G00232131

Cool Vendors in Content Analytics, 2012

Published: 26 April 2012

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Data is growing in volume, variety, velocity and complexity. Cool Vendors in content analytics offer innovative approaches, tools and technologies for analyzing text, images, video or speech, and for finding and acting upon insights and patterns across content types and structured data.

Key Findings

- Vendor ai-one provides machine learning technology that mimics how the brain detects patterns in data, which developers can embed into any application.
- Co-Decision Technology's Co-Mining decision tracker platform is a collaborative decision making platform that replicates the architecture and reasoning process of the human brain when analyzing, synthesizing and finding patterns in vast amounts of structured and content data flows.
- Mattersight finds new actionable insights and patterns by identifying emotion and sentiment in both speech and text interactions, and relates this to other transaction history to predict behavior and optimize actions and outcomes.
- ThoughtWeb is a collaborative decision-making environment that automatically reads, analyzes and relates structured and content data using automated semantic analysis and contextual learning.

Recommendations

- Embrace the potential of these forward thinking solutions to enable your organization to differentiate and innovate, but pilot them initially in areas where the pace of change in operations and business models permits trial and error.
- Innovative companies often change strategy and direction, so perform reference checks to validate claims and identify alternative solutions.
- Develop hypotheses of how derived insight can drive business value; use these tools to validate the hypotheses and look for opportunities to find hidden insights and expand use.

- Maintain an architectural view of your information management infrastructure, analytics and decision making capabilities, as well as the people and processes that use them, so that the role for innovative tools is well understood.

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Analysis

This research does not constitute an exhaustive list of vendors in any given technology area, but rather is designed to highlight interesting, new and innovative vendors, products and services. Gartner disclaims all warranties, express or implied, with respect to this research, including any warranties of merchantability or fitness for a particular purpose.

What You Need to Know

The explosion of data volume and its variety, velocity and complexity has the potential to enable new high-value advanced analytic use cases that drive innovation, growth and productivity. Yet, business analytics has largely been focused on tools, technologies and approaches for accessing, managing, storing, modeling and optimizing for analysis of structured, most often enterprise transaction, data, which has well-defined schemas typically stored in a relational database management system. This is changing as organizations strive to gain insights from new and diverse data types. It includes exploring and combining insights from organizations' vast internal repositories of content (such as text and, increasingly, video and audio/speech), in addition to externally generated content (such as the exploding volume of social media; for example, Facebook, Twitter, blogs and wikis, as well as video feeds), into existing and new analytic processes and use cases. Correlating, analyzing and presenting insights from structured and content information together enables organizations to personalize customer experiences and exploit new opportunities for growth, efficiencies, differentiation and innovation.

The vendors featured in this research offer innovative approaches to discovering new patterns and insights from linking and relating structured data with content, which to date have been separated by siloed repositories and analytic techniques. This enables organizations to optimize new and existing applications, including informatics, fraud detection, trading, customer sentiment, profiling, targeting, and service employee recruiting and retention, homeland security, and law enforcement,

to name just a few. These innovative products complement other emerging technologies, such as complex-event processing, that also help detect patterns in unstructured data.

ai-one

San Diego, California (www.ai-one.com)

Analysis by David Newman

The vendor ai-one makes systems smarter by providing machine learning technology that developers can embed into any application. Unlike prior artificial intelligence (AI) approaches that applied fairly static models and required specialized domain expertise, the company's toolkits mimic how brains quickly detect patterns, find high-order co-occurrences, and identify latent relationships among data elements across systems. In addition to machine learning technology, the company also provides reusable user interfaces into the mechanics and results of the machine learning process.

The company's products are potentially disruptive to markets in business intelligence, text analytics, bioinformatics, knowledge management and image processing. For example, the company's Topic-Mapper SDK and BrainBrowser workbench use natural-language processing to build intelligent applications that deliver sense-making capabilities for semantic discovery, knowledge collaboration, sentiment analysis and data mining. Sample applications in this problem space include: finding the best job candidate on LinkedIn; mining medical research at PubMed; or generating topics maps from social sites such as Twitter or talk radio. UltraMatch is a solution for image analysis and video matching. Graphalizer SDK is a solution for working with, and analyzing, sensor data, such as financial trading, biometric and industrial process control data.

Challenges: Gartner sees three important challenges for ai-one to address in the near term. First, the AI field in general has a questionable reputation with business leaders, as early promises never materialized despite ardent enthusiasm from the academic and R&D community. Success may be more forthcoming if ai-one were to refer to its machine learning technologies, and compete with the likes of Numenta and Palantir Technologies, rather than use the more lofty (and ambiguous) artificial intelligence term. Second, the company has cited technical limitations (32-bit single thread per instance) that it says will be resolved. This is necessary to address the exponential growth in the volume, velocity and variety of data types characteristic in the age of big data. Third, the company applies a minimum viable product strategy, which is geared toward fast and quantitative market testing to a subset of possible customers. This may make some mainstream organizations reluctant to pursue the company's products except for narrow, low risk prototyping applications.

Who Should Care: This vendor's offerings are of interest to chief technology officers, enterprise architects, information management specialists, business intelligence managers, technical professionals, application developers and other roles responsible for the strategies, architectures and solutions that can harness diverse data to deliver the next generation of intelligent applications.

Co-Decision Technology

Paris, France (www.comining.com)

Analysis by Rita Sallam

Decision makers are challenged with finding relevant patterns and signals on which to make unbiased decisions from increasingly vast and diverse, real-time data. Co-Decision Technology's Co-Mining decision tracker platform is a collaborative decision management environment, which replicates the architecture and reasoning process of the human brain to analyze, synthesize and find patterns in vast amounts of structured and content data flows. The Co-Mining decision tracker platform is cool because it performs cognitive functions (for example, signal detection, context analysis, and microrisks or microtrends aggregation) by aggregating heterogeneous particles of knowledge and points of view, and tracks what leads to collective decision processes. Specifically, the Co-Mining decision tracker platform structures a decision as a succession of microdecisions. It does this by automating complex reasoning for decision-making and the evolution of the decision process over time using algorithms (which Co-Mining calls CyberTracker techniques). These algorithms then connect and aggregate pieces of information and knowledge from heterogeneous platforms, applications and diverse and separated information sources (for example, real-time news feeds, trading flows, official announcements of the Federal Reserve or the International Monetary Fund, as well as information from structured databases, or from physical sensors).

Co-Mining's reasoning processes go through different stages (cognitive invariants), from alarm/ signal or rumor detection to validation, to reasoning, to final decision and action. The Co-Mining decision tracker platform captures all the steps of any reasoning process to ensure the traceability of decisions and the ability to reuse successful and sanctioned knowledge components and decision flows. Once links and patterns are detected, the Co-Mining platform can visualize decisions in one of two ways: either temporally, as a succession of links between particles of knowledge over time; or spatially, as structured aggregates in a visualization that resembles a macromolecule of knowledge, representing the knowledge DNA of an organization and the specific business process being monitored (for example, risk in a bank, security on a railroad or criminal activity). Co-Mining results can also be visualized using existing business intelligence and analytics (including data discovery and visualization) platforms. Co-Mining has captured and encapsulated the knowledge of experts (traders, economists, risk managers, intelligence officers and so on) in standard business knowledge components of the platform to support use cases in risk management, fraud detection, railroad and air infrastructure security control, market intelligence, and homeland security and law enforcement.

Challenges: Co-Decision Technology's biggest challenge is articulating Co-Mining's innovative approach and technology for relating diverse data and simulating the human decisioning process to business users (risk managers, trader, intelligence and business analysts, and so on) that will ultimately use the product. Co-Decision Technology must find partners that understand these business domains and own these relationships to accelerate its market adoption.

Co-Decision Technology also faces the challenge of articulating Co-Mining's differentiators when compared to other "man-machine" collaborative decision making platforms, such as Palantir,

ThoughtWeb and Saffron. It also needs to differentiate itself from vendors like ai-one, featured in this research, which are also building algorithms that simulate how the brain reasons and learns.

Who Should Care: Any organization that must make decisions based on large and diverse amounts of streaming data in a collaborative environment should consider the Co-Mining decision tracker platform. It is initially targeting risk management, homeland security, rail and air transportation security, and law enforcement applications, where it has out-of-the-box knowledge components.

Mattersight

Chicago, Illinois (www.mattersight.com)

Analysis by Rita Sallam

Why Cool: Mattersight builds unique behavioral models based on communications styles and patterns that detect personality and sentiment during a customer and employee interaction. It does this via proprietary algorithms for analyzing words and patterns of speech and text that each individual exhibits during an interaction. Mattersight is cool because it finds new actionable insights and patterns by identifying emotion and sentiment in both speech and text interactions (in most languages) and relates this to other transaction history. Specifically, it captures customer and employee interactions across multiple customer touchpoints, including calls, emails, chats, website visits, mobile applications and employee desktop data, and combines this with other available customer and employee data. It then uses the new insights to predict future customer outcomes and behaviors of each individual customer, to identify contact resolution patterns, to enable predictive routing, and to assist with social media intervention. By combining customer personality (voice and text sentiment) with previous interaction history and outcomes to calculate scores for each customer, Mattersight predicts behaviors such as customer service or sales interaction satisfaction (without having to conduct a post call survey), attrition likelihood and probability to purchase. It can then use these insights to automatically predict and route customer calls to the best available contact center agent to handle each specific caller.

Mattersight is also being applied to fraud and security applications, where fraudsters and criminals on phone calls are being identified using voice biometrics, linguistic algorithms and predictive models. Mattersight is a software-as-a-service-based application used in organizations across a range of industries, including healthcare, insurance, financial services, telecommunications, cable, utilities and government. Every day, Mattersight captures over 70 trillion data attributes, applies over 2 million algorithms, executes over 250 billion computations, and processes over 350TB of data in the cloud.

Challenges: Speech analytics is an emerging market with a number of small vendors (for example, Envision, CallMiner, Aspect, Nexidia and Utopy) that analyze speech in real time, while call center application vendors (such as Nice) are incorporating speech and text analytics into their applications. Mattersight will have to demonstrate how it can coexist with call center applications enhancing existing speech analytics capabilities, while at the same time differentiating itself from the pack of smaller vendors all vying for traction in this growing space.

Moreover, speech analytics vendors in general face similar challenges to other advanced analytics techniques. The perception is that speech analytics is complex and requires advanced skills in order to deploy and derive any benefits. Despite the potential benefits, relatively few contact centers have begun using speech analytics solutions. Mattersight will need to convince potential customers that its offerings are easy to use and deploy in order to encourage adoption.

Who Should Care: Chief marketing officers, heads of customer service and the CIO, who must optimize cross-channel and call-center interactions through insights derived from analyzing a variety of content interactions (text and speech) with transaction history, should consider investing in Mattersight's content analytics applications. Organizations with opportunities to identify fraud and security breaches through speech contacts should also consider Mattersight.

ThoughtWeb

Oakton, Virginia and Eveleigh, Australia (www.thoughtweb.com)

Analysis by Rita Sallam

Organizations face an ever-increasing challenge to extract insights from and put into context large volumes of structured and content data. ThoughtWeb is a collaborative decision management environment that automatically reads, analyzes, relates and finds insights in structured and content data (such as legacy transaction systems, documents, external news feeds, messaging, social data and so on). It does this by using automated semantic analysis, including clustering techniques from machine learning, in order to organize data streams into related "super threads" and using contextual learning coupled with intelligent personal agents to deliver personally relevant, prioritized insights to decision makers in near real time.

ThoughtWeb is cool because it enables organizations to "join the dots" and understand relationships in context between entities of interest, participants, emerging situations, threats and opportunities. Specifically, ThoughtWeb captures tacit knowledge and enables cognitive modeling utilizing conceptual frameworks to support contextual reasoning, intelligent push of insights to individuals, dynamic and collaborative communities of interest, activity synchronization, and dynamic knowledge visualization and sharing across the enterprise. By doing so, organizations can automatically learn in context, retain corporate knowledge, improve their situational awareness and share insights across multiple siloed organizations or communities to improve collaborative decision making and help prioritize actions. Linkages between data are automatically visualized using the most appropriate combination of graphical, spatial, temporal and contextual formats.

ThoughtWeb was initially used in the defense and intelligence sector, with recent commercial applications in financial services, a global IT supply chain ecosystem, and intelligent monitoring and protection of vulnerable people in a national care network. ThoughtWeb offers a "try and buy" business model with rightsized offerings for both small to midsize companies/departments and large enterprises.

For example, ThoughtWeb's intelligence community customers use the product to monitor a wide variety of data sources and link insights and interests among analysts working in separate silos. Each analyst or information consumer defines many triggers. Each trigger includes a definition with

a combination of factors of interest that are monitored, alerted and linked in real time to find potential threats or unexpected linkages among triggers that require action, and to facilitate intelligent collaboration across the silos.

Challenges: ThoughtWeb's biggest challenge is in articulating its value and overcoming the culture bias that many traditional organizations have against fact-based collaborative decision making. Similarly, while ThoughtWeb is being applied in a number of use cases beyond defense and intelligence, it needs to convince a completely different set of business users, with varying business needs, of its potential value. To achieve this, it will likely need to rely on partners with vertical and domain expertise to expand beyond its core client base. ThoughtWeb also faces the challenge of differentiating itself from vendors that are articulating similar capabilities and value propositions, such as Co-Mining, Palantir, Saffron and so on.

Who should Care: Any organization that needs to analyze, relate and collaboratively act upon insights from large amounts of diverse data should consider ThoughtWeb. It is applicable for any collaborative decision-making application, including homeland security, market intelligence, fraud detection, trading and so on.

Recommended Reading

Some documents may not be available as part of your current Gartner subscription.

"Technology Trends That Matter"

"Ten Reasons to Reach Beyond Basic Business Intelligence"

"Maverick* Research: Judgment Day, or Why We Should Let Machines Automate Decision Making"

"Text Analytics Guidance: Building a Text Analytics Program"

"Text Analytics: Nothing Remains Unstructured"

"Who's Who in Collaborative Decision Making"

"Advanced Analytics: Predictive, Collaborative and Pervasive"

"Finding Meaning in the Enterprise: A Semantic Web and Linked Data Primer"

"Big Data Means Big Changes for Business Intelligence"

"BDBA: A Framework for Big Data Behavioral Analytics"

"Innovation Insight: Linked Data Drives Innovation Through Information-Sharing Network Effects"

This is part of a set of related research. See the following for an overview:

- Cool Vendors 2012: The Nexus Alters Business and Consumer Strategies

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