

PSYDEX EXECUTIVE SUMMARY

Psydex has developed a next generation software solution for real time search, data mining and predictive analytics across streaming News, Social Media, Email, Market Data, Network Traffic and other types of fast-moving *structured* and *unstructured* data. Psydex enables faster, smarter decisions in Financial Markets, DoD/Intelligence and other industries where First-To-Know provides a distinct advantage.

Running on commodity hardware, the Psydex Analytics Grid (AG) is based on a revolutionary design that combines All-In-Memory (AIM) Indexes with Massive Parallel Processing (MPP) to analyze terabytes of real time data in a fraction of a second; generating high precision statistical patterns and signals. Psydex AG's architecture dramatically improves integration time and system reliability by loosely coupling Data Ingest, Indexing and Modeling tiers. Psydex AG closes the gap between real time complex event processing and historical (slower) OLAP Data Warehouses; incorporating much larger windows of real time data into analysis and dramatically reducing decision times from minutes, hours and days down to *milliseconds*. Psydex AG has been tested with sustained real time daily ingest/index rates of billions of messages.

Founded in 2004, Psydex has invested over 50,000 man hours in the design and development of AG and the numerous production applications that leverage the platform. The Company has early customers in Financial Services and DoD/Intelligence where high value is placed on efficiently extracting meaningful patterns and signals from fast moving data. Headquartered in the South, the Company has been funded to date through services and an investment from Intercontinental Exchange.

INVESTMENT HIGHLIGHTS

▪ **Leading Semantic Analytics Platform for Structured and Unstructured Data**

Psydex's AG platform leverages the latest in computational sciences and mathematics to provide real time intelligence that mimics the way a human mind operates, on an enormous scale. AG looks for unusual patterns by contextualizing every mention and data point across diverse mediums, detecting subtle changes and generating signals and alerts with high precision. AG is based on a Massively Parallel Processing (MPP), shared-nothing architecture and an all-in-memory indexes approach that eliminates expensive I/O calls. With its intelligent routing architecture, AG leverages hundreds of thousands of nodes to produce ad-hoc query results against real-time data in less than 30 milliseconds.

▪ **Large Worldwide Market for Business Intelligence Tools**

According to IDC estimates, the worldwide market for business intelligence tools software grew to reach \$8.1 billion in 2009 despite the worldwide recession. According to Global Industry Analysts, the worldwide business intelligence software market is expected to reach \$12.4 billion by 2015, driven primarily by the emergence of new types of BI tools, including predictive analytics, column-based databases, text analytics, and business activity processing. Decision-makers are increasingly employing BI software to resolve a wide range of issues such as latency in receipt of reports, unavailability of relevant content and difficulties in data analysis. From the perspective of Information Technology (IT), BI software acts as the enabling technology for providing knowledge workers with timely access to data for analysis and reporting purposes.

▪ **Strong Development and Leadership Team**

Psydex is comprised of a diverse team of visionaries, scientists and engineers with deep experience designing and developing High Volume, High Variety, High Velocity data management systems. The team has been awarded multiple patents in High Speed Semantic Processing, and maintains active TS/SCI Security Clearances. Psydex's senior management team is experienced across startups to global commercial and government entities including KnowledgeX, IBM, UUNET, AOL, GTE, U.S. State Department, Intelligence Agencies, and others.

▪ **Strong Reference Customers in Target Vertical Markets**

Psydex introduced the first commercial version of its product in 2009, has developed a strong pipeline of prospects and is currently deploying its solution at 2 customer sites. The AG solution is in production at 4 customer reference sites, where it is being used to address diverse needs within financial services, DoD/Intelligence, and Advertising/Media environments. The Company's diverse customer base includes: NYSE Euronext, Intercontinental Exchange, government intelligence agencies, Raymond James, and others.

▪ **Validation from Industry Analysts and Leading Partners**

Psydex has received industry recognition from a variety of sources, including Forrester, SearchDataManagement, and numerous other industry trade publications. Likewise, the Company leading partnerships with IBM, HP, AP, DowJones, Thomson Reuters, Nasdaq, Twitter, AOL, and others, provide additional points of validation.

COMPANY OVERVIEW

Products: Psydex's Analytics Grid has served as the foundation of numerous production applications that are geared toward the end user – ease of use with minimal installation and training. Psydex provides applications, tools, and programmatic interfaces that allow users to quickly realize business value, while the flexibility of its tools and data models allow the solutions to grow as users' needs evolve.

- **AG Dashboard:** The AG Dashboard is a powerful analytics user interface for searching and tracking topics in real time. The Dashboard reads the news and makes it easy to see unusual events and patterns. AG Dashboard allows users to view/monitor Models for unusual activity based on statistical patterns, trends and correlations. A DoD/Intelligence Partner has White Labeled the AG Dashboard.
- **AG Messenger:** AG Messenger provides lightweight access to the Psydex AG platform capabilities and delivers real time alerts and analysis right to users' desktops through existing messaging systems such as AOL AIM, MSN, SMS or others. Psydex is an AOL Commercial Partner.
- **Heatseeker:** Identifies/Alerts of unusual Commodities Trading activity in real time and allows regulators to correlate this activity with News Events so manipulation and insider trading can be identified in real time.
- **Psyng:** The Psyng web site (www.psyng.com) provides an example of a customized/White labeled AG Dashboard that monitors real time news, social media and market data. Users can sign up for a trial account.
- **AG API:** The AG API enables efficient access to a full set of capabilities in Psydex AG. All REST calls require authorization and an API Key. Client samples for Java, C# and custom TCP/IP socket interfaces are also available.

Technology: AG is based on a **Massive Parallel Processing (MPP), shared-nothing architecture, which results in a highly-scalable system using inexpensive, commodity hardware.** Psydex was designed from the bottom up as a massively scalable system supporting real time search, data mining and predictive analytics across high volume, velocity and variety data.

- **Modular/Flexible:** Data Ingest, Indexing and Modeling tiers are completely independent of each other. Indexes load directly from native sources/feeds and models/tagging can change in real time with no impact to existing data or indexes. Source handlers exist for databases, message queues, proprietary wire feeds, TV, Network Traffic and more.
- **SOA (Service Oriented Architecture):** Psydex AG has been designed and developed around open source technologies, with core code written in Java and no third party dependencies. Psydex AG runs on commodity hardware and leverages open source system components such as Linux, Apache Tomcat, JMS and MySQL. AG Services (Indexes, Content, Statistics, Correlations, Event Processing) are dynamically managed in the Grid with failover and redundancy. AG Services are accessible through a robust REST API, TCP sockets and numerous client interfaces based on Adobe Flex, C#, HTML/DHTML, Java and JavaScript.
- **All-In-Memory Indexes:** Indexes in Psydex AG are source specific representations of every possible way data might be queried. Indexes are constructed as AIM (All-In-Memory) multi-dimensional graphs of words, attributes and values organized around TIME. Each source index is partitioned across the grid as many separate Instances each representing a time slice for a source. A typical source index might have hundreds of Instances functioning seamlessly across many nodes. Terabytes of indexed data can be brought online in minutes with ad hoc queries executed against the live real time data in under 30 ms.
- **Massively Parallel Processing:** Psydex is designed around a shared-nothing, MPP architecture and easily scales using commodity hardware. Federators communicate with grid managers and index instances to intelligently route requests and aggregate, collate and fuse results. Communications between processes is based on a proprietary, compressed serialization protocol for optimized performance.
- **Psydex Event Processing:** PEP leverages the Analytics Grid to quantify and qualify real-world events with high precision and speed. The detection of "unusual" patterns and signals in real time is typically the first stage in a highly extensible process that employs domain-specific rules and a powerful model for extracting facts and figures for reasoning. Natural language processing, regular expression chaining and smart text extraction technology yield high precision.

Distribution: The Company is currently developing opportunities through a number of partners to license and sell the AG Platform and applications.

Services: Psydex's services include managed and customer co-located options, delivered through a software-as-a-service (SaaS) model.

Selected Case Studies

- **Trader:** Sales Traders value relationships with their clients, and being the first-to-know about news events impacting markets is key to maintaining those relationships. The challenge for many sales traders is they have many clients with many portfolios and it becomes difficult to organize, minimize false alarms, and manage windows of scrolling headlines on their trading terminal. A Psydex Partner, Psynq, offers products that blend information on publicly-traded companies with market data and news from many diverse sources, including major News Wires, Social Media, and Television. Users can visualize news flow and correlate with market activity, receive alerts based on custom filters and statistical analysis, plus integrate with popular Instant Message platforms, like AIM, and notifications via SMS and E-Mail.
- **Algorithmic Trading:** A major Hedge Fund has a team dedicated to short-term trading based on special situations and Unscheduled news events that create short term opportunities in one or more tradable instruments (e.g. Stocks, Futures). These types of events can be modeled based on previous occurrences and correlation with one or more trading instruments. Since these types of events are unscheduled, the occurrence and timing is not known and thus requires that the event be detected in near real time to maximize profits. As stocks, options and futures markets become dominated more and more by High-Frequency Trading (HFT) algorithms, the time to profit is reduced to near zero. Without a systematic, automated approach to detecting news events and efficient triggering of trade execution, firms are left out of the trade or in the red. Using the Psydex APIs against a Psydex AG configured for news and market data the customer is exposed to many more tradable events and significant reduction in the time to detect both specific events (e.g. Mergers, Management Change) and unusual chatter across many diverse mediums, including major News Wires, Social Media, and Television. Psydex AG provides the customer with a fully integrated system that automates the process end to end, from news gathering to event detection, making it easy to visualize and integrate with their existing order execution system.
- **Open Source Intelligence:** A government agency has a team of individuals responsible for monitoring open source information, leveraging the eyes and ears of the world to detect potential civil unrest, disasters, acts of terror, and other major events in near real time. The agency leverages the reach and power of Psydex AG to fuse vast amounts of information and apply next generation analytics to detect real events and minimize false alarms. Psydex AG identifies emerging patterns and trends in human discourse, resulting in alerts and action can be taken when unusual chatter levels are reached.
- **Cyber Security:** A multi-national organization monitors Network traffic activity from numerous global sites and has the challenge of detecting intrusions and unusual network activity in near real time. Typically it takes days or weeks to perform retrospective analysis to identify signatures. After that time, hackers have moved on... Psydex AG enables terabytes of real time packet data to be collected, aggregated and analyzed in real time. By maintaining large sets of historical and real time data in memory on a large scale, patterns can be identified and correlated in real time, enabling real time response to thwart an attack.
- **Search Engine Marketing:** A major Digital Media company, specializing in next generation Search Engine Marketing (SEM) services, was engaged by a client to provide smarter search advertising by delivering more relevant search ads that factor in the analysis of Real Time current events, sentiment, and other factors that affect how ad campaigns are delivered. The firm engaged Psydex to provide a real time intelligence platform - capable of monitoring mainstream media, television and social media to quantify *What the World is Thinking*[®].

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