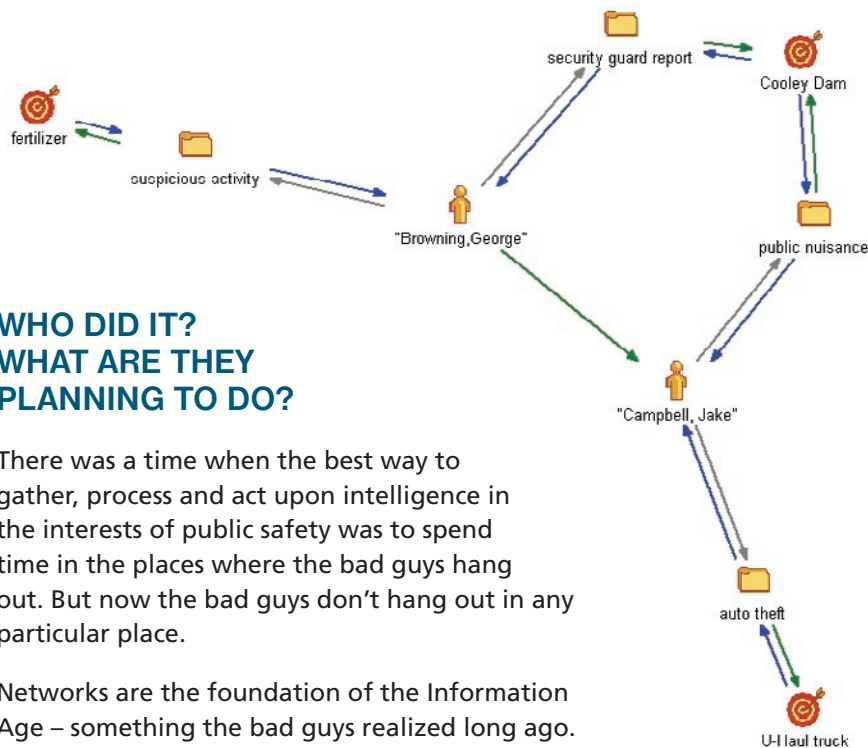


RELATIONSHIP ANALYTICS For Intelligence and Public Safety



WHO DID IT? WHAT ARE THEY PLANNING TO DO?

There was a time when the best way to gather, process and act upon intelligence in the interests of public safety was to spend time in the places where the bad guys hang out. But now the bad guys don't hang out in any particular place.

Networks are the foundation of the Information Age – something the bad guys realized long ago. Using transportation, communication, financial and information networks they found new ways to coordinate, operate, and avoid detection amidst the flood of data produced by these networks. Good guys need to do more than use the networks – they need to understand the networks if they're going to stop the bad guys. To do that, they need tools that can wade through the flood of data and quickly zero in and confidently connect the dots between cause and effect.

Cogito's Graph-Based Relationship Analytics gives you the power to understand information age networks and connect the dots with confidence. Cogito helps you understand cause and effect - the essential information problem for intelligence and public safety - by revealing the social networks of criminals (a cause) and determining whether suspicious parties represent enough of a threat (an effect) that action should be taken.

Figure 1: A summary relationship analysis showing two suspects, suspicious activity and a potential threat.

COGITO'S SOLUTIONS GIVE YOU THE TOOLS TO:

- Fuse—create the information networks by modeling, importing, and linking the data.
- Analyze—identify clusters, evaluate the nature of links, and find non-obvious patterns.
- View—present information for further visual analysis.
- Report—automated report generation and data exports to investigators and enforcement personnel.

Cogito's Graph-Based Relationship Analytics solutions identify and analyze the social networks of suspects and detect impending threats.

THE DATA PROBLEM: An Embarrassment of Riches

Locating relevant information for analysis, applying proper reasoning over the information once it is located, and identifying meaningful patterns in intelligence data are all time consuming and costly challenges for intelligence or public safety organizations. These challenges also increase the risk of undetected activities that threaten people and property.

In many cases, detectives and intelligence analysts are limited in their ability to effectively use intelligence data because of the lack of direct observation over suspects, activities and situations. To compound the problem, profiles or activity patterns are often incomplete or have inaccuracies, as investigations are in progress and evolving. Data exploration technology being used to fill these gaps needs to be flexible and adaptive enough to create an efficient discovery process. Analysts need intuitive and highly interactive intelligence data in order to enhance observation data and more effectively make accurate discoveries.

Manually pulling together multiple sources and then sifting through the potentially massive amounts of data related to a case or incident is a slow and inefficient process (if done at all).

Finding relationships between seemingly unrelated data sets is cumbersome and sometimes impossible because of the limitations of existing relational database technology. These inefficient, time-consuming processes—often tied to traditional technology—create the following problems:

- Inefficient analyst/resource utilization
- Overly complex and lengthy searches because relevant subsets of data could not be created or identified
- Inadequate discovery tools
- Inability to get answers or long delays to important data queries
- Increased hardware costs

DATA TRANSFORMED INTO INTELLIGENCE

The Cogito Knowledge Center is a graph-based relationship analytics solution that works with existing public safety systems and makes it possible for detectives and intelligence analysts to fuse case and event information into a single integrated data set—quickly finding relationships that may be hidden in an increasingly complex, data rich environment.

The Cogito Knowledge Center makes it possible for analysts to narrow the scope of an investigation by quickly finding relationships between suspects, activities, locations and events, allowing them to cull irrelevant data and focus on a core subset of relevant intelligence information. Cogito solutions enable pattern matching and relationship identification of suspicious activities, even if the pattern being sought is incomplete or has errors. Queries will return

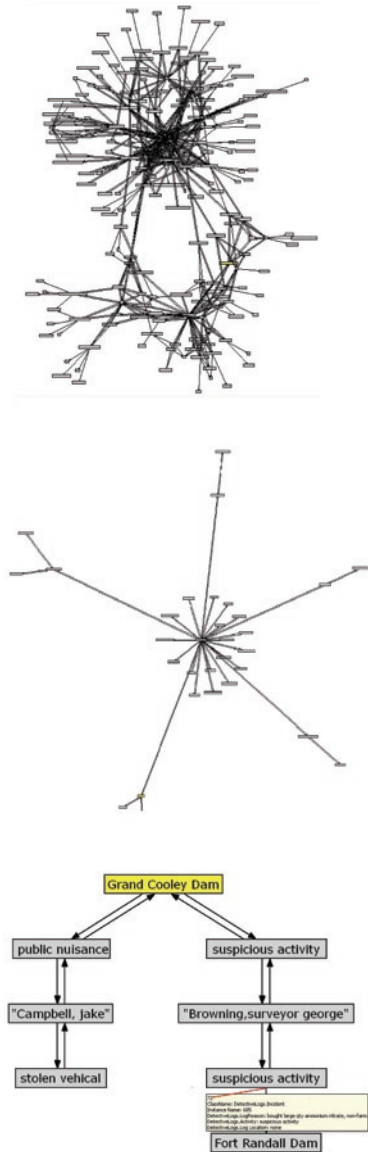


Figure 2: Filter large amounts of disparate data to get to relevant information that is really needed. The Cogito Knowledge Center helps intelligence and security analysts connect related observation, social network, event, location, and activity pattern data while filtering and focusing on only information that is relevant.

a data subset that contains the full or partial pattern along with relevant and related data that can be used for further investigation to identify pending terrorist activity or potential suspects.

Placing intelligence data into the Cogito Knowledge Center allows organizations to create an activity graph and narrow the analytical focus to a subset of relevant data presented in a format that naturally exposes relationships between people, objects, organizations and events. Patterns and trends emerge almost immediately from simply viewing the relationships between the items in a fused database. Visual query gives rise to relevant case factors and enables faster discovery and pursuit. Searching through multiple levels or generations of data is done 10 to 100 times faster than with traditional relational databases because the intelligence information is taken out of data tables and formatted in a natural graph index. Changes that take hours with traditional database tables only take minutes using a graph solution, which means greater productivity and a reduction in data management, hardware costs and complexity.

Information assimilated into the Cogito Knowledge Center can be viewed and filtered visually (specific relationships turned on or turned off at varying degrees of connection) for immediate observation of patterns. Graph data can also be queried and filtered using any of several query options (including using a sub-graph as a pattern matching query) to search for specific patterns or results. Information is then available for further analysis, pattern discovery, reporting and distribution as needed.

COGITO GRAPH ENGINE

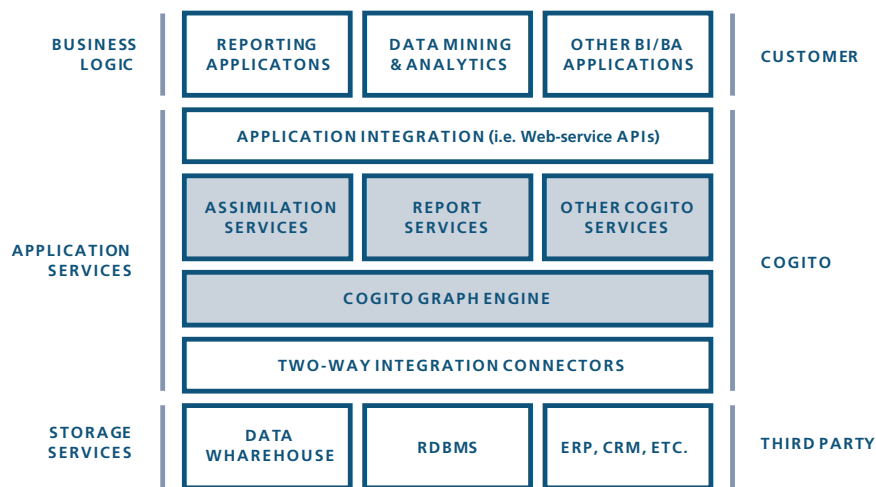


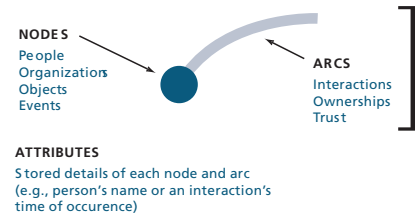
Figure 3: Cogito Knowledge Center architecture accommodates disparate data sources and provides for various forms of output and analytics.

The Cogito Knowledge Center supports both Windows and Linux, 32-bit and 64-bit systems. Web services and thin-client capabilities for distributed users are supported as well as Windows clients for modeling, analysis and administration. Application programming interfaces (API) are available as part of the Cogito software development kit (SDK).

GRAPH BENEFITS

Increase data analytical capability and results while reducing the time analysts spend identifying patterns and relationships in fused data

- Graph data is formatted to immediately highlight relationships between objects, people, organizations or events
- The data schema is dynamic, accommodating changes and saving time and money
- Graph data is naturally indexed so searches are 10 to 100 times faster than traditional databases



COGITO KNOWLEDGE CENTER SPECIFICATIONS

GRAPH DATABASE OVERLAY

- Scalable graph database supporting over four billion nodes per graph with the capability of one million arcs per node
- Bidirectional, weighting arc
- Supports Linux and Windows XP – 32 & 64 bit

RELATIONSHIP ANALYTICS

- Node – Alias Detection
- Arc – Inference Establishment
- Link (path) – Link Discovery & Analysis; Path Analysis
- Group – Finding
- Cluster – Detection & Analysis
- Pattern – Matching, Detection & Analysis

QUERY AND REPORTING

- Query by pattern match where pattern can be simple or complex (e.g., "name", group of nodal attributes, or one or more relations)
- Reporting engine supports formatting the result of a query response into user defined format
- Viewing support includes hierarchical, symmetrical, orthogonal, and circular diagrams

DATA INTEGRATION

- Data input/output (CSV, XML, XLS & ODBC)
- Graph data can be imported and exported in Cogito defined XML format

FOR MORE INFORMATION

The Cogito Knowledge Center is ready to improve the productivity of detectives and intelligence analysts, provide intelligence analysis capabilities not previously available, and lower your total cost of ownership and data management.

For more information, call 801.858.1000, send an email to info@cogitoinc.com, or visit www.cogitoinc.com.