SALIENT HHS

Visualizing the Power of Enhanced Provider Data

NAMPI Conference 2013
Baltimore, MD

OPERA SOLUTIONS

D&B

Agenda

Introduction	10 mins
Salient Overview	10 mins
D&B Overview	10 mins
Opera Solutions Overview	10 mins
Value of Integrated Data	10 mins
Q&A	10 mins

SALIENT HHS

Fahad Rahman - Director, Business Dev.

Craigan Gray, MD, JD – Chief Medical Officer

D&B

Chip Rogers - Director, Bus. Dev.

OPERA SOLUTIONS

Sterling McCullough - Principal

What do these numbers have in common?

300 billion

15 billion

5

What do these numbers have in common?

300 billion

Total annual Medicaid spend

15 billion

Approximate amount lost to fraud, waste, abuse

5

Average % of lost $$ recouped by states

What does this mean?

The status quo is ineffective and unsustainable

States need more powerful tools to track Medicaid spend and waste

What do these numbers have in common?

9,900,000

950,000

4

What do these numbers have in common?

9,900,000

Tiger Woods' total winnings in 2006

950,000

Average winnings of a pro golfer in 2006

4

Average % difference in strokes between the two

What does this mean?

A 4% improvement in strokes led to a 1000% improvement in winnings

A marginal difference in performance can have a significant impact on outcomes

What's going on?

- Medicaid expansion leading to increased Program Integrity demands
- Staffs and resources are severely constrained
- Movement towards Pre-Pay analytics – need faster cycle times
- CMS considering consolidated, best-practices Unified Program Integrity Contractors (UPIC) approach for Program Integrity

What will you need?

- Solutions that can “force multiply”
- Quickly prioritize, explore, and validate targets
- Scale and grow with forecasted needs
- Integrate with existing technology and resource investments

What is Enhanced Provider Data?

Integration of data outputs and sources to provide, powerful unified user experience for the SME

Self-service data visualization

Prioritized list of high value, high risk providers:

- deep trend analysis
- high $$ at risk
- repeat offenders
- collusion

Medicaid pre-pay or post-pay transactions

Non-Medicaid, provider focused data elements:

-credit risk

-financial risk

-legal affiliation

What is Enhanced Provider Data?

Integration of data outputs and sources to provide, powerful unified user experience for the SME

Self-service data visualization

Prioritized list of high value, high risk providers:

- deep trend analysis
- high $$ at risk
- repeat offenders
- collusion

Medicaid pre-pay or post-pay transactions

Non-Medicaid, provider focused data elements:

-credit risk

-financial risk

-legal affiliation

Three Companies – One Solution

Prioritization

OPERA SOLUTIONS

SALIENT HHS

D&B

Predictive modeling platform

Pre-pay analytics

Man and machine learning for developing intelligence

Powerful data visualization and integration platform

Puts data in the hands of SME's

Analyst-centric approach

World's leading source of business-oriented data

Extensive provider-oriented database

Proprietary financial, credit, and linkage data

Three Companies – One Solution

Validation

OPERA SOLUTIONS

Predictive modeling platform

Pre-pay analytics

Man and machine learning for developing intelligence

SALIENT HHS

Powerful data visualization and integration platform

Puts data in the hands of SME's

Analyst-centric approach

D&B

World's leading source of business-oriented data

Extensive provider-oriented database

Proprietary financial, credit, and linkage data

Three Companies – One Solution

Visualization

OPERA SOLUTIONS

Predictive modeling platform

Pre-pay analytics

Man and machine learning for developing intelligence

SALIENT HHS

Powerful data visualization and integration platform

Puts data in the hands of SME's

Analyst-centric approach

D&B

World's leading source of business-oriented data

Extensive provider-oriented database

Proprietary financial, credit, and linkage data

Better Targeting

Visualization

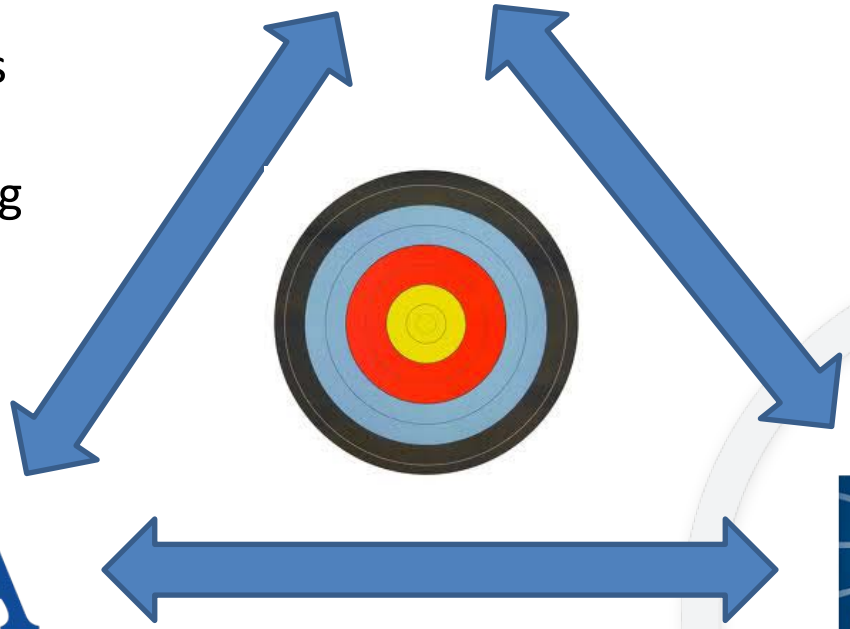
SALIENT HHS

Identify high value, high priority targets

SME-directed tuning of data models

Claims data with external, business data elements for investigation

Enhanced investigations and validations



OPERA SOLUTIONS

D&B

Enhanced external, business data elements for better targeting

Prioritization

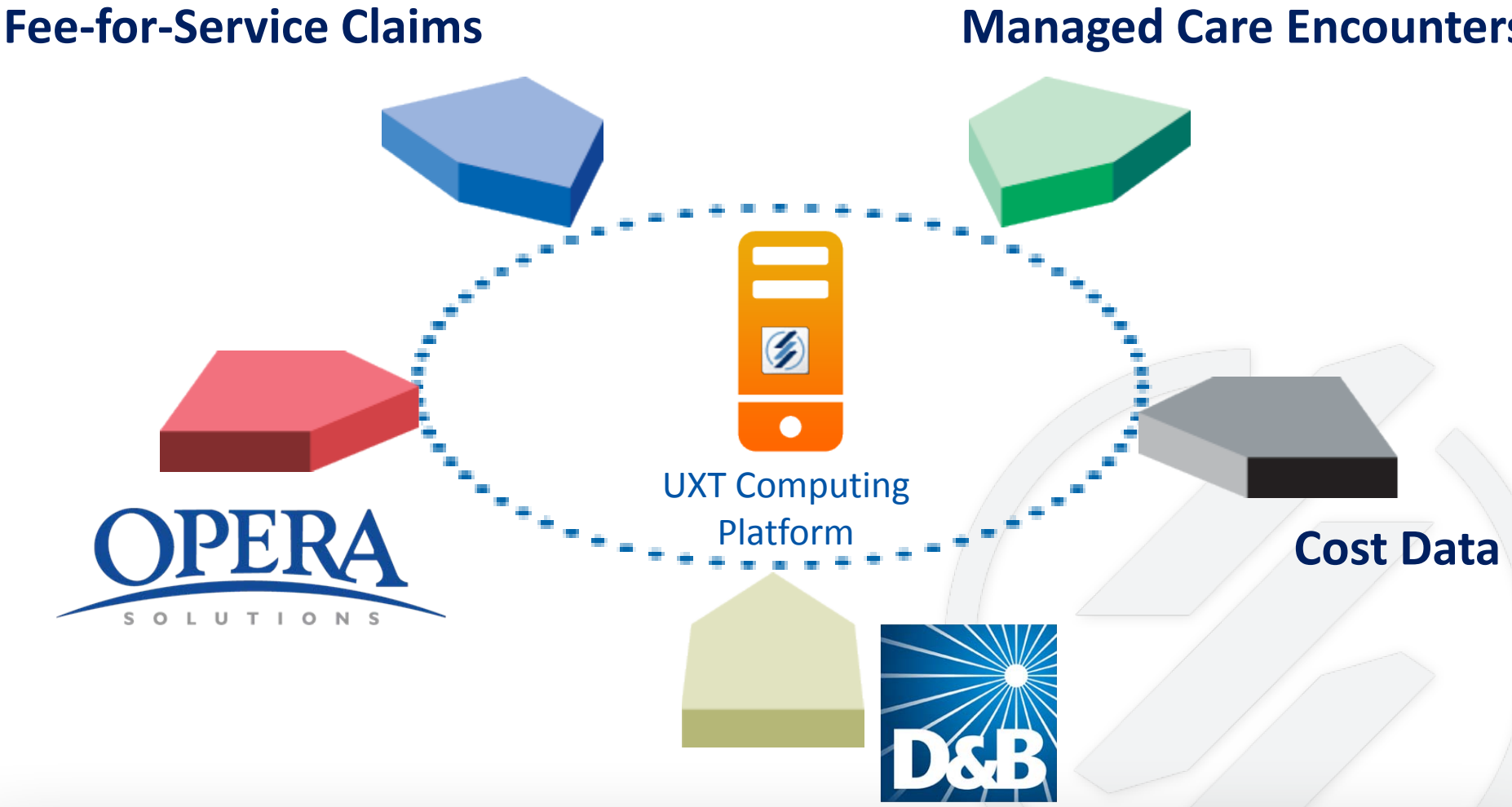
Validation

SALIENT® HHS

Salient Management Company

- Founded in 1986
- 350+ Clients worldwide spanning 60 countries
- Powerful and Unique Visual Data Discovery Platform

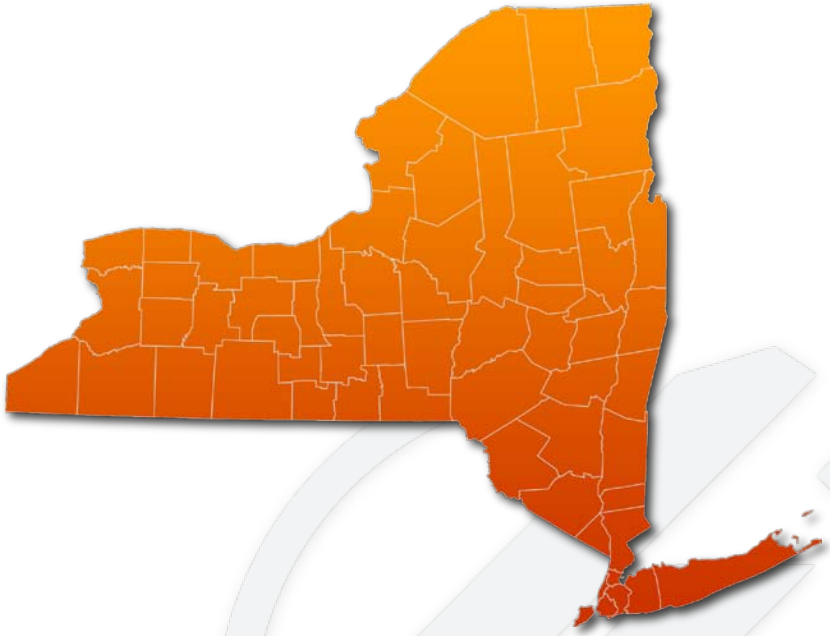
Visual Data Mining Platform



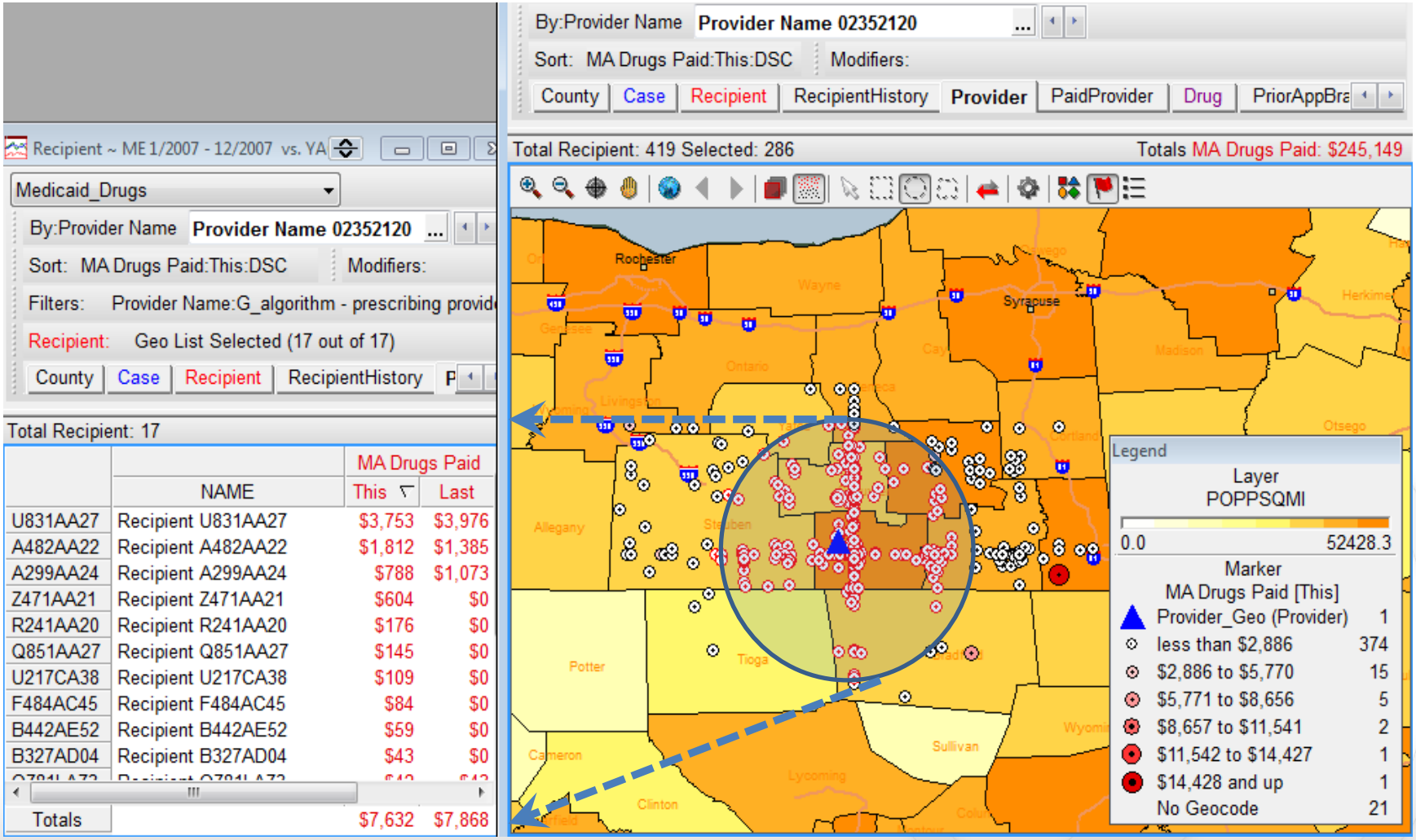
New York State Medicaid

Key Facts

- Broad use
- 400+ licenses
- 8+ years of data
- $300+ billion of spend
- 5 Billion transactions
- 10 Million recipients
- 70% User Adoption Rate
- **3 sec response times**



Geospatial view: allows users to isolate key constituencies, drill-down and take action…



BI Industry Recognition: Gartner

- Salient Recognized in BI “Magic Quadrant” report
- Gartner feedback is very positive:
  - ***Top-3 ranking for Business Benefits***
  - ***Best rating for 3 categories: Product Quality, Performance and Product Support***
  - ***“Processing speed is a Salient strong suit***… delivering rapid performance while handling complex calculations”
- Key areas of Salient’s value to healthcare analytics validated:
  - Performance
  - Handling complexity
  - Scenario modeling
  - Collaboration

Capabilities Summary

Speed:	Sub 3-second response times for 97% of queries with massive claims volumes and complex data integration
Scalability:	Efficient economical growth relative to other in-memory methodologies
Synergy:	Integrating multiple data sources and technology platforms
Self Service:	Ease-of-use, click-and-view data interrogation
Specificity:	Granularity of data allows inquiry down to root cause

D&B

D&B Background

- D&B (NYSE:DNB) is the world's leading source of commercial information and insight
- D&B's global commercial database contains more than 225 million business records
- Founded in 1841, and headquartered in Short Hills, NJ, D&B directly employs over 4,000 associates worldwide, and maintains a World Wide Network of business and information partners to provide information coverage on over 190 countries

D-U-N-S®

DATA UNIVERSAL NUMBERING SYSTEM

NUMBER

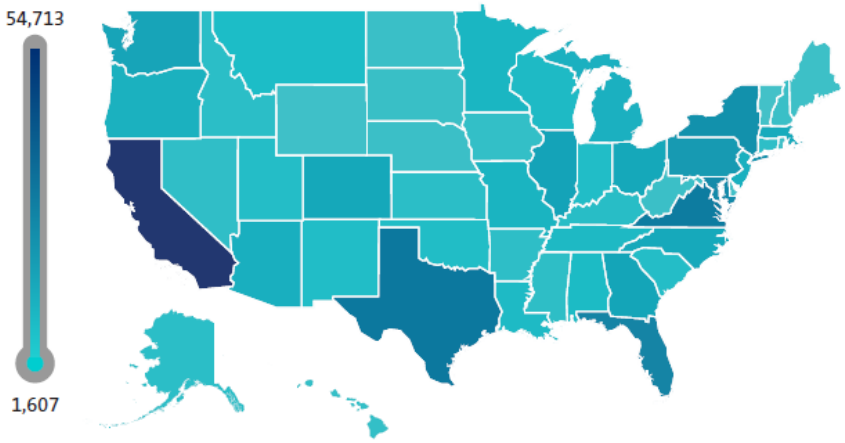
1962 DUNS Number is born

1997 Adopted by US Government

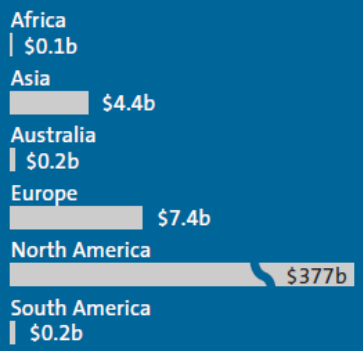
2011 Recommended or required by more than 200 government, trade & industry organizations worldwide

2013 Linked to more than 225 million businesses worldwide

Concentration of Government Contractors



Geographic Distribution of Contracts



TOP 3 INDUSTRIES RECEIVING CONTRACTS

- Aircraft Manufacturing
- Engineering Services
- Facilities Support Services

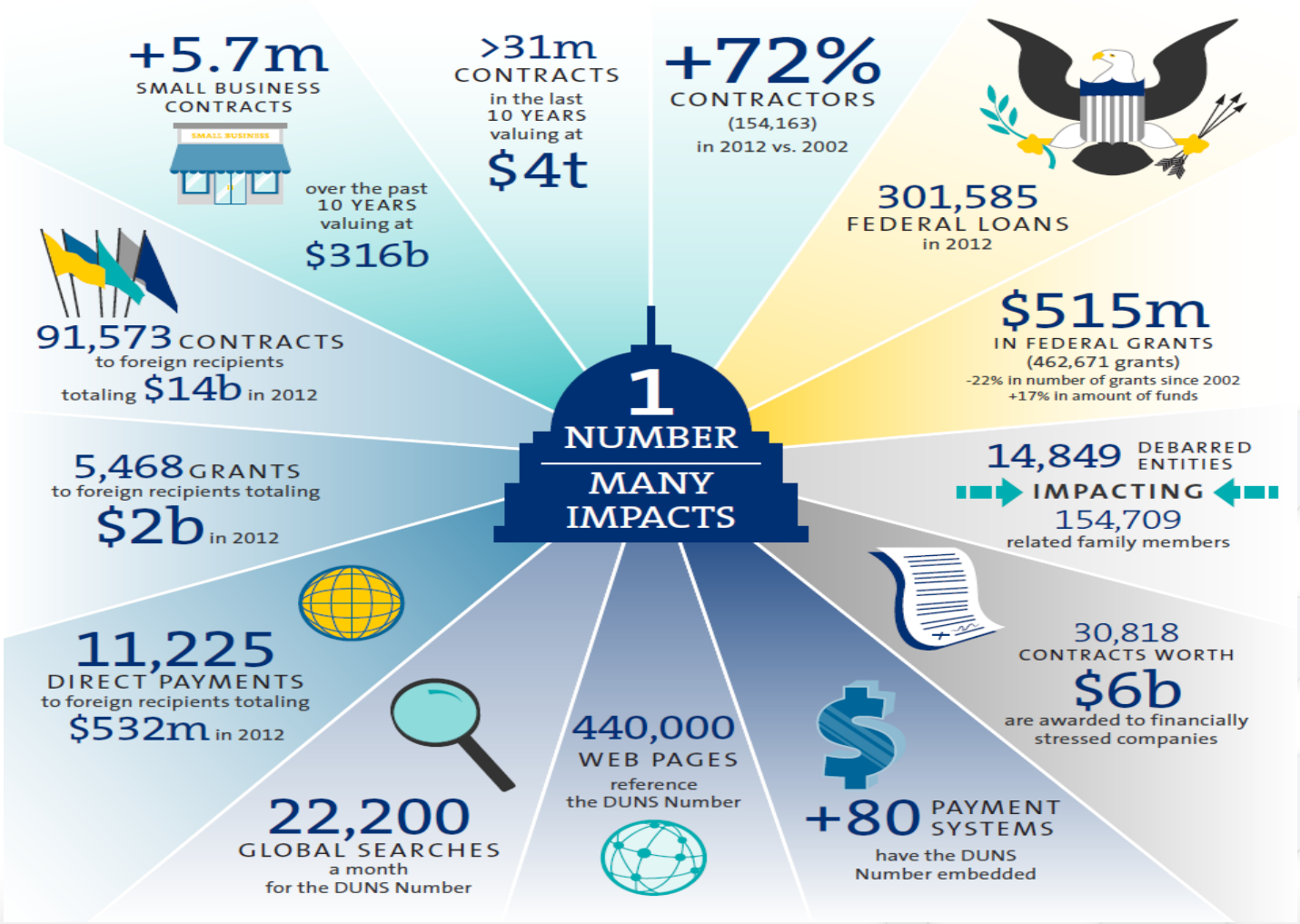
TOP 3 INDUSTRIES RECEIVING GRANTS

- Administration of Public Health
- Administration of Social and Manpower Programs
- Regulation/ Administration of Transportation

www.dnb.com/government

© Dun & Bradstreet, Inc. 2013. All rights reserved.

The DUNS Number Drives Global Commerce



Process for Providing Insight to Agencies Fighting Fraud, Waste and Abuse

- **D&B accepts your State Provider File**
- **D&B then takes that file and runs it thru Postal Processing, Matching and Data Optimization**
    - Each Record is appended with a **DUNS #**
    - Key to note that D&B can match on **Legal Name** as well as **Tradestyles**
    - D&B can also match to **Physical address** as well as **PO Box**
- **The records are then "Optimized" – appended with the D&B Layout/Content**
- **The appended data provides the tools needed to "Thin the Haystack" and investigate the Providers that are most likely conducting Fraudulent Behavior**

D&B's Optimization Process: "Thinning the Haystack"

Data Characteristics	Total	Reimbursement $
Debarred from doing business with U.S. Govt	19	$683,164
Associated with a suit, lien or judgment	3,701	
Higher probability of severe delinquency	7,945	$1,322,892,454
Higher probability of going out of business	17,588	$482,808,428
Open bankruptcy (U.S. Only)	238	$2,227,236
Associated with criminal activity (U.S. Only)	41	$12,234,750
Linked to other businesses	15,293	
Foreign owned	401	
Small business (as defined by SBA) U.S. Only	55,142	
Recent name, address, phone or CEO changes	467	$12,767,828

Actual Customer Data

Testing our Hypothesis

- **We enlisted the help of Inspectors General and Medicaid Agencies in multiple states**
  - We asked for live samples where Fraud had occurred and put these entities thru our Process to see if we could have predicted Fraud and saved the States and Taxpayers valuable funds.

- **We took a D&B snapshot in time to when the fraud was occurring**

- **Please note that although these are real examples we have used fictitious names in this presentation as some of these entities are still in the litigation process**

Case Study: D&B acquired 3 years of Medicaid claims data and we provided our content and analysis for 2007-2009

- For payments made in 2008, D&B pulled the historical D&B account information as of Dec 2007.
- For payments made in 2009, D&B pulled the historical D&B account information as of Dec 2008.
- For payments made in 2010, D&B pulled the historical D&B account information as of Dec 2009.

The intent of this analysis was to determine if D&B information were used to assess claims prior to payments, would the information have directionally detected "red-flags" or potential concerns before transactions had occurred.

Acme Medical Supplies: 12-345-6789

Main St, USA

In Dec 2009, prior to claim submissions, D&B showed Business as:

Credit Delinquency Risk	High
Financial Stress Risk	High
Trade Payments Collected	7
Trade Reported Negative	6
D&B Rating	2R4
Estimated Sales	$150,000
Legal Filings	3*

In Dec 2008, prior to claim submissions, D&B showed Business as:

Credit Delinquency Risk	High
Financial Stress Risk	High
Trade Payments Collected	4
Trade Reported Negative	3
D&B Rating	DS
Estimated Sales	N/A
Legal Filings	3*

In Dec 2007, prior to claim submissions, D&B showed Business as:

Credit Delinquency Risk	High
Financial Stress Risk	High
Trade Payments Collected	2
Trade Reported Negative	2
D&B Rating	DS
Estimated Sales	N/A
Legal Filings	2*

* Legal Filings included 1 open State Tax Lien (2004), 1 Federal Tax Lien (2008) and 1 Judgment (2008). Business had previous State Tax Liens that had been satisfied in 2003.

Acme Medical Supplies: 12-345-6789

Main St, USA

Dec 2009

Credit Delinquency Risk	High
Financial Stress Risk	High
Trade Payments Collected	7
Trade Reported Negative	6
D&B Rating	2R4
Estimated Sales	$150,000
Legal Filings	3*

Dec 2008

Credit Delinquency Risk	High
Financial Stress Risk	High
Trade Payments Collected	4
Trade Reported Negative	3
D&B Rating	DS
Estimated Sales	N/A
Legal Filings	3*

Dec 2007

Credit Delinquency Risk	High
Financial Stress Risk	High
Trade Payments Collected	2
Trade Reported Negative	2
D&B Rating	DS
Estimated Sales	N/A
Legal Filings	2*

Prior High Risk Business Activity = Correlation to FWA

Led to prosecution of healthcare provider for fraud

Implied Cost Avoidance 3 Year: $554,207 10 Year: $1,847,356

ABC Med Supply: 00-523-1671

Main St, USA

In Dec 2009, prior to claim submissions, D&B showed ABC as:

Credit Delinquency Risk	High
Financial Stress Risk	High
Trade Payments Collected	5
Trade Reported Negative	4
D&B Rating	DS
Estimated Sales	N/A
Legal Filings	3*
Year Started	2007

In Dec 2008, prior to claim submissions, D&B showed ABC Med Supply as:

Credit Delinquency Risk	High
Financial Stress Risk	High
Trade Payments Collected	2
Trade Reported Negative	1
D&B Rating	DS
Estimated Sales	N/A
Legal Filings	2*
Year Started	2007

In Dec 2007, prior to claim submissions, D&B showed ABC Med Supply as:

In December of 2007, ABC Med Supply had not entered the D&B database, therefore D&B had not received evidence of an existing business even though corporate charter was established in 2004.

* Legal Filings included 2 suits (2006 & 2009) and 1 open State Tax Lien (2008).

ABC Med Supply: 00-523-1671

Main St, USA

Dec 2009

Credit Delinquency Risk	High
Financial Stress Risk	High
Trade Payments Collected	5
Trade Reported Negative	4
D&B Rating	DS
Estimated Sales	N/A
Legal Filings	3*
Year Started	2007

Dec 2008

Credit Delinquency Risk	High
Financial Stress Risk	High
Trade Payments Collected	2
Trade Reported Negative	1
D&B Rating	DS
Estimated Sales	N/A
Legal Filings	2*
Year Started	2007

Dec 2007

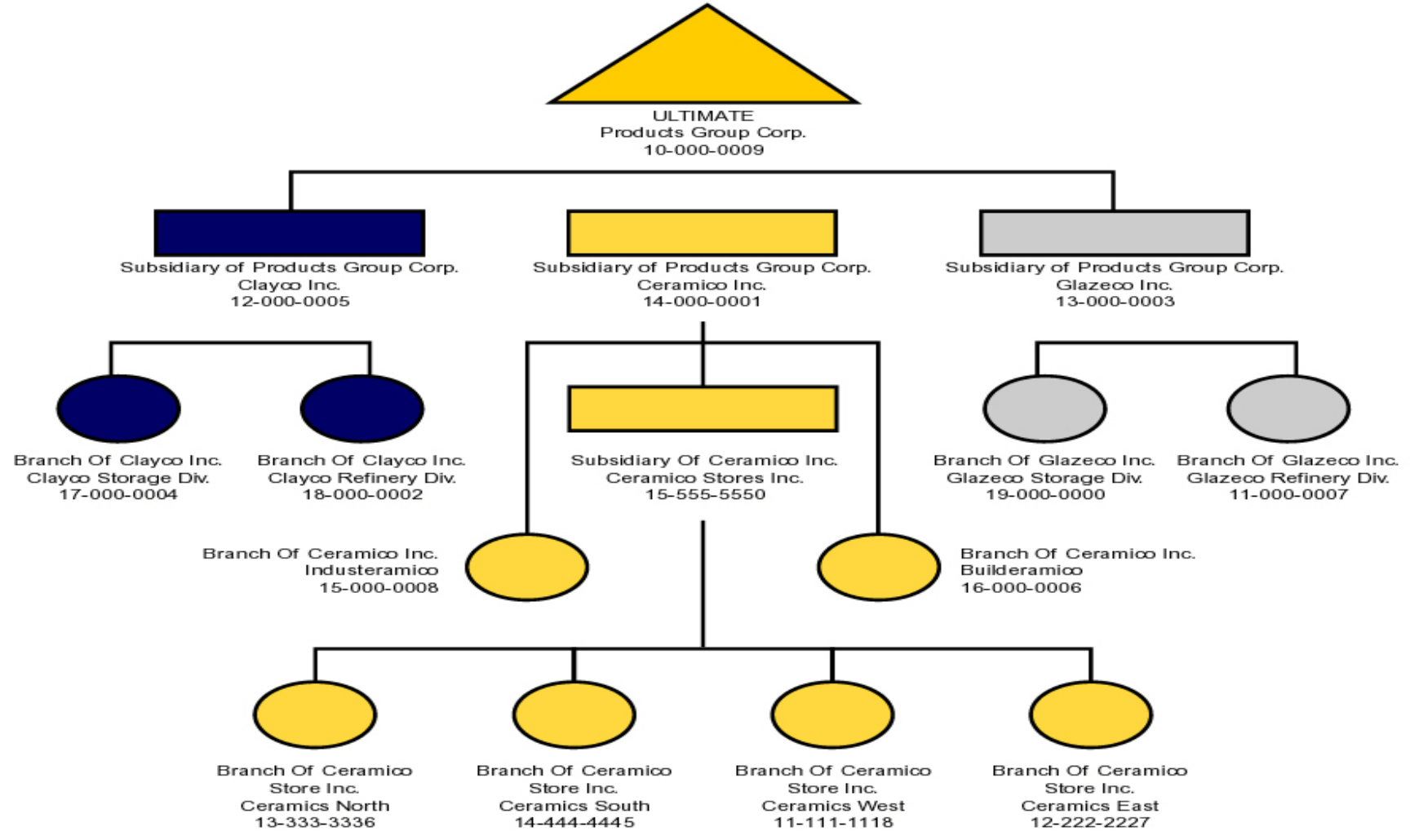
In December of 2007, ABC Med Supply had not entered the D&B database, therefore D&B had not received evidence of an existing business even though corporate charter was established in 2004.

Prior High Risk Business Activity = Correlation to FWA

Led to prosecution of healthcare provider for fraud

Implied Cost Avoidance 3 Year: $3,008,967 10 Year: $10,029,980

D&B Corporate Linkage: Understanding total exposures in the Medicaid program across related business entities



D&B uses Specific Proprietary Data Elements in its Fraud Mitigation Process: *No one else can provide all of these to you*

- MATCH INDICATOR
- D&B Bankruptcy ID
- BankruptcyDate
- BankruptcyChapter
- BankruptcyStatus
- D&B Debarred Indicator
- D&B Rating
- Financial Stress Score
- Paydex Score
- Commercial Credit Score
- Criminal Proceeding Indicator
- Suits and Judgments Indicator
- Lien Indicator
- Higher Risk Indicator
- Business Deterioration Indicator
- FederalTaxIDNumber
- Number Of Liens Open
- Number Of Judgments Open
- Number Of Suits Open
- Compliance Risk Index
- Out Of Business
- Public Private
- Corporate Linkage

Our Findings

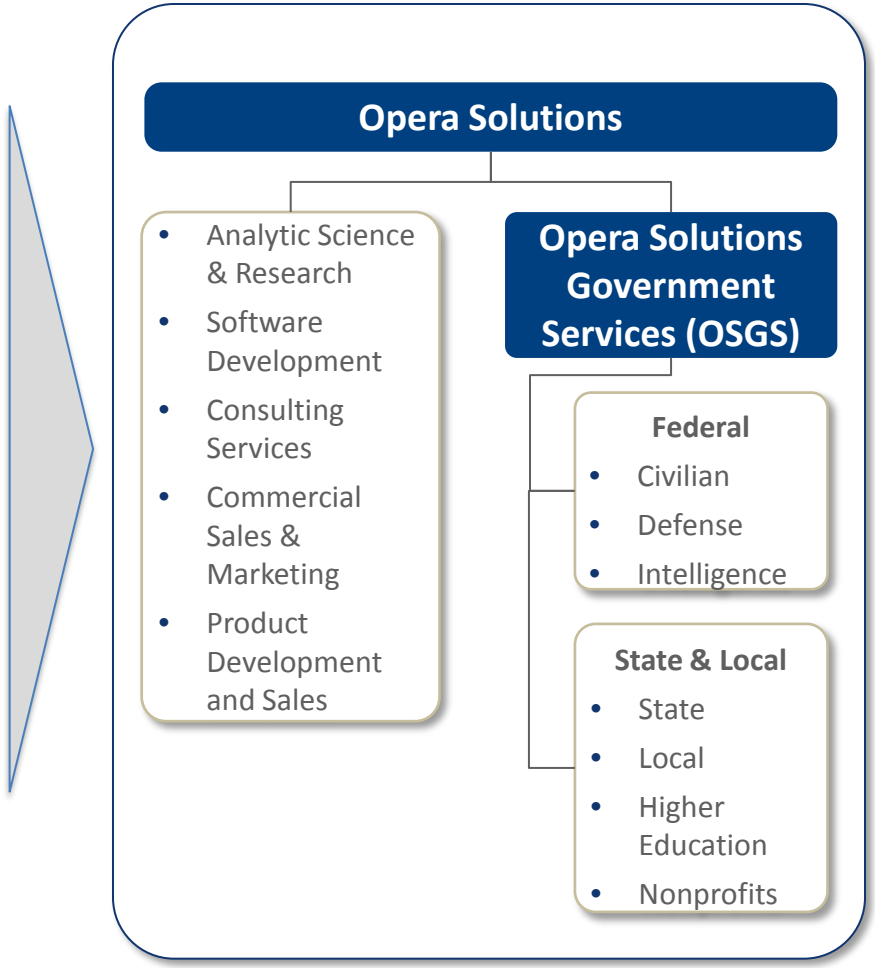
- We found during this process that by combining State's Claims Data with our Financial, Credit and Linkage Data that we can accurately predict Fraud, Waste and Abuse
- The Challenge: "How do you effectively use all of this data and make it actionable
- The Answer: You need a data mining system that enables the data to come to life, making it actionable
- The Result: D&B has joined forces with Salient and Opera

OPERA
SOLUTIONS

Corporate Profile

Opera Solutions is committed to being the leading provider of advanced analytic solutions for government organizations worldwide.

- Global Firm
  - Founded in 2004
  - 600+ seasoned management and technology consultants with client experience performing analysis, identifying solutions and leading implementations
  - 220+ advanced degree analytic scientists
  - Offices in North America, Europe, Asia
  - Minority-owned business designation in several localities
- High Profile Clients
  - Public and private sector (Fortune 500) client base
  - Clients share characteristic of fragmented operations, data-rich, transaction-intensive environments
- Public Sector Commitment
  - Government sector is one of three strategic industries for Opera (along with health care and financial services)
  - Dedicated Opera Solutions Government Services (OSGS) entity
  - Dedicated public sector expertise, focus and investment
  - GSA contract



Select Client Experience

Opera has worked with a number of public sector and private sector organizations on more than 100 engagements and has helped our clients achieve more than $10B in savings

Retail

Public Sector

Financial Services

Telecom and Media

Industrial

We create value out of big data by…

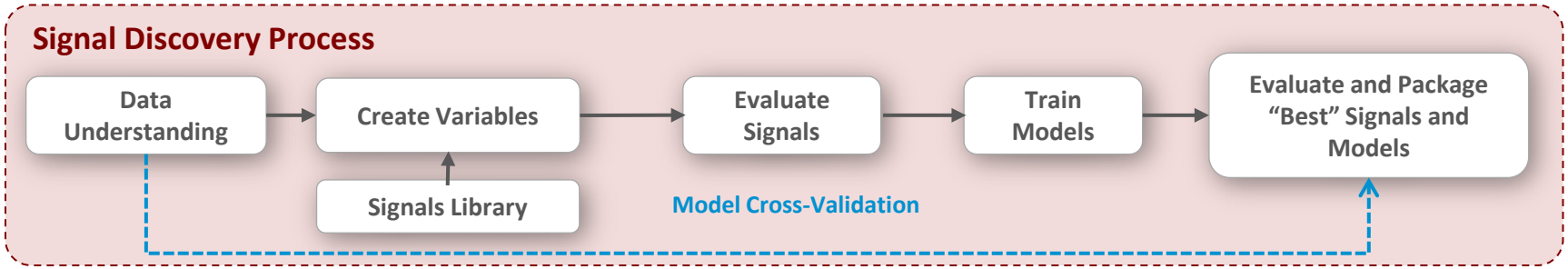
INTO SMALL DATA…

by distilling out signals

TURNING BIG DATA…

(Most of Big Data is noise)

Approach to Analytic Modeling



220+ Data Scientists

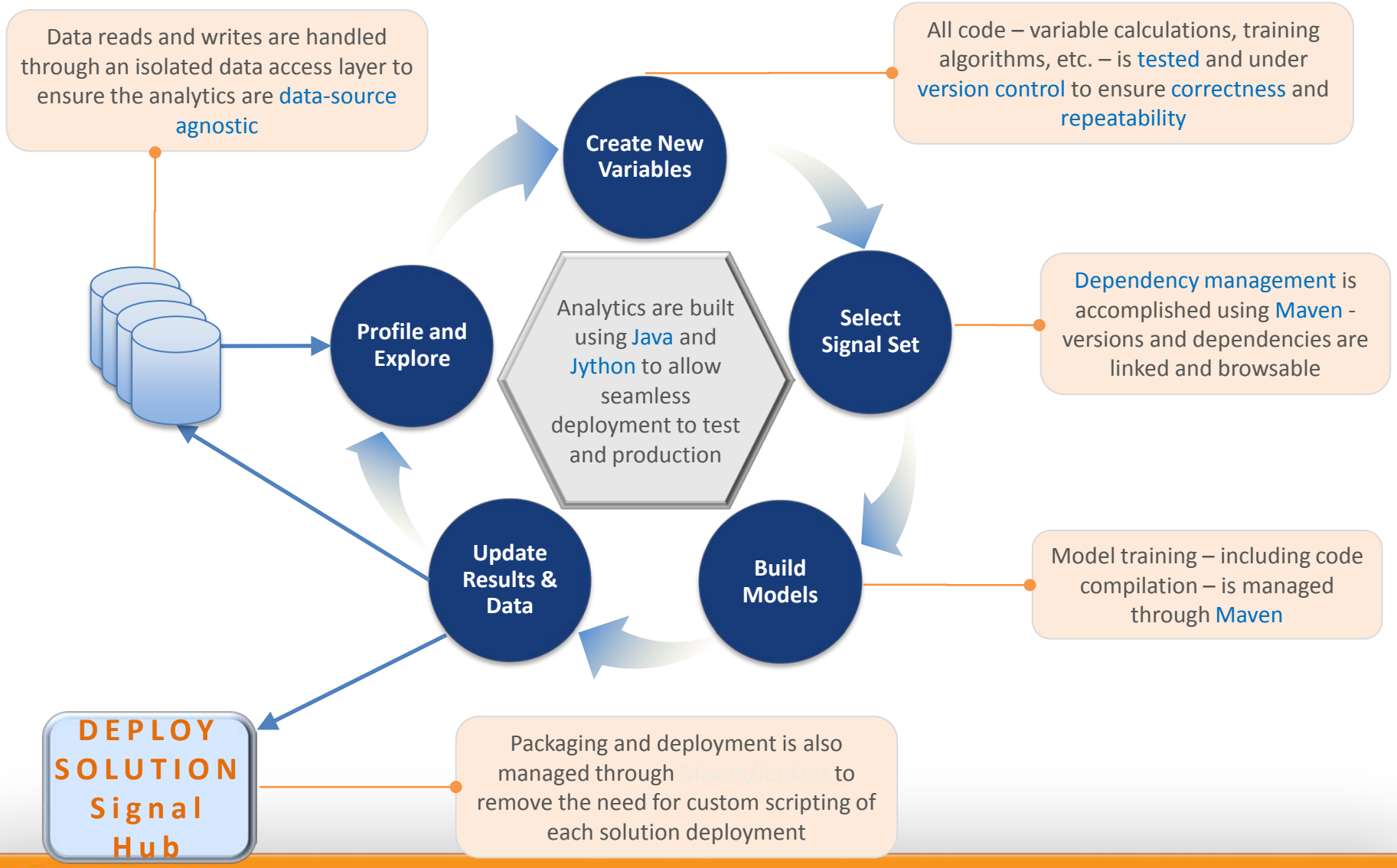
Focusing on 10 classes of problems…

- Regression
- Classification
- Clustering
- Forecasting
- Optimization
- Simulation
- Sparse Data Inference
- Anomaly Detection
- Natural Language Processing
- Intelligent Data Design

Wide range of advanced modeling techniques…

- ARMA
- CART
- CIR++
- Compression Nets
- Decision Trees
- Discrete Time Survival Analysis
- D-Optimality
- Ensemble Model
- Gaussian Mixture Model
- Genetic Algorithm
- Gradient Boosted Trees
- Hierarchical Clustering
- Kalman Filter
- K-Means
- KNN
- Linear Regression
- Logistic Regression
- Monte Carlo Simulation
- Multinomial Logistic Regression
- Neural Networks
- Optimization: LP; IP; NLP
- Poisson Mixture Model
- Restricted Boltzmann Machine
- Sensitivity Trees
- SVD, A-SVD, SVD++
- SVM
- Projection on Latent Structures
- Spectral Graph Theory

Analytics Development – Man + Machine Learning



Health Exchange Analytics News

OPERA BLOG

Opera Solutions Selected by the Centers for Medicare & Medicaid Services to Provide Operational and Fraud Analytics

November 15, 2012 – 8:00 am

Categories: News, Press Releases

Big Data Science Company will enhance operational control and fraud prevention capabilities for the federal government's new Health Insurance Exchange Operations

NEW YORK, N.Y., Nov. 15, 2012 — Opera Solutions, LLC, a leading global Big Data science company, today announced that it has been selected by the Centers for Medicare & Medicaid Services (CMS) to provide advanced analytics to enhance operational controls and prevent fraud in federally funded Health Insurance Exchange Operations ("HIX") managed by CMS' Center for Consumer Information and Insurance Oversight (CCIIO). Opera Solutions will apply its unique healthcare claims data anomaly detection experience, in tandem with its extensive origination/eligibility and fraud detection expertise, to support CMS' rollout of the Exchanges that begins in January 2014.

Health Exchanges are a critical component of the Patient Protection and Affordable Care Act (PPACA). Successful implementation requires oversight of the billions of federal dollars that will be spent on behalf of the Exchange enrollees, who include both individuals and small businesses. CMS is responsible for ensuring the financial integrity of these Exchange-related programs by making certain that eligible enrollees receive the appropriate assistance in joining qualified health plans. Market-wide oversight also will heighten the confidence of insurance providers participating in both Exchange and non-Exchange markets.

Health Exchange Analytics Overview

Leverage advanced analytics and outlier detection to ensure that health exchanges operate as designed and fraud is prevented

- ❑ Enrollment and Eligibility
- ❑ APTC/CSR
- ❑ Risk Corridors
- ❑ Edge Server
- ❑ Reinsurance
- ❑ Risk Adjustment
- ❑ RA User Fees
- ❑ Exchange User Fees

Operations Analytics

➢ **Monitor the critical business/operational concerns relevant to the process**

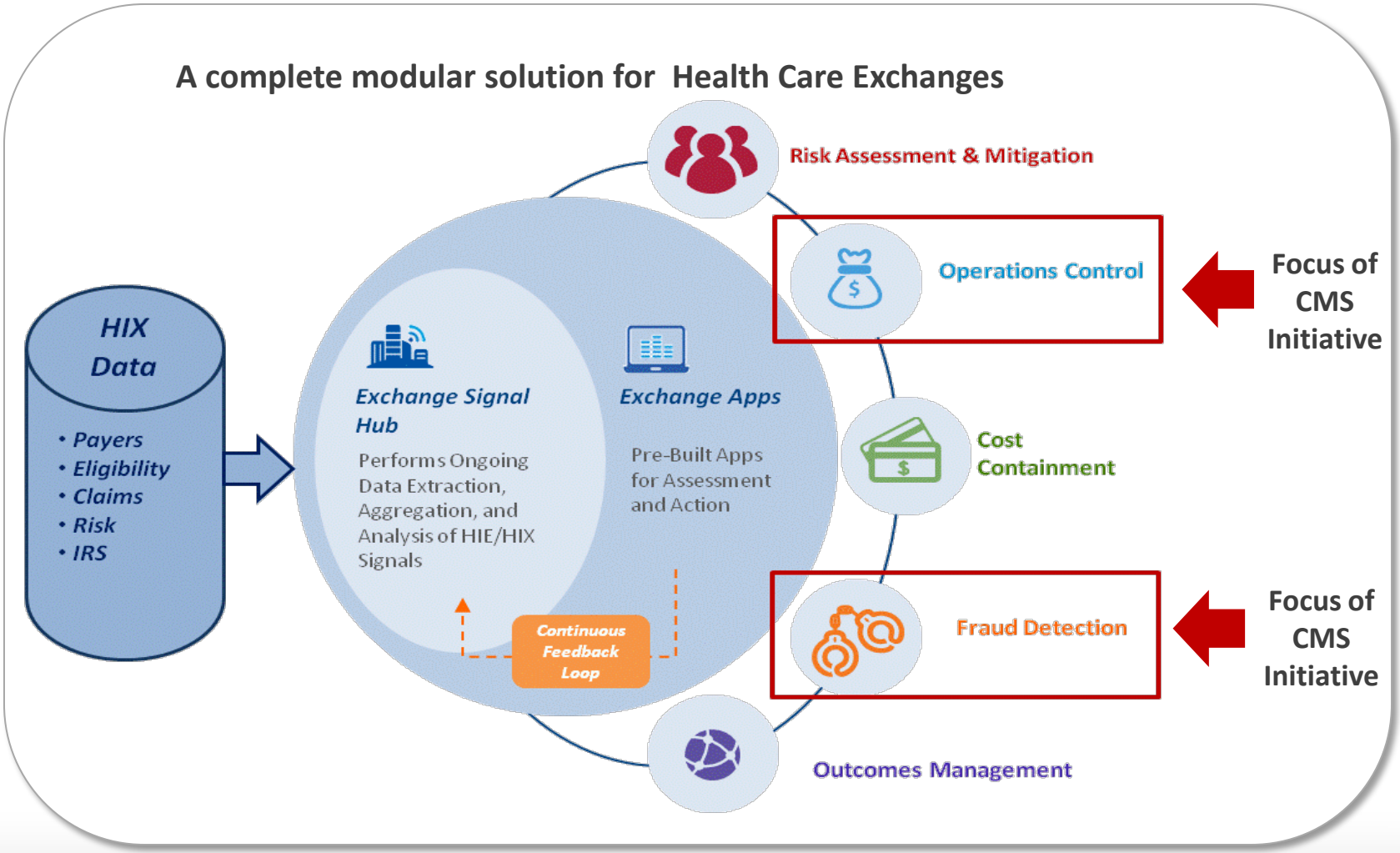
- ✓ Programmatic Operations
- ✓ Programmatic Compliance
- ✓ Market Performance
- ✓ Financial Performance
- ✓ System-Level Operations (hardware/software)
- ✓ End User Success and Satisfaction

Fraud Surveillance Analytics

➢ **Monitor, detect, and mitigate fraud, waste, and abuse**

- ✓ Identify the types of fraud that may occur based on points of end-user influence that are inherent in the programs/systems
- ✓ Establish a solid baseline of data and behavioral norms against which aberrations or unexpected results will be flagged
- ✓ Ensure that there is ongoing review of the analytics as a whole to encourage the incorporation of new information related to fraudulent behaviors as it becomes known

Opera's Health Insurance Exchange Solution



Value of Integration

Three Companies – One Solution

Prioritization	Visualization	Validation
OPERA SOLUTIONS	SALIENT HHS	D&B
Predictive modeling platform Pre-pay analytics Man and machine learning for developing intelligence	Powerful data visualization and integration platform Puts data in the hands of SME's Analyst-centric approach	World's leading source of business-oriented data Extensive provider-oriented database Proprietary financial, credit, and linkage data

Better Targeting

Visualization

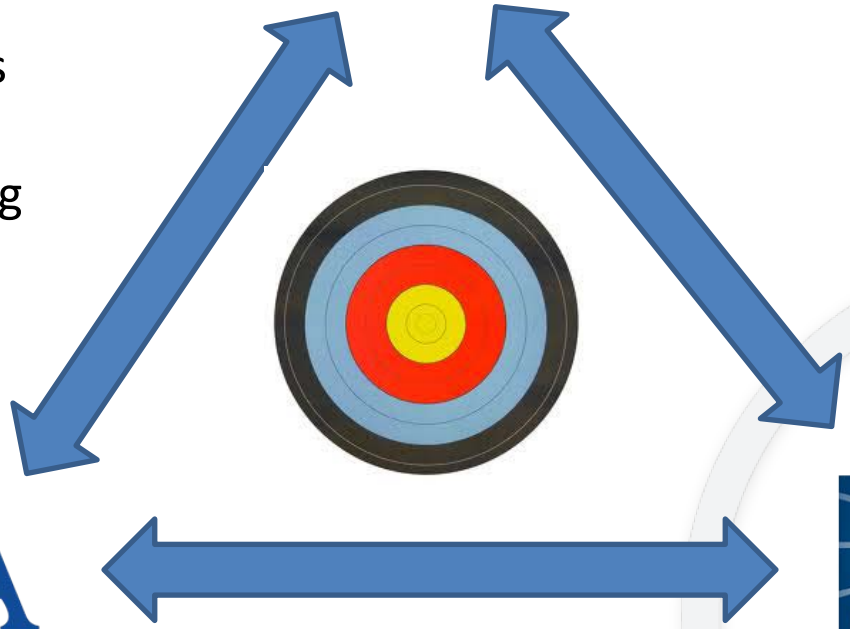
SALIENT HHS

Identify high value, high priority targets

SME-directed tuning of data models

Claims data with external, business data elements for investigation

Enhanced investigations and validations



OPERA SOLUTIONS

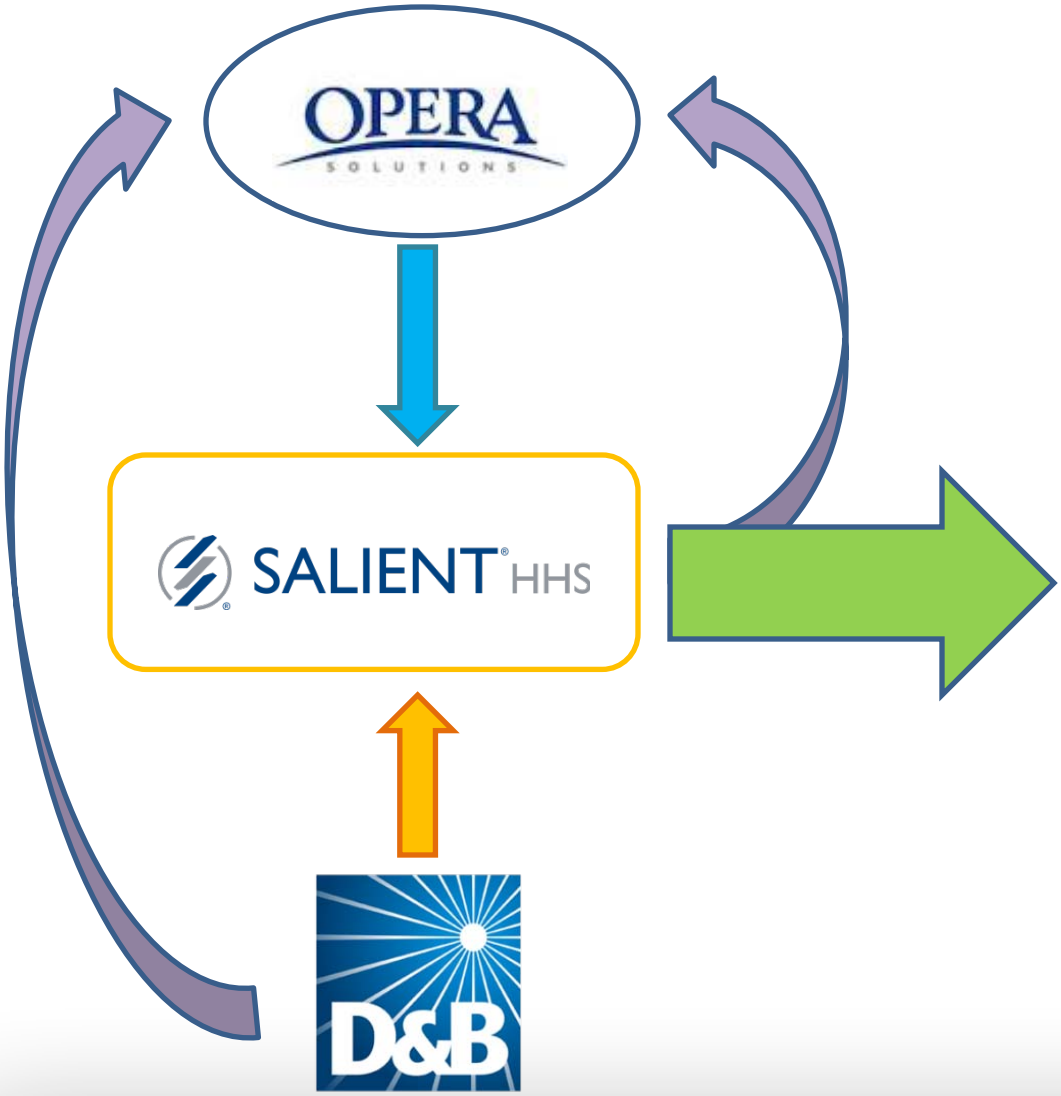
D&B

Enhanced external, business data elements for better targeting

Prioritization

Validation

Summary: The Virtuous Cycle



- Increase the "sweet spot"
- Better targeting of high risk, high $$ targets
- Machine and Man intelligence loop
- Best-of-breed platforms interoperation

Questions/Discussion