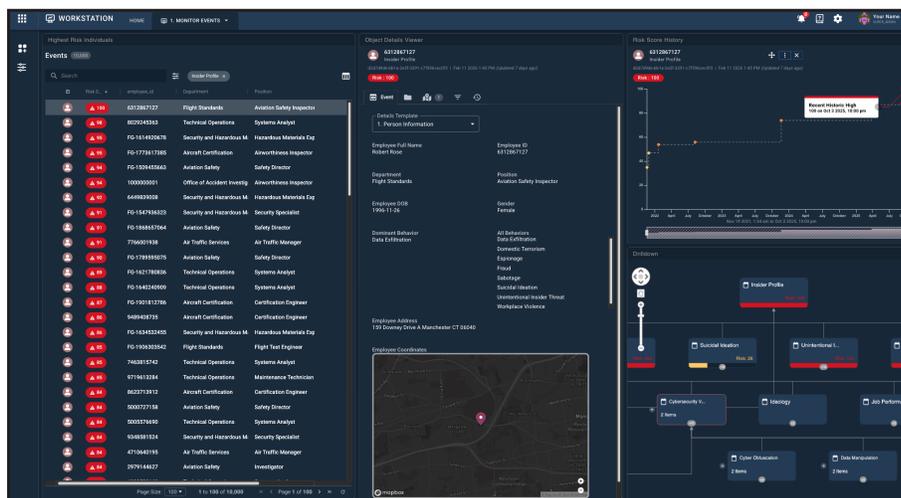
Cogynt.ai Analyst Workstation Environment

Superset Tool

The Superset Tool provides an up-to-date, bird's-eye view of the organization's key performance indicators (KPIs). The integrated BI feature allows program managers, directors, and stakeholders to create customized charts and interactive dashboards to get the operational insights they need.
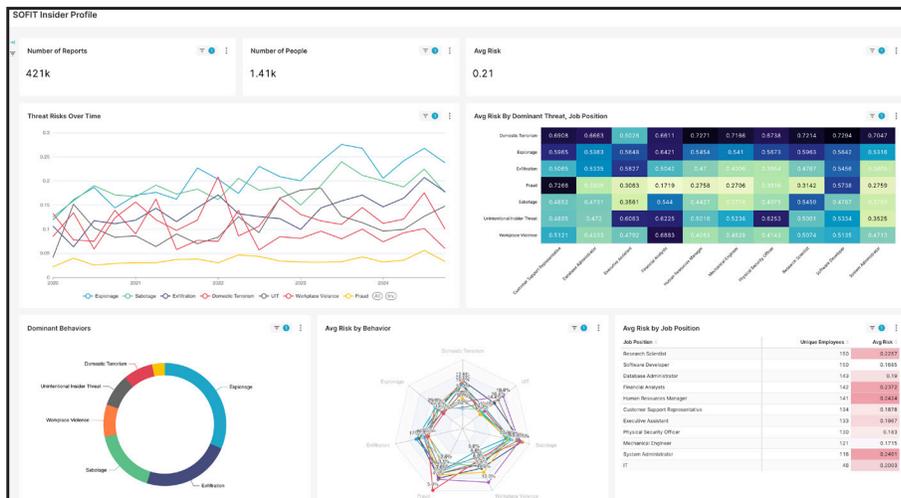

Cogynt.ai Superset for BI Insight Visualization

Advanced Behavioral Analytics at Work

Hierarchical Complex Event Processing is at the core of Cogynt.ai's analytic technology. HCEP takes into account multiple dimensions and factors that alone might have limited meaning, but in combination and context, could represent a potential risk or opportunity.

As a real-time behavioral analytic, HCEP defines event patterns from the top down, starting with a hypothesis. The top-level event pattern is then decomposed into lower-level patterns until the analysis reaches the raw event level, or observation. Once the model has been established and data is flowing into the HCEP analytic engine, events are matched to patterns from the bottom up at machine speed.

Within HCEP, the organic component of a behavior is an event pattern. If an event pattern is fully matched, a new complex event is created, which may trigger a higher-level event pattern. This process continues until it satisfies the full behavioral profile. While this process is ongoing, Cogynt.ai continuously assesses risk or opportunity, applying a probability weighting, and calculating a statistical likelihood of future events occurring (as defined in the model). Since the system maintains state, this history of partially matched patterns is fully traceable. The event generated from this real-time analysis is known as "actionable intelligence" — predictive, contextualized insight that a human or system can act upon.
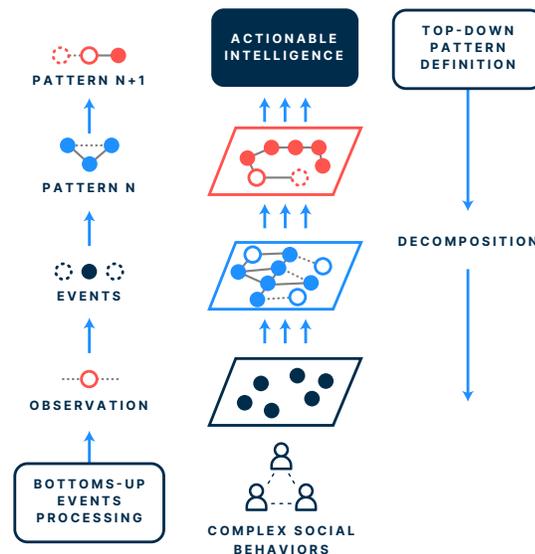
Hierarchical Complex Event Processing

Simplifying DI Process

Typically, analysts must possess detailed technical knowledge of data sources and associated schemas. They would collaborate with data scientists to enable systems to ingest the data. Cogynt.ai Authoring tool eases this burden with its built-in Kafka topic schema discovery — eliminating manual schema creation and mapping to source data. The Authoring Tool, which is seamlessly integrated with Apache Kafka and Flink, greatly simplifies the challenge of creating, refining, and repurposing event patterns against streaming data. Its elegant modeling notation and semantics are easy to learn, enabling an analyst or data scientist to be productive in a matter of days.

Additionally, Cogynt.ai uses a domain specific language called Event Pattern Constraint Language (EPCL). This is an easy-to-understand declarative system that removes the need for code or SQL expertise. Cogynt.ai's no-code authoring environment lets analysts define an EPCL model with a few clicks of their mouse, regardless of how basic or sophisticated the computational logic. Cogynt.ai's simplified authoring, automated model publishing, data processing governance, and findings management capabilities overcome the complexity behind sourcing, using, and managing a piecemeal, in-house DIP architecture. The logistics of data ingestion, event streaming, state maintenance, and identifying behavioral patterns are all kept under the hood. This allows analysts and data scientists to focus on achieving high-confidence insights with considerably less development, production, and testing iteration.

Achieve Decision Advantage

With almost two decades of research and development behind it, Cogynt.ai stands as the decision intelligence platform of choice for government and commercial organizations to gain continuous decision intelligence and achieve decision advantage.

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Visit **www.cogility.com** to obtain more information and request an expert demo.

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