

Building Your Information Strategy for Big Data & Analytics

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In November we discussed...

- **Data as the new oil, powering the modern economy**
- **The emergence of a software platform to harness all available information**
- **What IBM has learned about big data adoption:**
 - Organisations are focused on the customer
 - A strong information foundation is vital
 - Early efforts focus on existing and new data
 - Analytics is critical for success
 - Organisations are focused on establishing the business value as they explore new big data technologies

What's changed in the last 5 months?

.....key use cases identified

.....technology enhancements announced

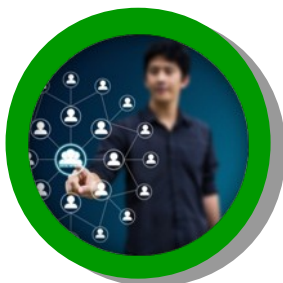


Business Models are under Constant Threat

Demanding and connected customers

Brands built and destroyed in days

Great relationships trump great products



Telecommunications

Transforming their use of network data into new revenue streams

Retailing

Disrupted by social media, networks and mobile commerce

Political Campaigns

Game changing targeting and recruitment of individual voters

Not changing is the same as losing



Fueled by Disruptive Technology Factors



Big Data is All Data and All Paradigms

Transactional & Application Data



- Volume
- Structured
- Throughput

Machine Data



- Velocity
- Semi-structured
- Ingestion

Social Data



- Variety
- Highly unstructured
- Veracity

Enterprise Content



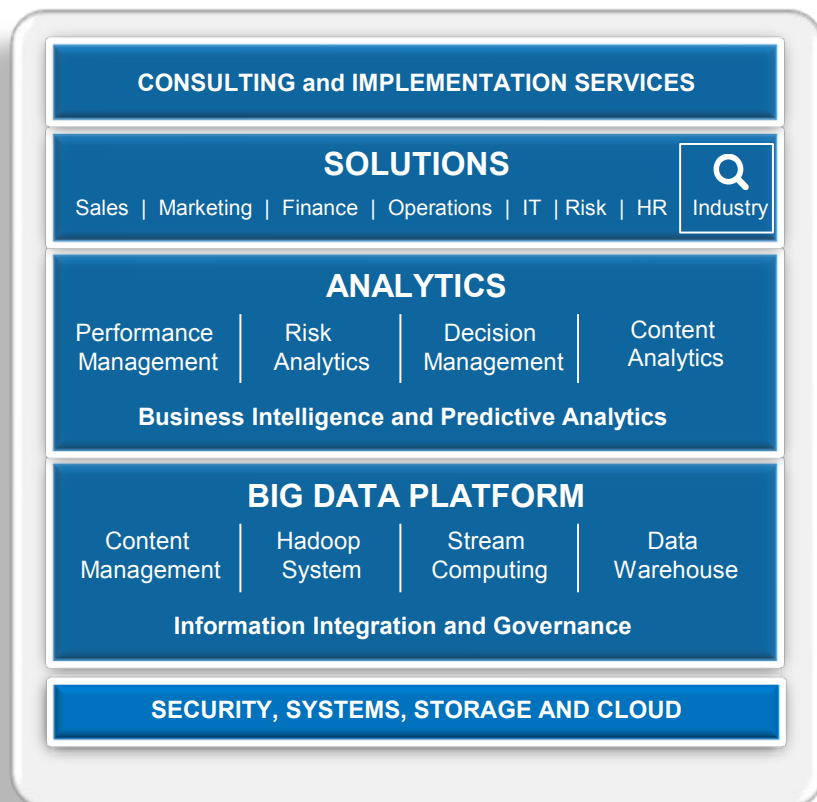
- Variety
- Highly unstructured
- Volume



Every Industry can Leverage Big Data and Analytics

 <p>Banking</p> <ul style="list-style-type: none"> • Optimize Offers and Cross Sell • Contact Center Efficiency and Problem Resolution • Payment Fraud Detection & Investigation • Counterparty Credit Risk Management 	 <p>Insurance</p> <ul style="list-style-type: none"> • Claims Fraud • Customer Retention • Catastrophe Modeling 	 <p>Telco</p> <ul style="list-style-type: none"> • Pro-active Call Center • Network Analytics • Location Based Services • IT/Network Infrastructure Transformation • Smarter Campaigns 	 <p>Energy & Utilities</p> <ul style="list-style-type: none"> • Smart Meter Analytics • Distribution Load Forecasting/Scheduling • Condition Based Maintenance • Create & Target Customer Offerings 	 <p>Media & Entertainment</p> <ul style="list-style-type: none"> • Business process transformation • Audience & Marketing Optimization • Multi-Channel Enablement • Digital commerce optimization
 <p>Retail</p> <ul style="list-style-type: none"> • Actionable Customer Insight • Merchandise Optimization Playbook • Dynamic Pricing 	 <p>Travel & Transport</p> <ul style="list-style-type: none"> • Customer Analytics & Loyalty Marketing • Capacity & Pricing Optimization • Predictive Maintenance Analytics 	 <p>Consumer Products</p> <ul style="list-style-type: none"> • Optimized Promotions Effectiveness • Micro-Market Campaign Management • Real Time Demand Forecast 	 <p>Government</p> <ul style="list-style-type: none"> • Threat Prediction and Prevention • Health and human services fraud, waste & abuse • Tax compliance - fraud and abuse • Crime prevention and prediction 	 <p>Healthcare</p> <ul style="list-style-type: none"> • Measure & Act on Population Health • Engage Consumers in their Healthcare
 <p>Automotive</p> <ul style="list-style-type: none"> • Data Warehouse Optimization • Predictive Asset Optimization (PAO) • Actionable Customer Intelligence • Connected vehicle 	 <p>Chemical & Petroleum</p> <ul style="list-style-type: none"> • EDW Smart Consolidation & Augmentation • Operational Surveillance, Analysis & Optimization • Engineering & Operational Data Exploration & Mining 	 <p>Aerospace & Defense</p> <ul style="list-style-type: none"> • Uniform Information Access Platform • Data Warehouse Optimization • Predictive Asset Optimization (PAO) 	 <p>Electronics / Industrial Products</p> <ul style="list-style-type: none"> • Channel Driven Customer Analytics (CDCA) • Predictive Asset Optimization (PAO) 	 <p>Life Sciences</p> <ul style="list-style-type: none"> • Increase visibility into drug safety and effectiveness

IBM Provides a Holistic and Integrated Approach to Big Data and Analytics



Enabling organizations to

- Assemble and combine relevant mix of information
- Discover and explore with smart visualizations
- Analyze, predict and automate for more accurate answers
- Take action and automate processes
- Optimize analytical performance and IT costs
- Reduced infrastructure complexity and cost
- Manage, govern and secure information



New technology enhancements to strengthen our approach



New

Speed of Thought Analytics

- **8-25x** faster reporting and analytics¹
- **10x** storage space savings seen during beta test²
- **No** indexes, aggregates, tuning, or SQL / schema changes



New

Platform advances in consumability and performance

- **Big SQL** standard ANSI SQL access to data in BigInsights
- **GPFS-FPO** with POSIX compliance and enhanced security
- **2-10x** faster Streams operations using bounded lists & maps³



New

Explore and analyze more data with appliance simplicity

- **8x** faster deployment than custom-built solutions⁴
- **First appliance** with built-in analytics accelerator⁵
- **Only Hadoop system** with built-in archiving tools⁶

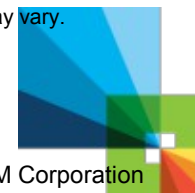
¹ Based on internal IBM testing of sample analytic workloads comparing queries accessing row-based tables on DB2 10.1 vs. columnar tables on DB2 10.5. Performance improvement figures are cumulative of all queries in the workload. Individual results will vary depending on individual workloads, configurations and conditions.

² Client-reported testing results in DB2 10.5 early release program. Individual results will vary depending on individual workloads, configurations and conditions, including table size and content.

³ Runtime performance increase for operations using bounded lists & maps compared to InfoSphere Streams 3.0

⁴ Based on IBM internal testing and customer feedback. "Custom built clusters" refer to clusters that are not professionally pre-built, pre-tested and optimized. Individual results may vary.

⁵ Based only on current commercially available Big Data appliance product data sheets from large US vendors



The 5 Key Use Cases



Big Data Exploration

Find, visualize, understand all big data to improve decision making



Enhanced 360° View of the Customer

Extend existing customer views (MDM, CRM, etc) by incorporating additional internal and external information sources



Security/Intelligence Extension

Lower risk, detect fraud and monitor cyber security in real-time



Operations Analysis

Analyze a variety of machine data for improved business results



Data Warehouse Augmentation

Integrate big data and data warehouse capabilities to increase operational efficiency



1. Big Data Exploration: Needs



Explore and mine big data to find what is interesting and relevant to the business for better decision making

Requirements

Explore new data sources for potential value

Mine for what is relevant for a business imperative

Assess the business value of unstructured content

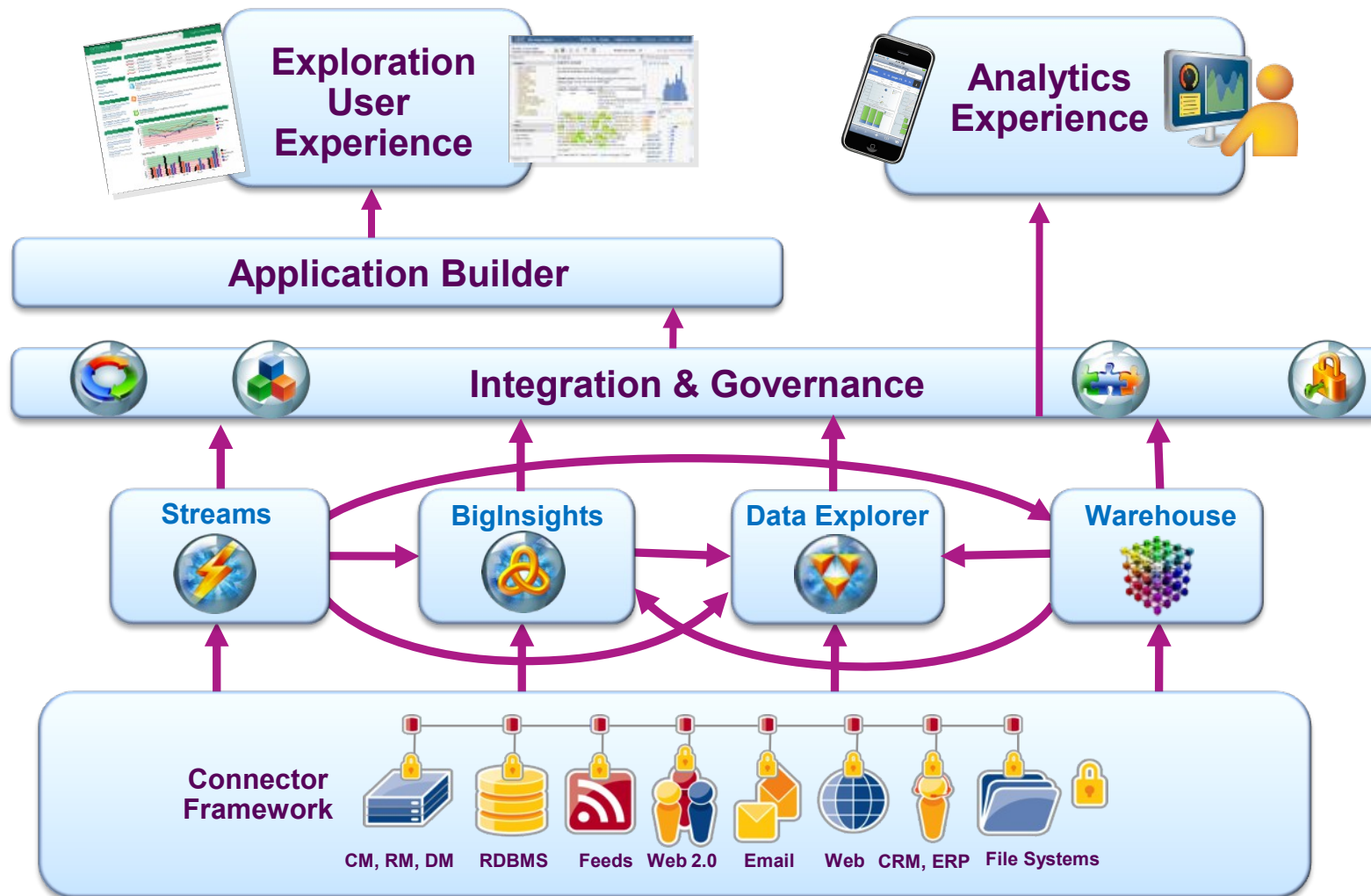
Uncover patterns with visualization and algorithms

Prevent exposure of sensitive information

Industry Examples

- Customer service knowledge portal
- Insurance catastrophe modeling
- Automotive features and pricing optimization
- Chemicals and Petroleum conditioned base maintenance
- Life Sciences drug effectiveness

1. Big Data Exploration: Diagram



Global automotive manufacturer gains a timely, integrated view of vehicles

The IBM Big Data platform combines at-rest vehicle data with real time data-in-use from vehicles for single, integrated, near real-time view of the vehicle and its usage.

- Monetize telematics data
- Predict demand for replacement parts and service
- Provide drivers assistance

2. Enhanced 360° View of the Customer: Needs



Optimize every customer interaction by knowing everything about them

Requirements

Create a connected picture of the customer

Mine all existing and new sources of information

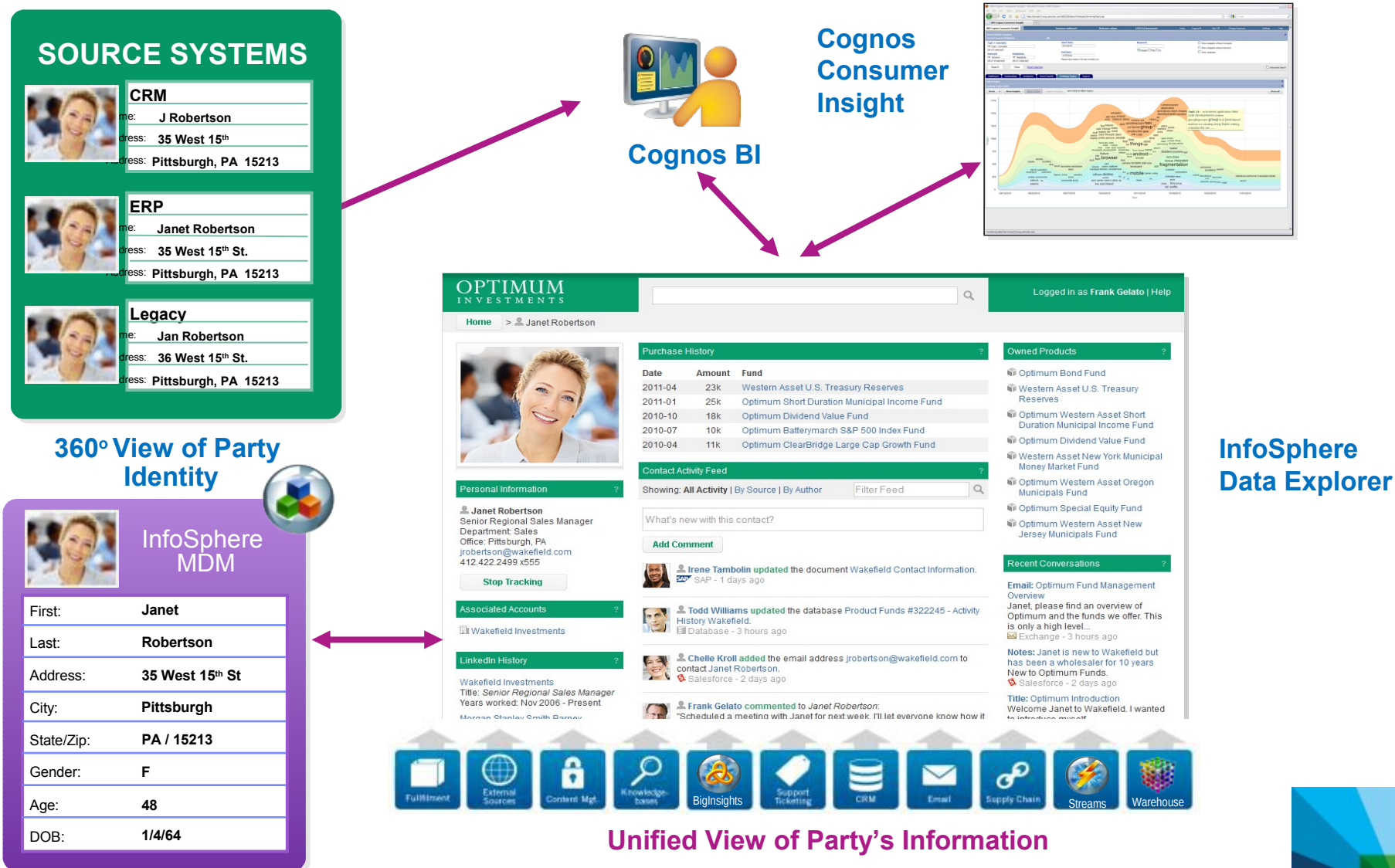
Analyze social media to uncover sentiment about products

Add value by optimizing every client interaction

Industry Examples

- Smart meter analysis
- Telco data location monetization
- Retail marketing optimization
- Travel and Transport customer analytics and loyalty marketing
- Financial Services Next Best Action and customer retention
- Automotive warranty claims

2. Enhanced 360° View of the Customer: Diagram



Enhanced 360° Customer View: Customer Example



Leading Medical Equipment Supplier Blinded for confidentiality

- Increase revenue and decrease cost in the call center
- Increase customer & employee satisfaction
- Ask “one more question”, targeted to individual client situation

Is the Enhanced 360° Customer View Right for You?

- ✓ How do you identify and deliver all data as it relates to a customer, product, competitor to those to need it?
- ✓ How do you gather insights about your customers from social data, surveys, support emails, etc.?
- ✓ How do you combine your structured and unstructured data to run analytics?
- ✓ How are you driving consistency across your information assets when representing your customer, clients, partners etc.?
- ✓ How do you deliver a complete view of the customer enhance to your line of business users to ensure better business outcomes?

Product Starting Point: InfoSphere Data Explorer, InfoSphere BigInsights

3. Security and Intelligence Extension: Needs



Enhance traditional security solutions to prevent crime by analyzing all types and sources of big data

Requirements

Enhanced Intelligence and Surveillance Insight

Analyze data-in-motion and at rest to:

- Find associations
- Uncover patterns and facts
- Maintain currency of information

Real-time Cyber Attack Prediction and Mitigation

Analyze network traffic to:

- Discover new threats sooner
- Detect known complex threats
- Take action in real-time

Crime Prediction and Protection

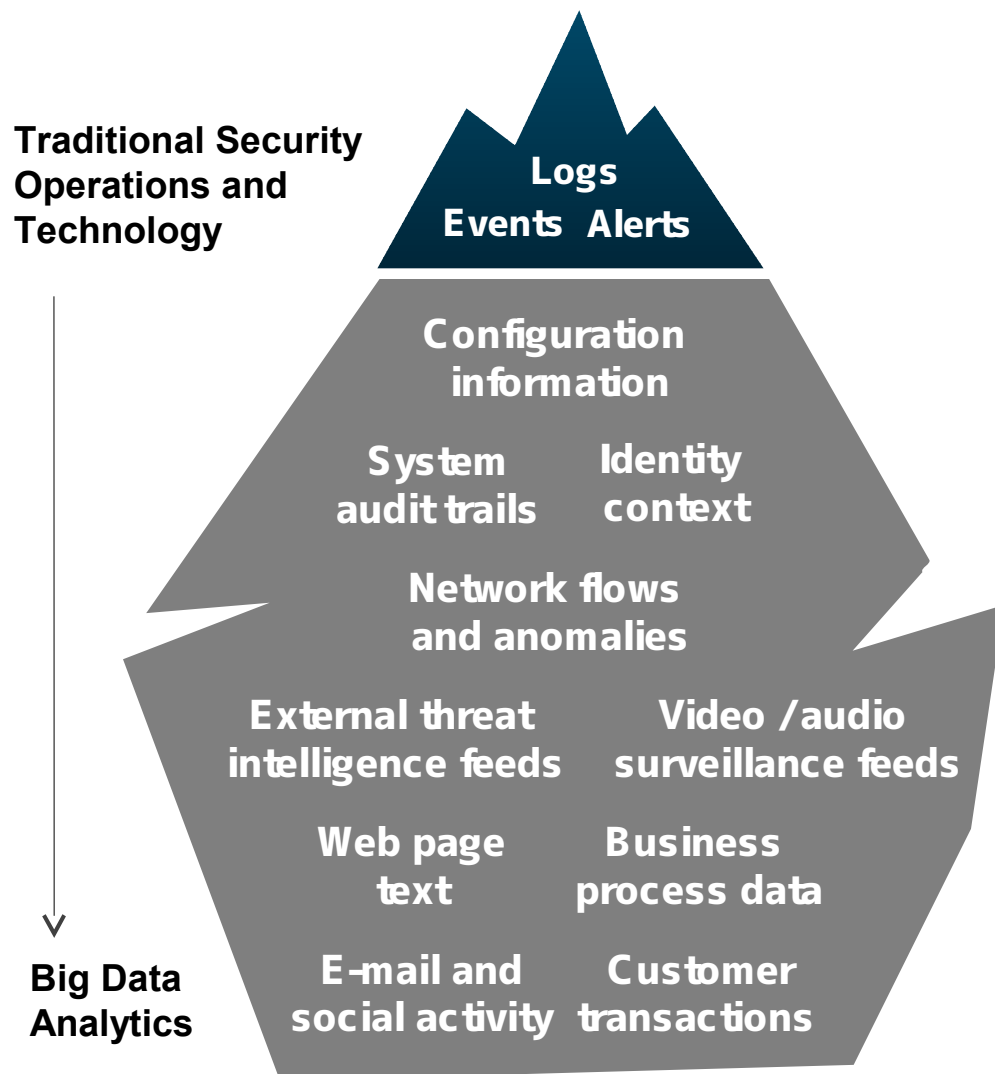
Analyze telco and social data to:

- Gather criminal evidence
- Prevent criminal activities
- Proactively apprehend criminals

Industry Examples

- Government threat and crime prediction and prevention
- Insurance claims fraud

3. Security/Intelligence Extension: Diagram



New Considerations

Collection, Storage and Processing

- Collection and integration
- Size and speed
- Enrichment and correlation

Analytics and Workflow

- Visualization
- Unstructured analysis
- Learning and prediction
- Customization
- Sharing and export





TerraEchos uses streaming data technology to support covert intelligence and surveillance sensor systems

Need

- Deployed security surveillance system to detect, classify, locate, and track potential threats at highly sensitive national laboratory

Benefits

- Reduced time to capture and analyze 275MB of acoustic data from hours to one-fourteenth of a second
- Enabled analysis of real-time data from different types of sensors and 1,024 individual channels to support extended perimeter security
- Enabled a faster and more intelligent response to any threat



4. Operations Analysis: Needs



Apply analytics to machine data for greater operational efficiency

Requirements

Analyze machine data to identify events of interest

Apply predictive models to identify potential anomalies

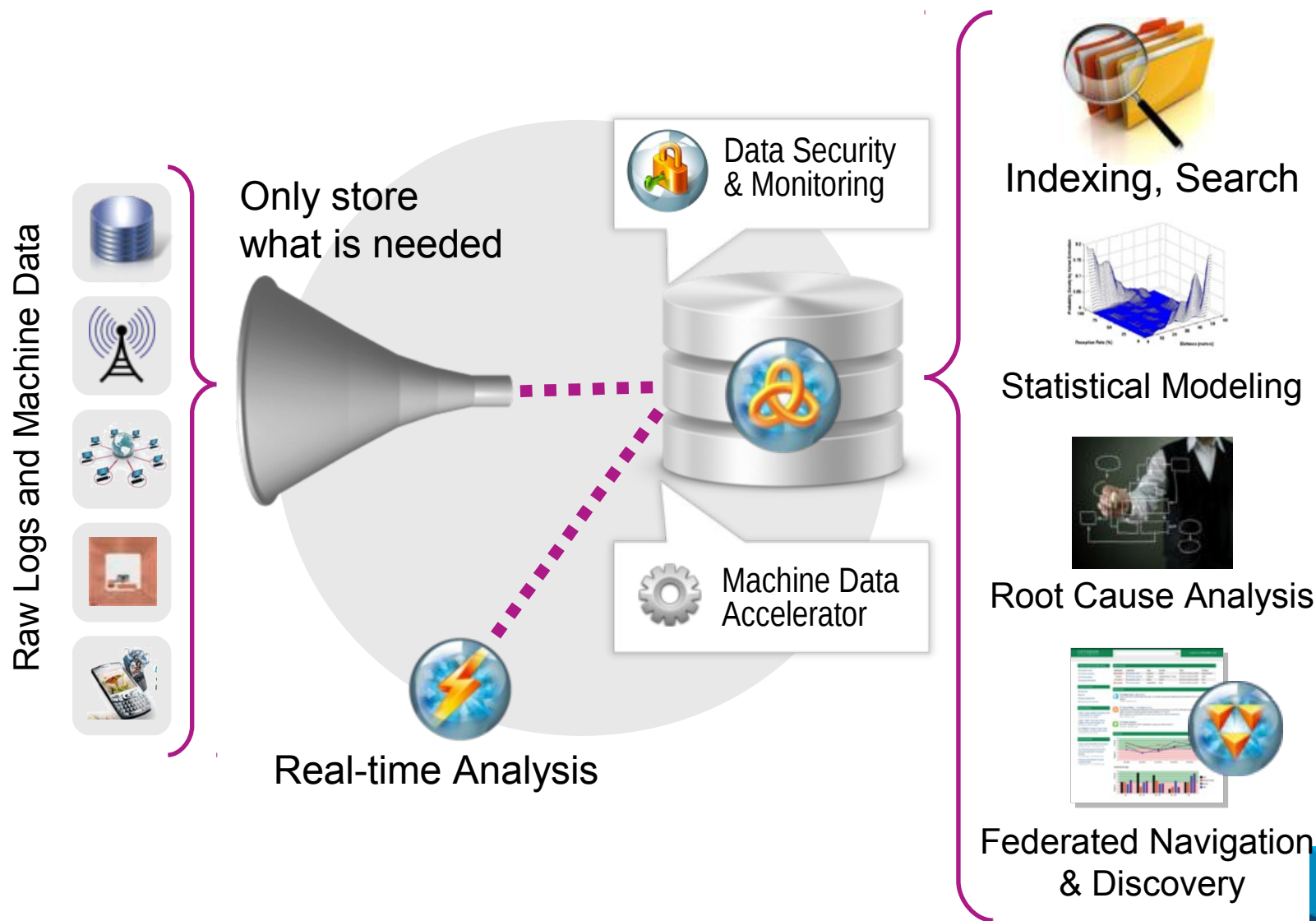
Combine information to understand service levels

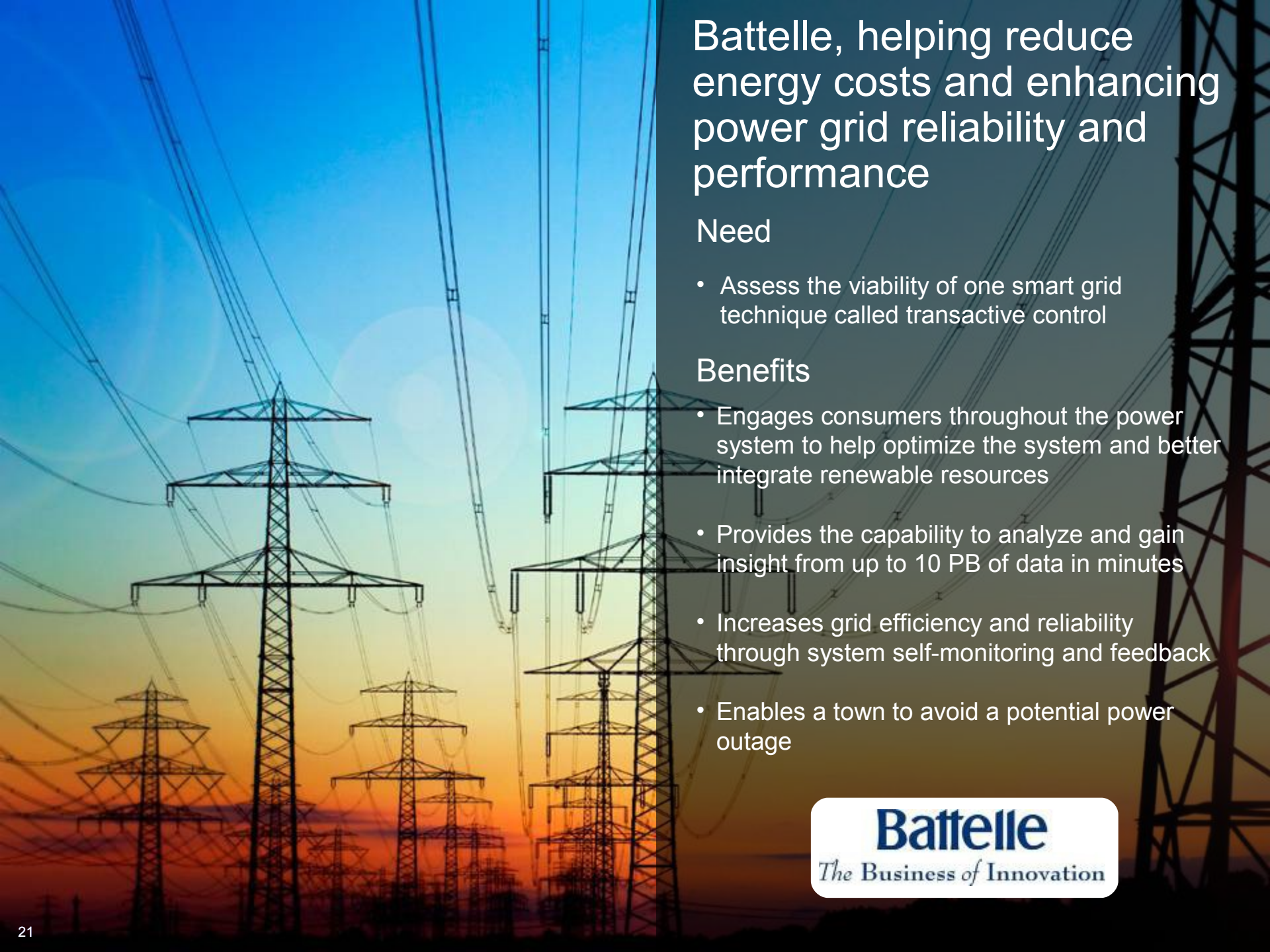
Monitor systems to avoid service degradation or outages

Industry Examples

- Automotive advanced condition monitoring
- Chemical and Petroleum condition-based Maintenance
- Energy and Utility condition-based maintenance
- Telco campaign management
- Travel and Transport real-time predictive maintenance

4. Operations Analysis: Diagram





Battelle, helping reduce energy costs and enhancing power grid reliability and performance

Need

- Assess the viability of one smart grid technique called transactive control

Benefits

- Engages consumers throughout the power system to help optimize the system and better integrate renewable resources
- Provides the capability to analyze and gain insight from up to 10 PB of data in minutes
- Increases grid efficiency and reliability through system self-monitoring and feedback
- Enables a town to avoid a potential power outage

Battelle
The Business of Innovation

5. Data Warehouse Augmentation: Needs



Exploit technology advances to deliver more value from an existing data warehouse investment while reducing cost

Requirements

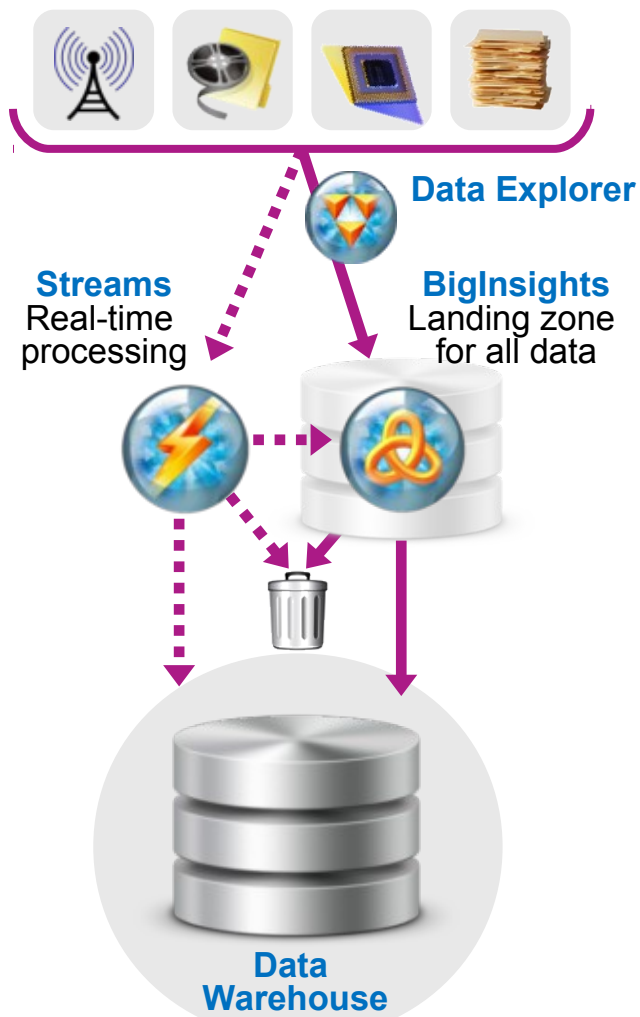
- Add new sources to existing data warehouse investments
- Optimize storage and provide query-able archive
- Rationalize for greater simplicity and lower cost
- Enable complex analytical applications with faster queries
- Scale predictive analytics and business intelligence

Examples

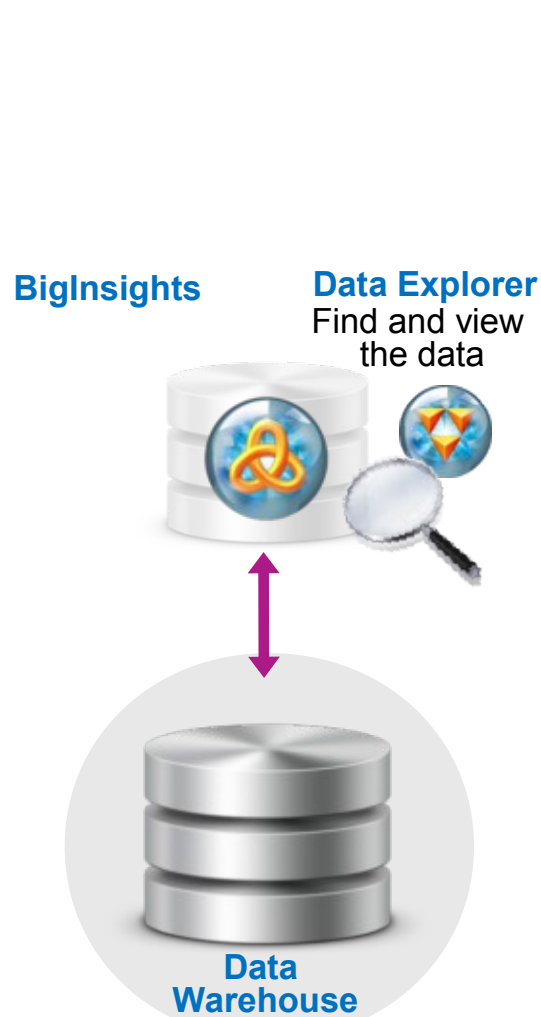
- Pre-Processing Hub
- Query-able Archive
- Exploratory Analysis
- Operational Reporting
- Real-time Scoring
- Segmentation and Modeling

5. Data Warehouse Augmentation: Diagram

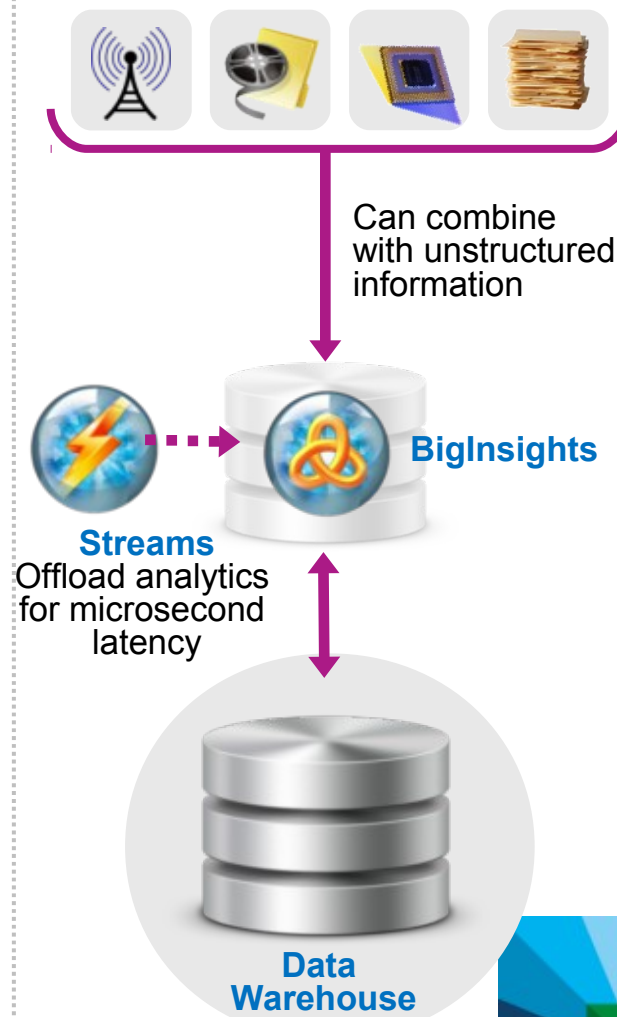
Pre-Processing Hub



Query-able Archive



Exploratory Analysis



Data Warehouse Augmentation: Customer Example



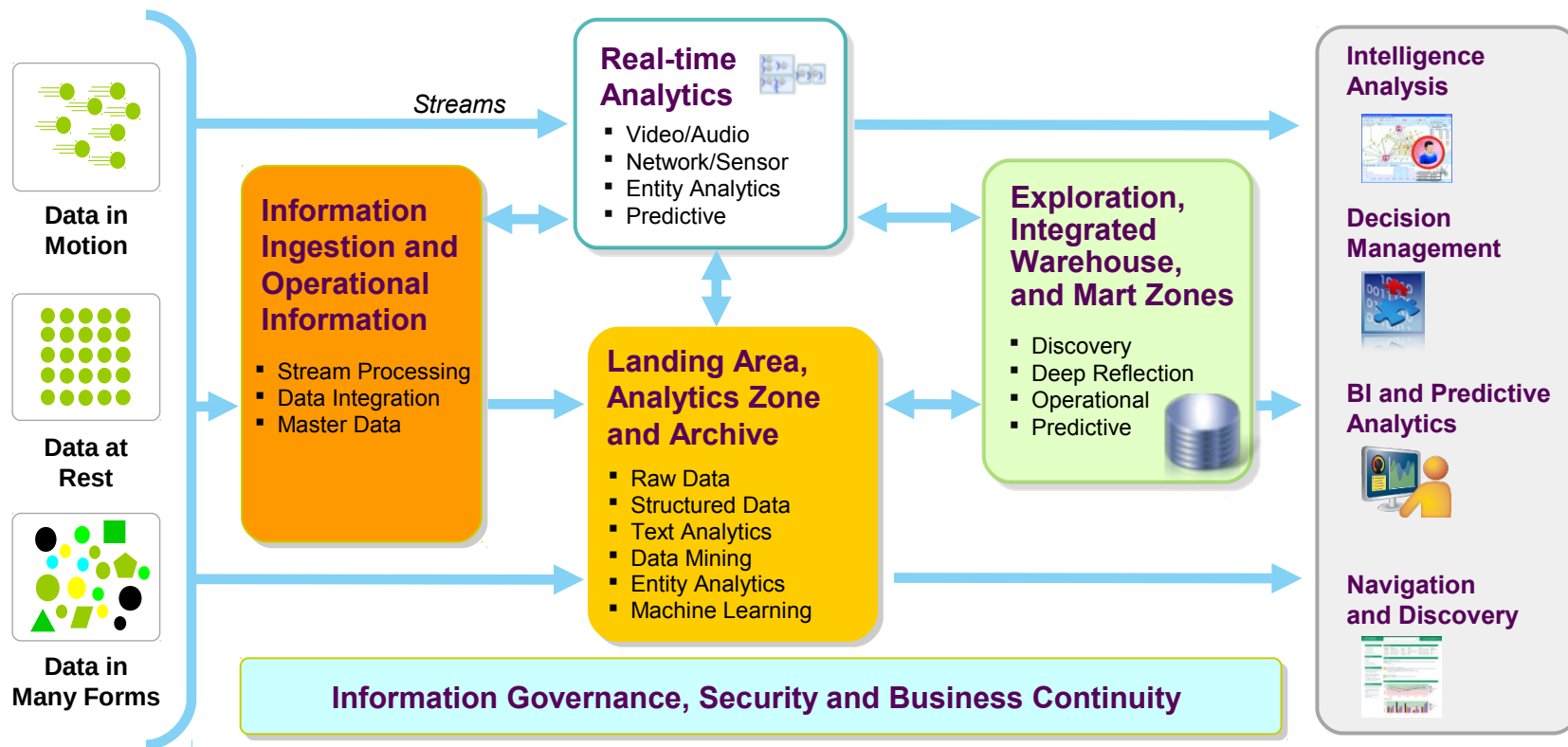
Improved analysis performance by over 40 times, reduced wait time from hours to seconds, and increased campaign effectiveness by 20+%.

Could Data Warehouse Augmentation benefit you?

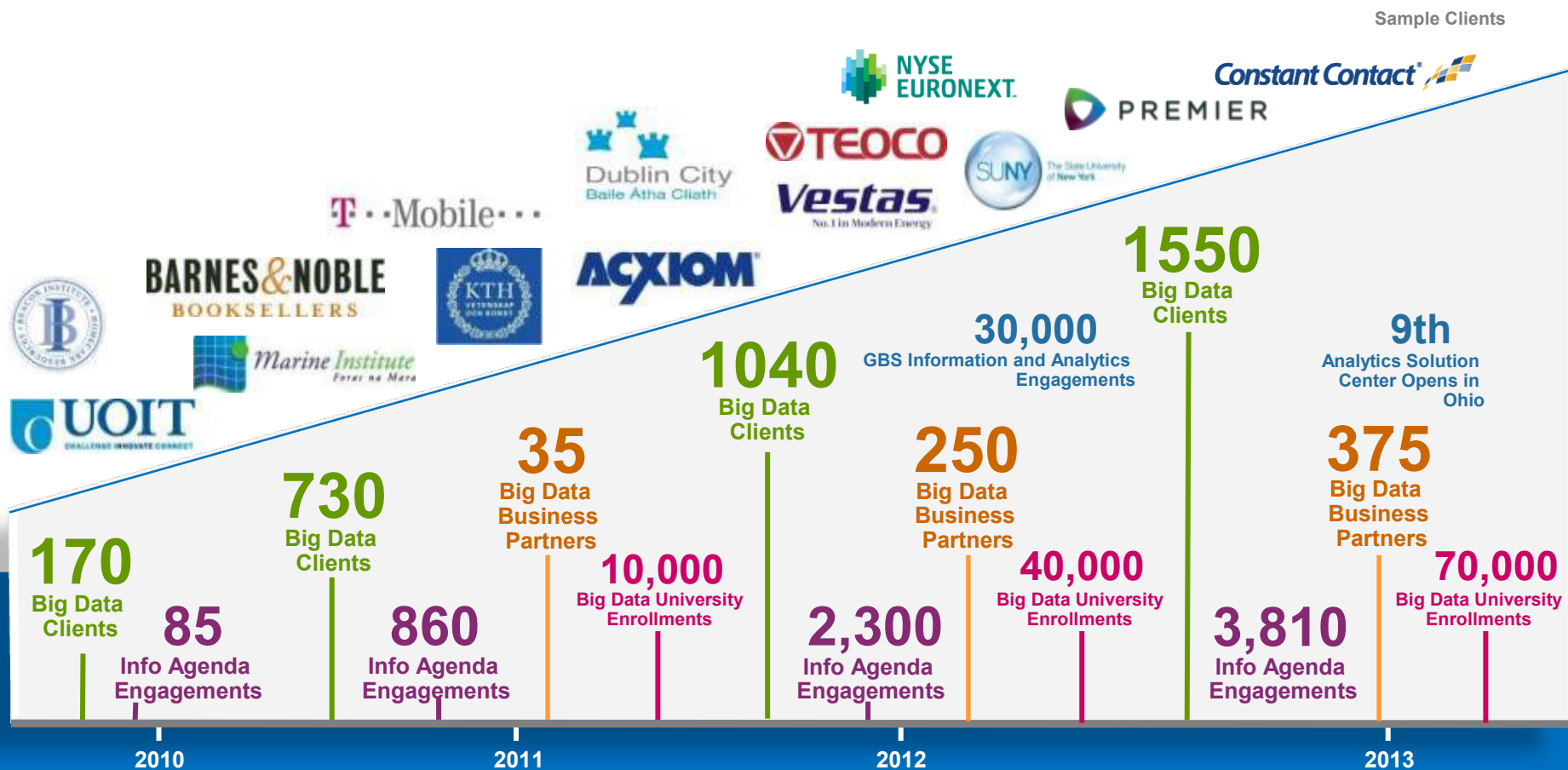
- ✓ Are you drowning in very large data sets (TBs to PBs) that are difficult and costly to store?
- ✓ Are you able to utilize and store new data types?
- ✓ Are you facing rising maintenance/licensing costs?
- ✓ Do you use your warehouse environment as a repository for all data?
- ✓ Do you have a lot of cold, or low-touch, data driving up costs or slowing performance?
- ✓ Do you want to perform analysis of data in-motion to determine what should be stored in the warehouse?
- ✓ Do you want to perform data exploration on all data?
- ✓ Are you using your data for new types of analytics?

Product Starting Point: InfoSphere BigInsights, InfoSphere Streams

New Architecture to Leverage All Data and Analytics



IBM Big Data Momentum

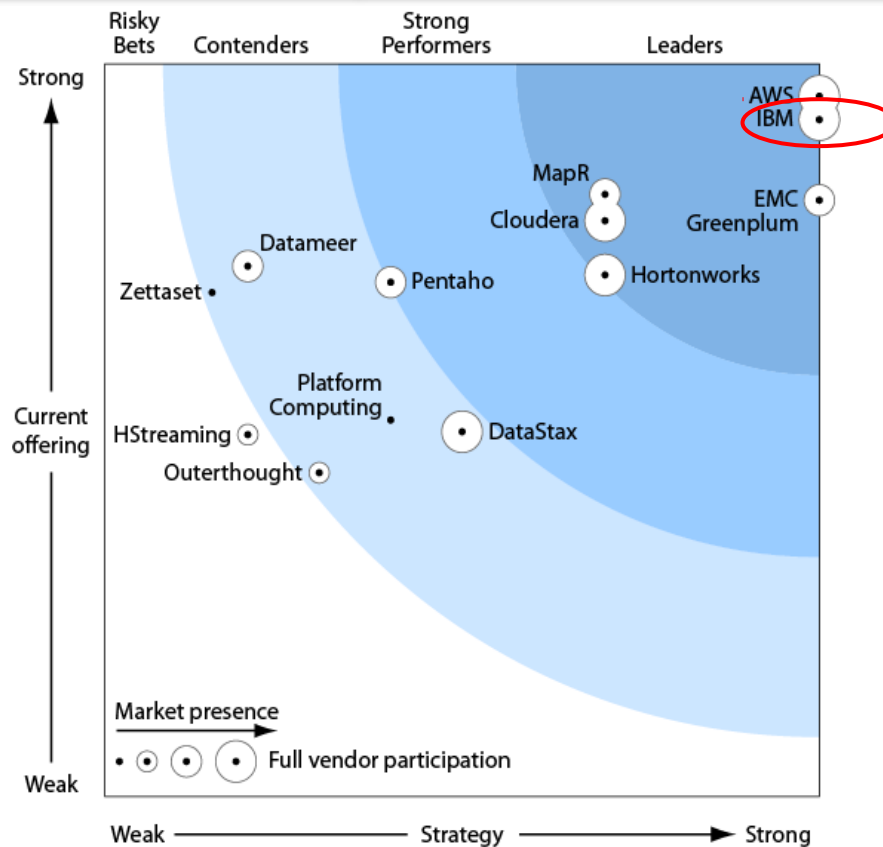


Source IBM. All numbers are cumulative.



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“IBM has the deepest Hadoop platform and application portfolio.”



February 2012 “The Forrester Wave™: Enterprise Hadoop Solutions, Q1 2012”



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- Industry use cases
- Business uses
- Business value assessment

Thank you

