Arkansas
Chief Technology Officer

Quarterly IT Leader Meeting

July 9, 2014

Arkansas Cooperative Extension Service

Technology Update

- Completed: Next Generation State Network
- Broadband Manager's Report
- Arkansas State CIO Academy

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Next Generation State Network

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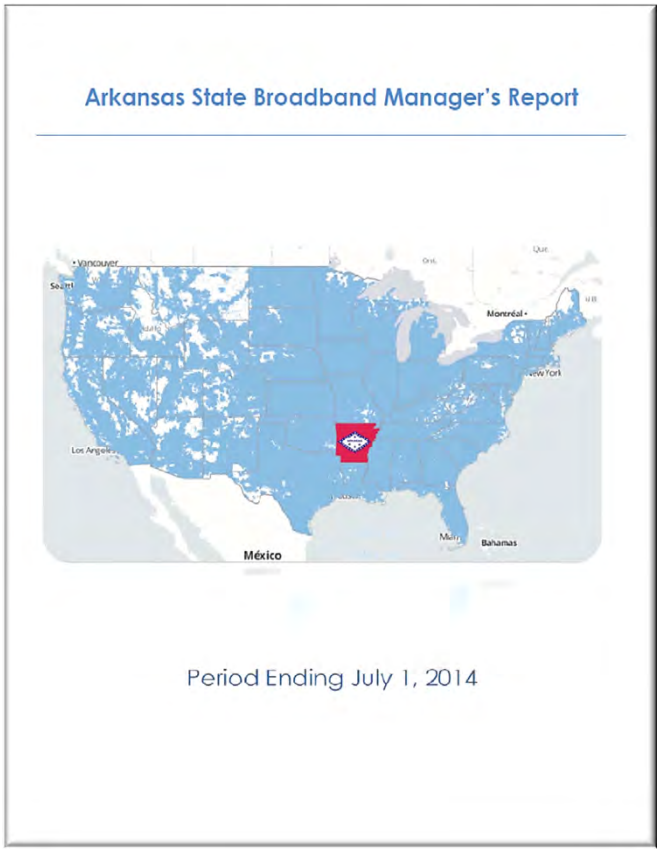
Arkansas State Broadband Manager's Report



Report Available Online at
Stc.arkansas.gov

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Background

Act 1168 of 2013

Stricken language would be deleted from and underlined language would be added to present law.
Act 1168 of the Regular Session

State of Arkansas — *As Engrossed: S4/2/13*
89th General Assembly — A Bill
Regular Session, 2013 — SENATE BILL 926

By: Senator Teague

BE IT ENACTED BY THE GENERAL ASSEMBLY OF THE STATE OF ARKANSAS:

SECTION 1. Arkansas Code Title 25, Chapter 4, Subchapter 1, is amended to add an additional section to read as follows:

25-4-125. State Broadband Manager.

(a) The Director of the Department of Information Systems is designated the State Broadband Manager.

BE IT ENACTED BY THE GENERAL ASSEMBLY OF THE STATE OF ARKANSAS:

SECTION 1. Arkansas Code Title 25, Chapter 4, Subchapter 1, is amended to add an additional section to read as follows:

25-4-125. State Broadband Manager.

(a) The Director of the Department of Information Systems is designated the State Broadband Manager.

(b) The State Broadband Manager shall coordinate the state's efforts to expand and improve broadband capacity and availability by:

(1) Serving as a single point of contact for:

(A) State agencies, boards, commissions, and constitutional officers, including without limitation the Governor, Department of Education, Department of Higher Education, and Arkansas State Highway and Transportation Department;

(B) Private businesses, enterprises, and broadband

03-09-2013 14:19:20 DLP229

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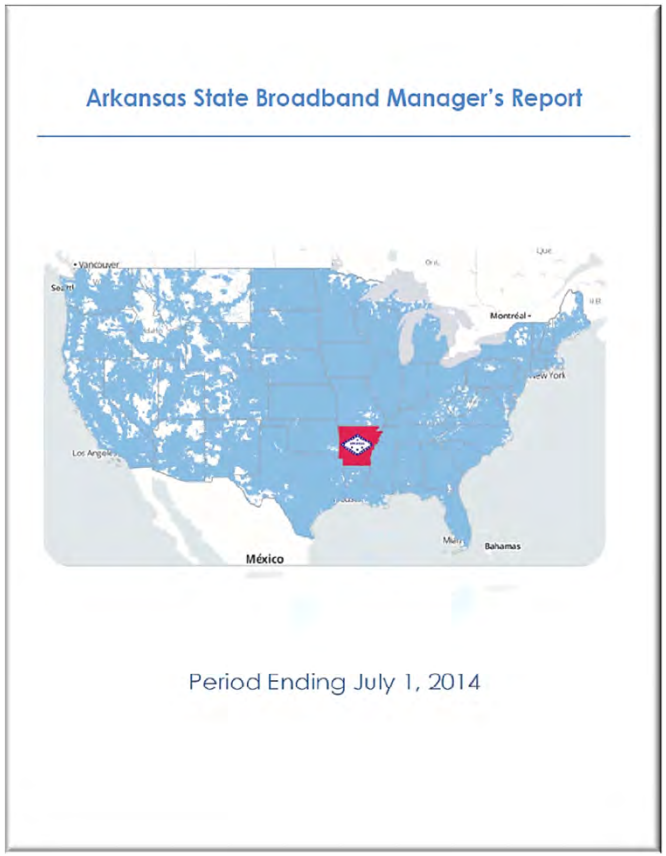
Arkansas State Broadband Manager's Report



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Arkansas State CIO IT Academy Class of 2013

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Chief Technology Officer

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STATE BROADBAND MANAGER

CHIEF TECHNOLOGY OFFICER

DIRECTOR, DIS

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501.682.2701 OFFICE

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Arkansas Department of Information Systems

@ArkansasDIS

Arkansas Department of Information Systems (DIS)

How can government deliver better services with fewer resources using data?

Steve Ellsworth, Sr. Customer Success Manager

@CivicAgent

c: (206) 321-4055

e: steve.ellsworth@socrata.com

Socrata

Socrata Overview

Seattle-based software-as-a-service provider with a global presence

Founded in 2007

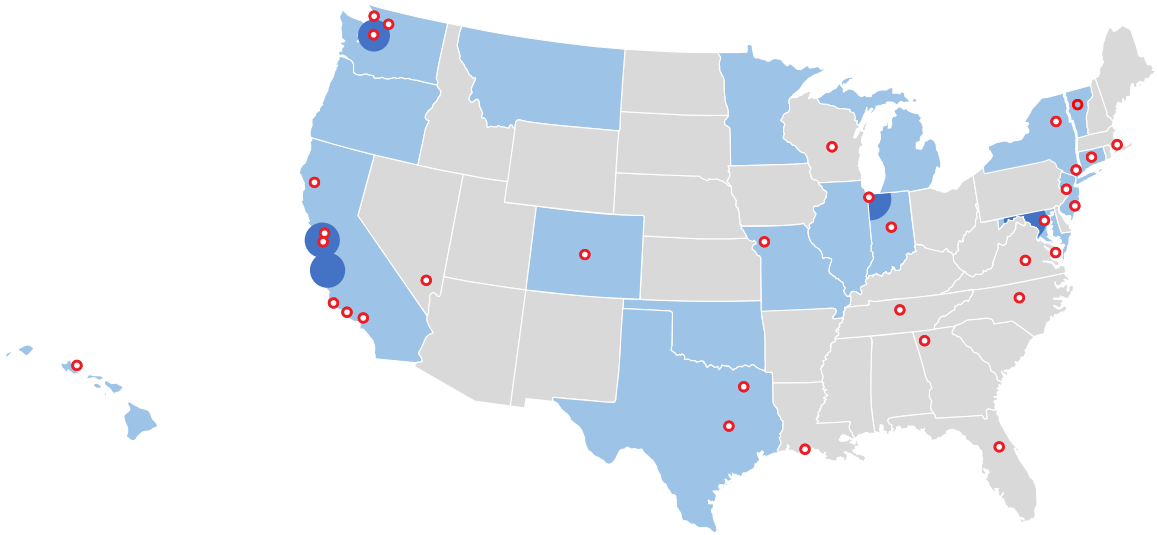
Global leader in open data and government performance management

150 customers

Focused exclusively on a cloud-based platform that democratises access to government data in order to:

- Transform government
- Improve resident engagement
- Increase transparency
- Fuel innovation
- Make data-driven decisions
- Improve operational efficiency
- Promote economic development

U.S. Customer Leadership



Federal	State	City	City	County	Other
White House	Hawaii	Chicago	New York	San Mateo	USAID
Medicare	California	Seattle	Las Vegas	Cook	World Bank
HHS	Texas	San Francisco	Burlington	King	United Nations
CDC	Washington	Los Angeles	Somerville	Montgomery	Gates Foundation
Data.gov	Maryland	Edmonton	Raleigh	Alameda	Large Global Presence
CFPB	Colorado	Atlanta	Nashville	Prince George's	
EPA	Indiana	New Orleans	Richmond	Strathcona	
Energy Star	New York	Dallas	Cambridge		

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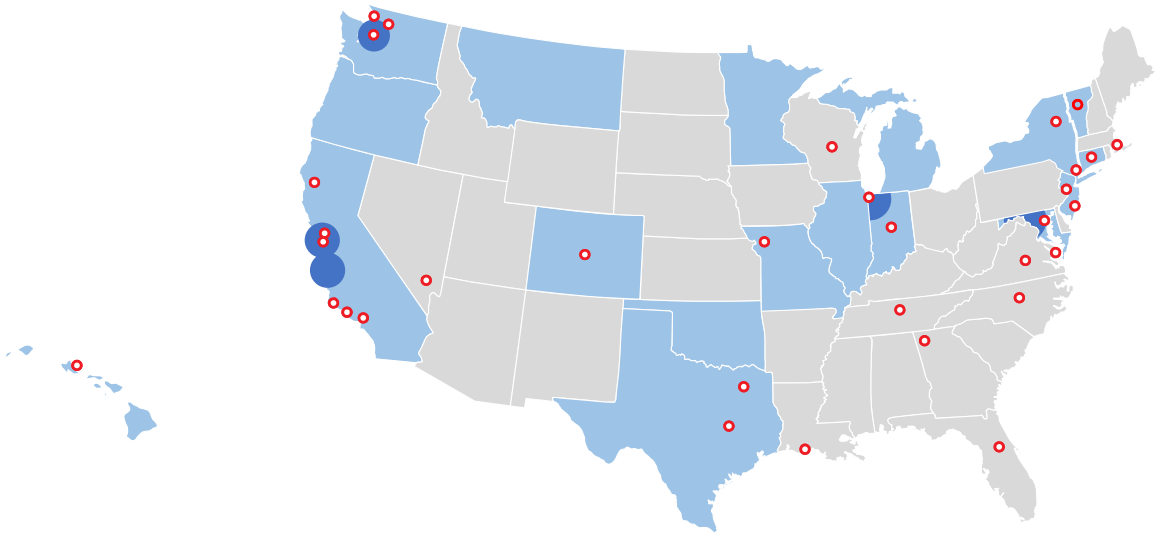
The State & Local Government Standard



State	State	City (>750k)	City (>250k)	City (<100k)	County
Hawaii	Texas	New York	Oakland	Albany	San Mateo
Washington	Illinois	Los Angeles	Las Vegas	Burlington	Cook
Oregon	Indiana	Chicago	Providence	Somerville	King
California	Michigan	Dallas	Salt Lake City	South Bend	Montgomery
Montana	New York	San Francisco	Raleigh	West Sacramento	Alameda
Colorado	Maryland	Austin	Nashville	Cambridge	Prince George's
Oklahoma	Connecticut	Baltimore	Richmond	West Hollywood	Strathcona
Missouri	Vermont	Boston	Gainesville	Culver City	

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Scalability

100,000+
Datasets

250%
Annual Growth in Volume of Data Served

1,000%
Annual Growth in **API Calls**

250 Million
Citizens Served

50 Million
Pageviews Per Month

Socrata

Socrata Customers Set the Standard

DGAA
Digital Government Achievement Award

Digital Government Achievement Award

Alameda County, CA

DIGITAL CITIES SURVEY Winner

Digital Cities Award

Boston
Seattle
Austin
Chicago
Baltimore
Raleigh

Digital Counties Award

Montgomery County, MD
Snohomish County, WA
King County, WA

DIGITAL COUNTIES SURVEY Winner

NASCIO

State Technology Innovator Award

State of Hawaii
State of Michigan

State Program Innovation Award

State of Oregon

Bloomberg Mayor's Challenge

City of Chicago

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The Data Opportunity

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Data – Success stories

On average, government workers spend 19% of their days simply looking for information (McKinsey Global)

State of Oregon saves $500,000 by not implementing an Oracle custom application (Socrata)

Australian Capital Territory (ACT) - from spreadsheet to interactive map in 3 minutes (Socrata)

City of San Francisco provides real-time access to data and saves $1million annually (CapGemini)

65% drop in the number of FOIA requests – Chicago Dept. of Public Health (Chicago)

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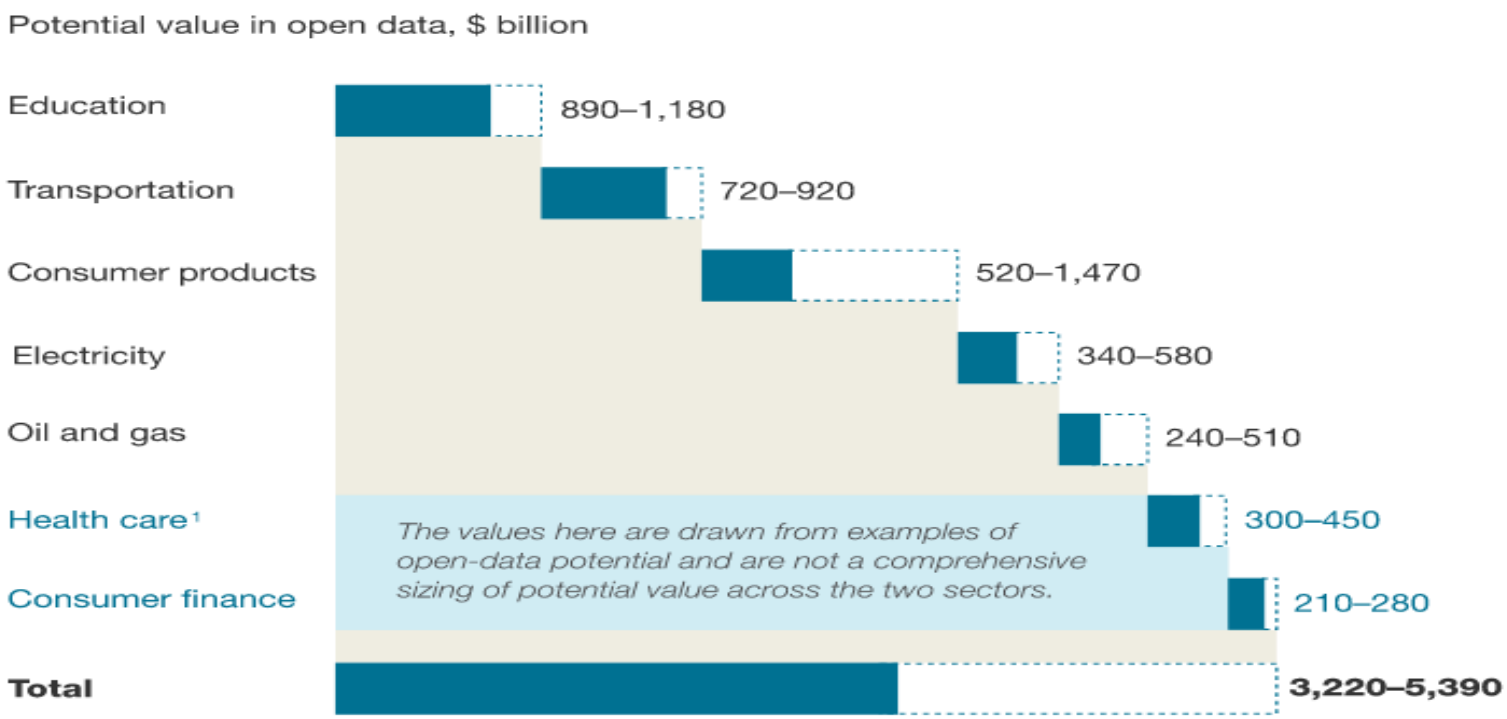
Data – Economic Roadmap

Open data can help unlock $3 - $5 trillion in economic value annually across seven sectors (McKinsey)



[1]Includes US values only.

Source: McKinsey Global Institute analysis

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Data – Value Creation

The more data is opened, the more it can be used

Opening data creates and economic value by:

- Reducing costs in the provision of existing services both by government and private sector (i.e. doing the same for less cost)
- Enabling new services and improved quality of services
- Indirectly contributing to improvements in governance and government services through improved accountability and citizen involvement, both of which engender greater trust in government

(Omidyar Network)

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Why Embrace Data as a Strategy?

Improves Transparency

Builds Public Trust

Strengthens Citizen Engagement

Reduces Operating Costs

Foundation for Data-Driven Decisions

Promotes Economic Development

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Data Offers a Measurable Impact

Improved Services

- Increase in the speed of delivering digital information
- Improved quality-of-life services
- Information products that contextualise the data experience

Rapid Innovation

- Increase in accessibility of organisation's information
- Improved data flow to stakeholders
- Empower local civic ecosystem

Better Government

- Public recognition of effort to be open and transparent
- Cross-department and organisation data sharing and collaboration
- Leverage valuable data assets to support data-driven decisions

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Data Driven Government and Citizen Engagement

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Data - Where are we now?

A transformation is taking place

Openness and transparency are winning

Civic engagement is being redefined by access to data

Data driven government and civic innovation are taking shape...the outcomes are amazing

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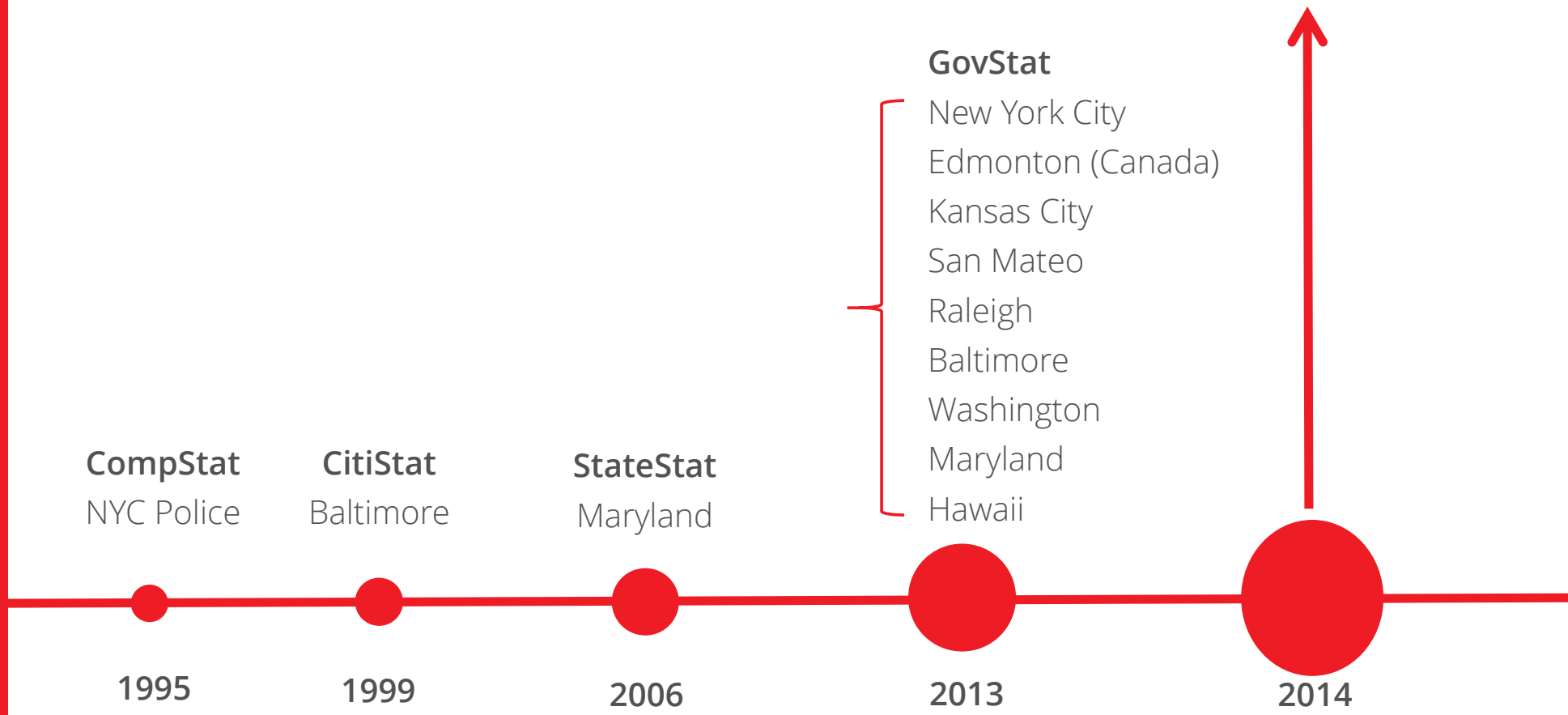
The Evolution of Data-Driven Government



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MARYLAND STATESTAT

WAR ROOM | 14:00

Open Data Portal

Goals Summary

Opportunity

- Jobs
- Education
- Skills
- Veterans

Security

- Violent Crime
- Violence Against Women and Children
- Homeland Security

Sustainability

- Bay Restoration
- Transit Ridership
- Energy Efficiency
- Renewable Energy
- Greenhouse Gases

Health

- Childhood Hunger
- Infant Mortality
- Substance Abuse

Governor O'Malley's 16 Strategic Goals

StateStat works closely with the Governor's Office and Maryland agencies to drive progress towards the Governor's 16 strategic goals.

OPPORTUNITY

Jobs	ON TRACK
Education	ON TRACK
Skills	PROGRESSING
Veterans	INSUFFICIENT PROGRESS

SECURITY

Violent Crime	ON TRACK
Violence Against Women and Children	ON TRACK
Homeland Security	ON TRACK

Maryland lit the fuse for the “Stat” approach

Three guidelines for open performance management

1. Curate data and inform people about the government conversation
2. Let developers access the data and allow the ecosystem to flourish
3. Nurture a collaborative environment where data analysts talk with the government and developers, and everyone understands the big picture to take risks and set ambitious goals

In order to drive efficiency and make the right decisions for citizens, we needed to understand which services were the most valuable. The answers were in the data.

Beth Blauer, Beyond Transparency

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Maryland StateStat: Results

#1 Public Schools for 5 Years in a Row

Violent crime levels driven down to 30-year lows

#1 State for Entrepreneurship and Innovation – US Chamber

100% of all jobs lost in the recession recovered

1 of 8 states to maintain its AAA Bond Rating every year of the recession

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Essential Elements of a Data-Driven Approach

- Set Goals Openly and Transparently
- Conduct Regular Data Collection and Analysis
- Measure Progress Openly and Transparently
- Intuitive, easy-to-use technology for setting goals and tracking results
- Create a Resident – Local Authority Feedback Loop
- Make the data open

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Follow Us!
@socrata / @CivicAgent

Friend Us!
facebook.com/socrata

Watch Us!
http://www.youtube.com/user/socratavideos

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Machine Data Insights for State and Local Government

John Zarour

National Director State and Local Government

splunk>

Company

Fast Company 2013: Named Splunk #4 Most Innovative Company in the World and #1 Big Data Innovator

Leader: Gartner SIEM Magic Quadrant, 2013

Company (NASDAQ: SPLK)

- Founded 2004, first software release in 2006
- HQ: San Francisco / Regional HQ: London, Hong Kong
- Over 1,000 employees, based in 12 countries
- Annual Revenue: $302.6M (YoY +52%)
- $6+ billion market valuation

Business Model / Products

- Free download to massive scale
- On-premises, in the cloud and SaaS

7,400+ Customers

- Customers in over 90 countries
- Over 2/4 of the Fortune 100
- Largest license: 100 Terabytes per day

Topics of Discussion

Key State and Local Government IT priorities

What is Machine Data?

Machine Data Insights for Government – Applications and Sensors

Questions

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Core Focus Areas for Government IT

Security & Privacy

Compliance

Service Availability

Information Access

Consolidation & Shared Services

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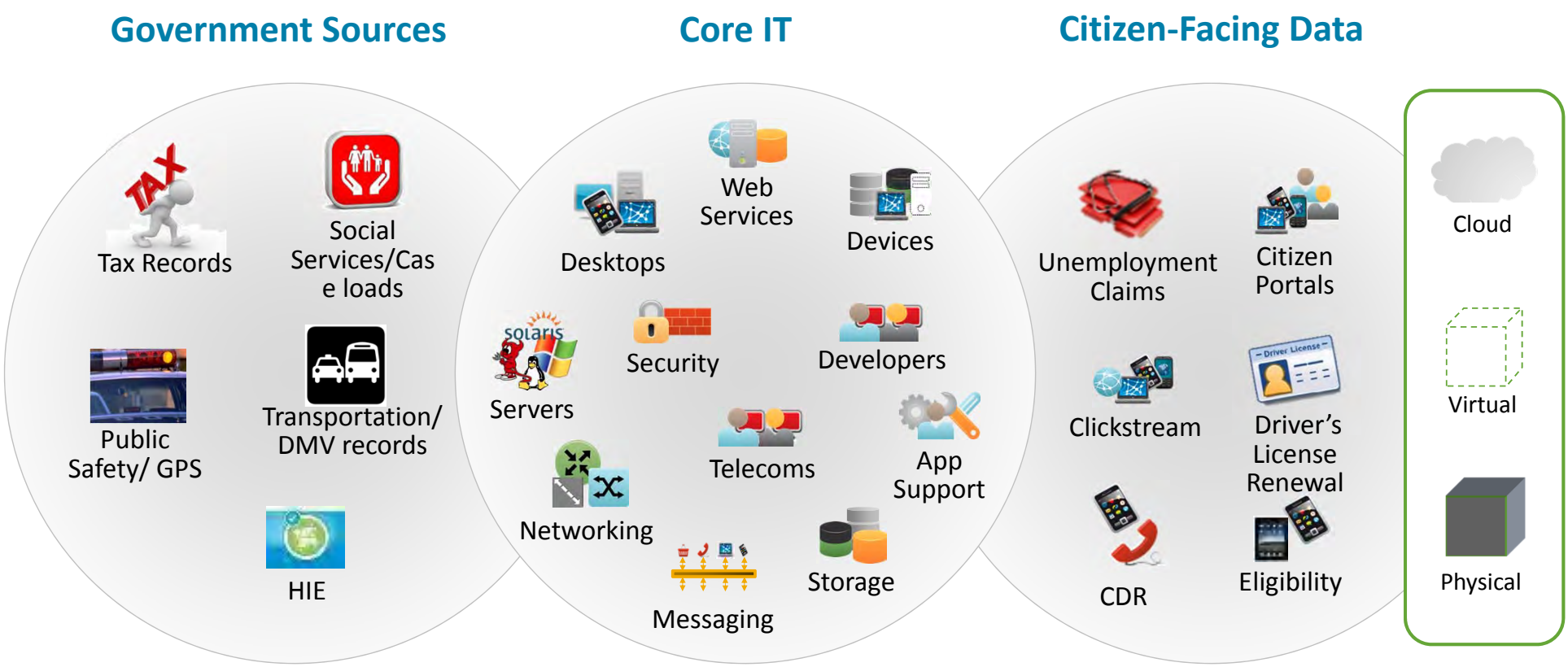
Expanding Government Data Universe



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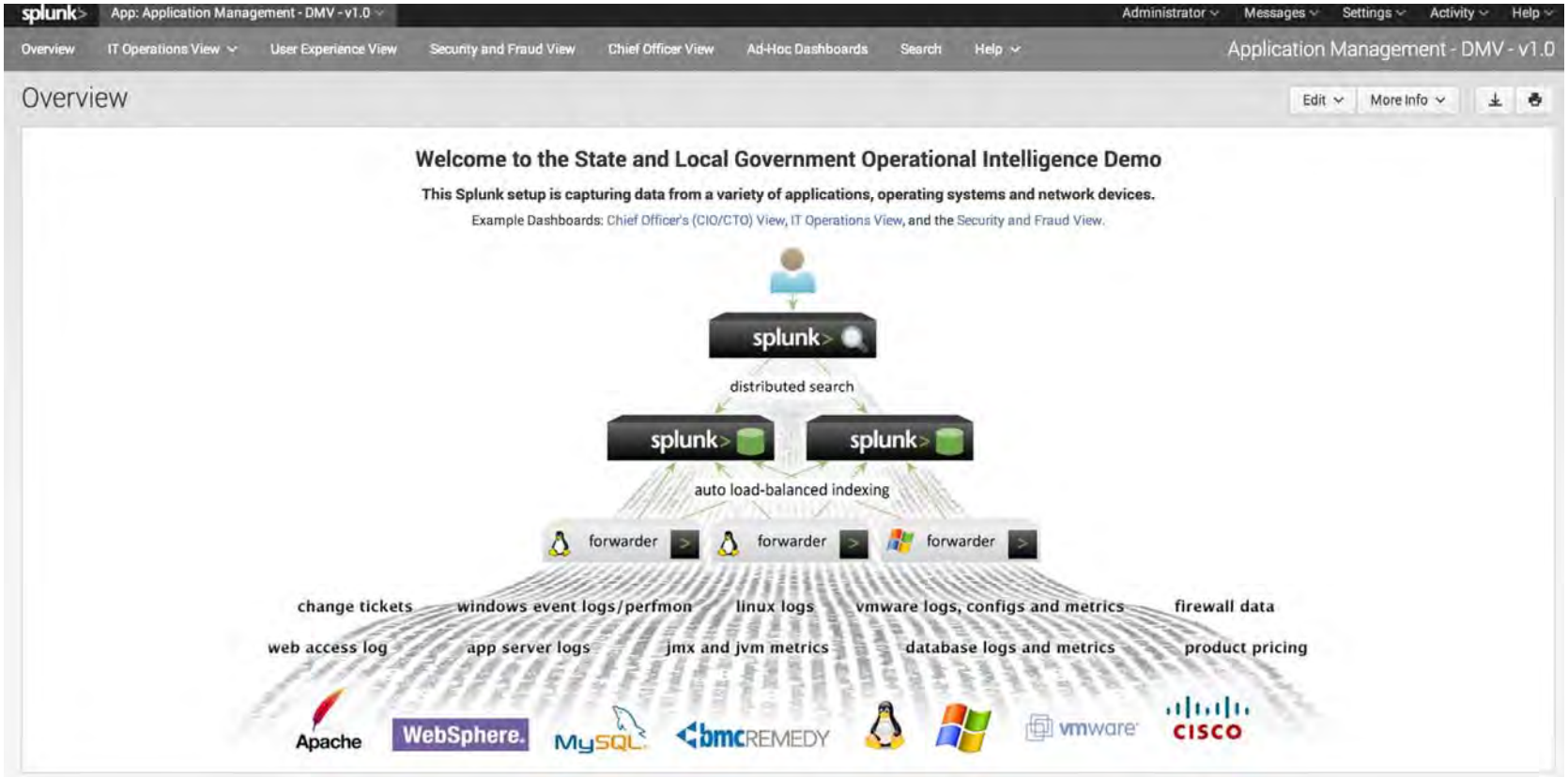
Splunk Visuals - Overview



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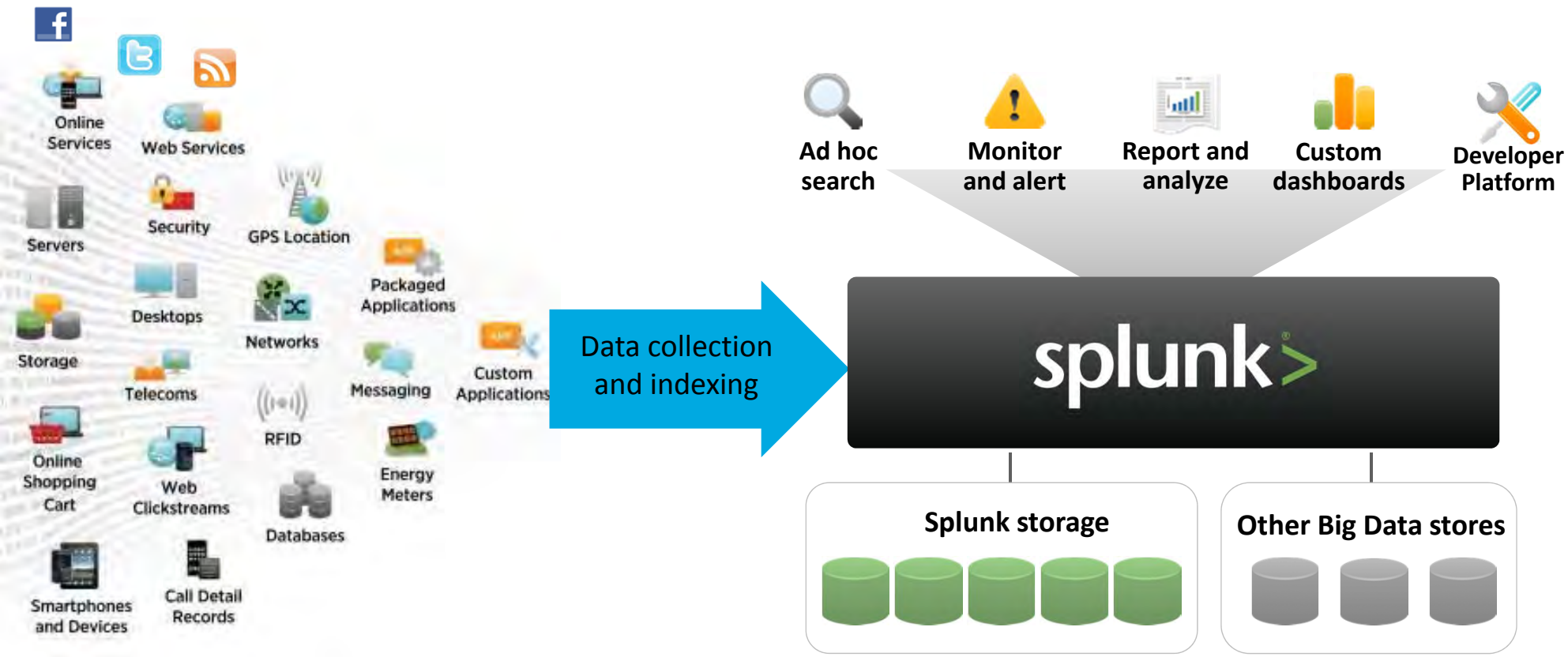
Innovative, Powerful and Easy to Use Software



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Splunk Search

< Hide Fields ≡ All Fields

Selected Fields
- action 1
- # bytes 1
- clientip 1
- code 1
- host 3
- JSESSIONID 1
- OID 1
- # price 1
- product_id 1
- product_name 1
- referer_domain 1
- source 3
- sourcetype 3
- # SQLSTATE 1
- # status 1
- status_description 1
- status_type 1
- uri 1
- uri_path 1
- uri_query 1
- user 1
- useragent 1

Interesting Fields
- # date_hour 1
- # date_mday 1
- # date_minute 1
- date_month 1
- # date_second 1
- date_wday 1

i	Time	Event
>	7/7/14 1:39:03.444 PM	07/Jul/2014 20:39:03:444 [CRITICAL] ./mysqld: Shutdown complete host = mysql.splunk.com source = /usr/local/mysql/logs/mysqld.log sourcetype = mysqld
>	7/7/14 1:39:03.437 PM	07/Jul/2014 20:39:03:437 [CRITICAL] Could not use /mysqllog/binlog/localhost-3306-bin for logging (error 28) host = mysql.splunk.com source = /usr/local/mysql/logs/mysqld.log sourcetype = mysqld
>	7/7/14 1:39:03.420 PM	07/Jul/2014 20:39:03:420 [CRITICAL] Error writing file '/mysqllog/binlog/localhost-3306-bin' (errno: 28) host = mysql.splunk.com source = /usr/local/mysql/logs/mysqld.log sourcetype = mysqld
>	7/7/14 1:39:03.351 PM	07/Jul/2014 20:39:03:351 [CRITICAL] Error writing file '/mysqllog/slow_log/localhost_3306_slow_queries.log' (errno: 1) host = mysql.splunk.com source = /usr/local/mysql/logs/mysqld.log sourcetype = mysqld
>	7/7/14 1:39:03.346 PM	07/Jul/2014 20:39:03:346 [CRITICAL] /opt/mysql/bin/mysqld: Disk is full writing '/mysqllog/binlog/localhost-3306-bin.000020' (Errcode: 28). Waiti ng for someone to free space... Retry in 60 secs host = mysql.splunk.com source = /usr/local/mysql/logs/mysqld.log sourcetype = mysqld
>	7/7/14 1:39:03.327 PM	[07/07/14 20:39:03:327 UTC] 000000c6 DataStoreCont E com.ibm.wps.datastore.impl.DataStoreContext handleException EJPDB0001E: Error occurred durin g database access. Last SQL statement is [SELECT OID, CREATED, MODIFIED, PORT_DESC_OID, PORT_DESC_SL, SCOPE_OID, WSC_INST_HANDLE, WSP_IS_PROVIDED , WSP_PROD_OFF_INST, TYPE, PARENT_OID, PARENT_SL, PREF_SCOPE_TYPE, PREF_SCOPE_UID, VALIDATION_BASE, VALIDATION_STATE, JSR_DATA FROM customiz.PORT _INST WHERE (OID = ?)]. com.ibm.wps.datastore.domains.DomainUnavailableException: EJPDB0101E: Database domain [Domain: cust] is currently unavailable. com.ibm.wps.datastore.domains.DomainUnavailableException: EJPDB0101E: Database domain [Domain: cust] is currently unavailable. at com.ibm.wps.datastore.impl.DataStoreContext.handleException(DataStoreContext.java:315) at com.ibm.wps.datastore.impl.DataStoreContext.handleException(DataStoreContext.java:315) Show all 46 lines OID = ? SQLSTATE = 55032 code = 000000c6 host = websphere-2.splunk.com source = /opt/websphere/appserver/log/SystemOut.log sourcetype = websphere_trlog
>	7/7/14 1:39:03.266 PM	07/Jul/2014 20:39:03:266 [CRITICAL] /opt/mysql/bin/mysqld: Disk is full writing '/mysqllog/binlog/localhost-3306-bin.000020' (Errcode: 28). Waiti ng for someone to free space... Retry in 60 secs host = mysql.splunk.com source = /usr/local/mysql/logs/mysqld.log sourcetype = mysqld
>	7/7/14 1:39:03.151 PM	[07/07/14 20:39:03:151 UTC] 000000c6 ConnectionEve A J2CA0056I: The Connection Manager received a fatal connection error from the Resource Adap ter for resource jdbc/wpdbDS5. The exception which was received is com.ibm.websphere.ce.cm.StaleConnectionException: [IBM][CLI Driver] SQL1224N The database manager is not able to accept new requests, has terminated all requests in progress, or has terminated your particular request due to a problem with your request. SQLSTATE=55032 :COM.ibm.db2.jdbc.DB2Exception: [IBM][CLI Driver] SQL1224N The database manager is not able to accept new requests, has terminated all requests in progress, or has terminated your particular request due to a problem with your request. SQLSTATE=55032 :COM.ibm.db2.jdbc.DB2Exception: [IBM][CLI Driver] SQL1224N The database manager is not able to accept new requests, has terminated all requests in progress, or has terminated your particular request due to a problem with your request. SQLSTATE=55032 SQLSTATE = 55032 code = 000000c6 host = websphere-2.splunk.com source = /opt/websphere/appserver/log/SystemOut.log sourcetype = websphere_trlog

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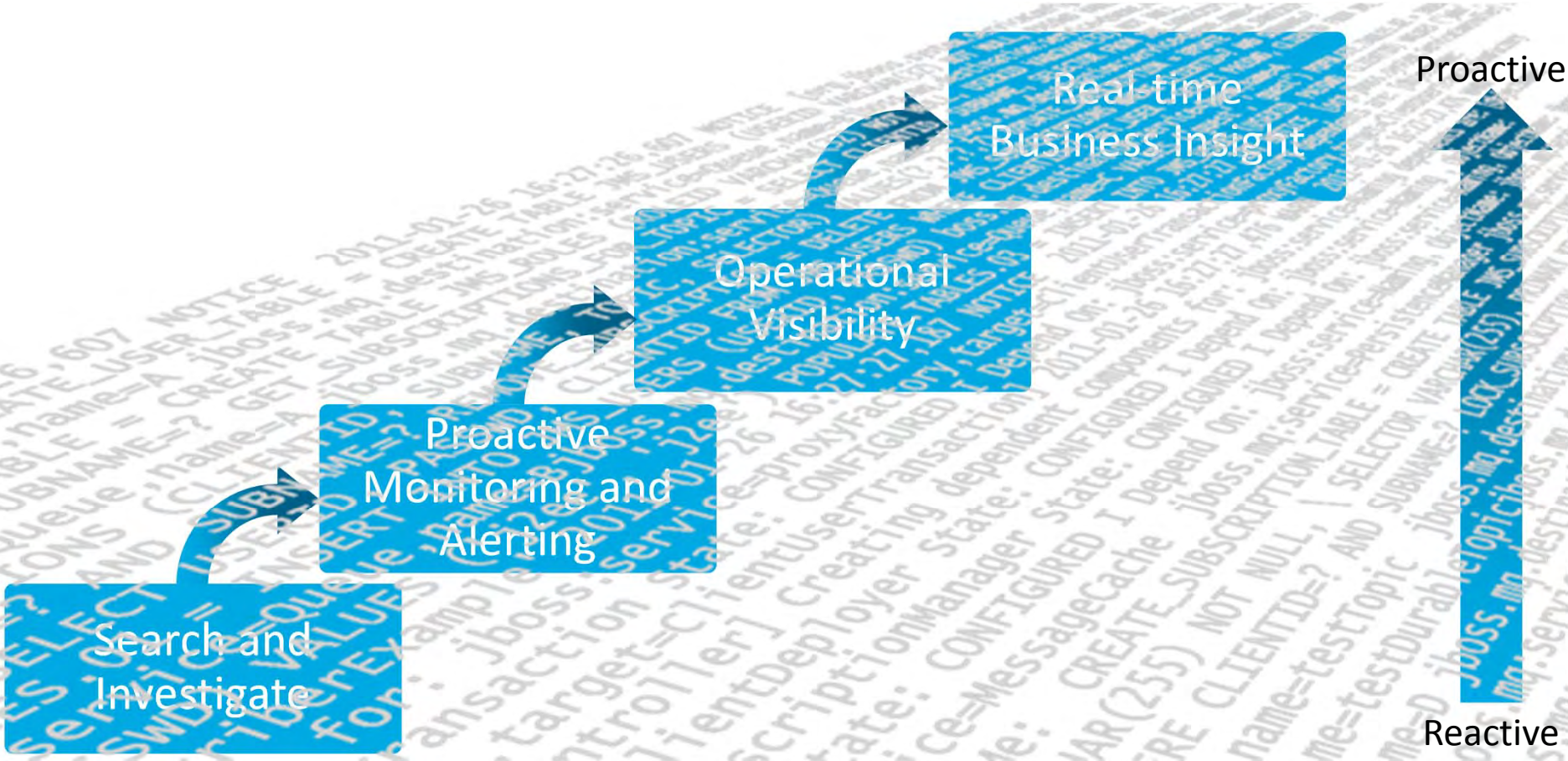
Turning Machine Data into Operational Intelligence



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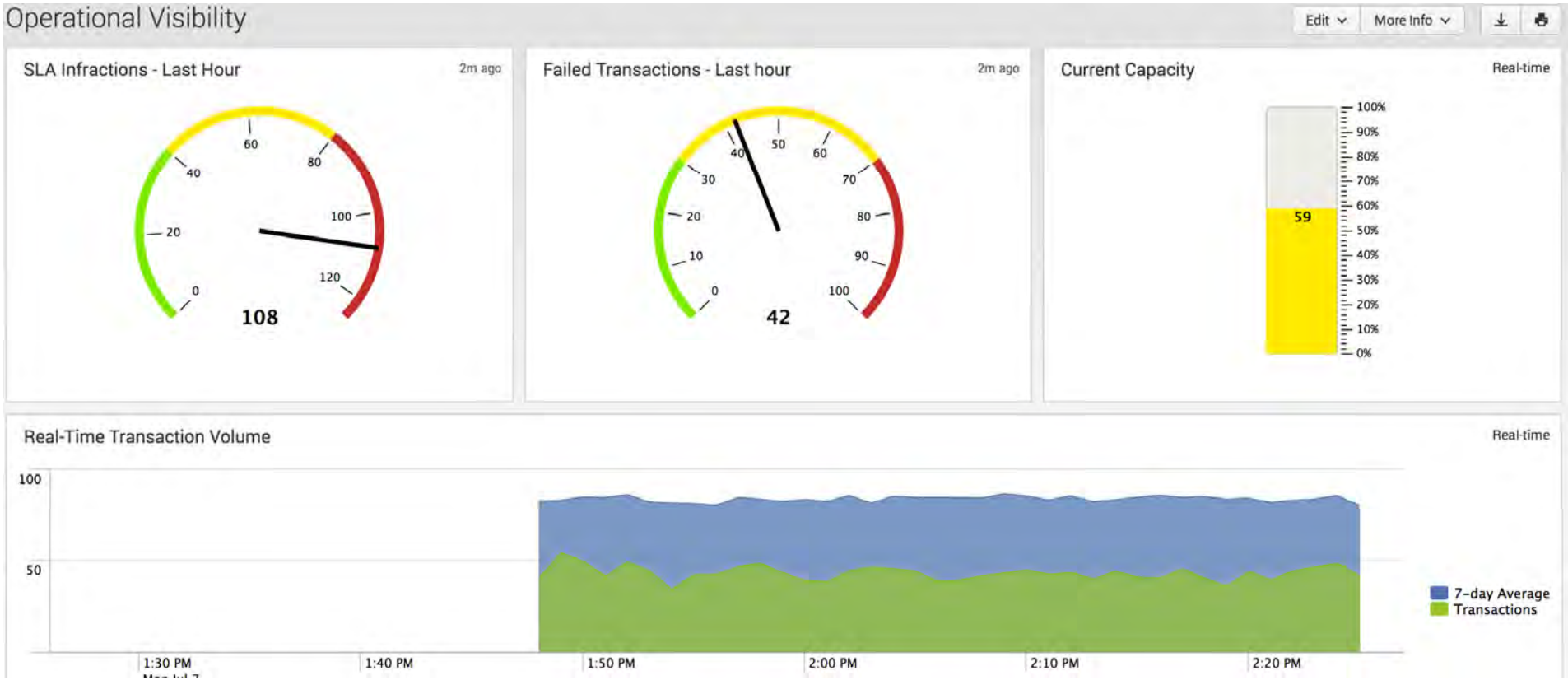
Operational Visibility



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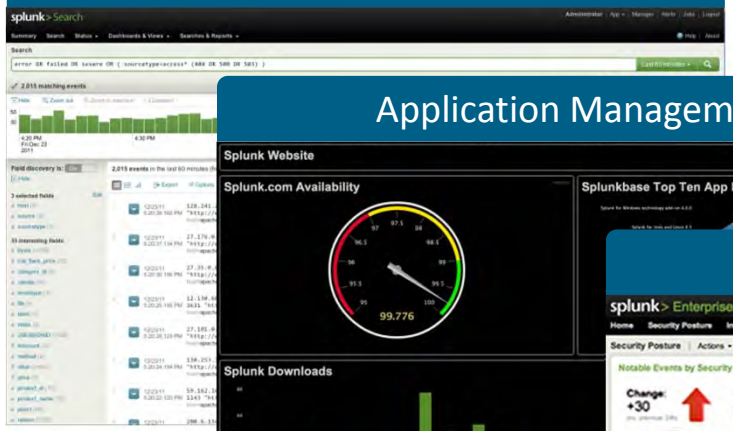
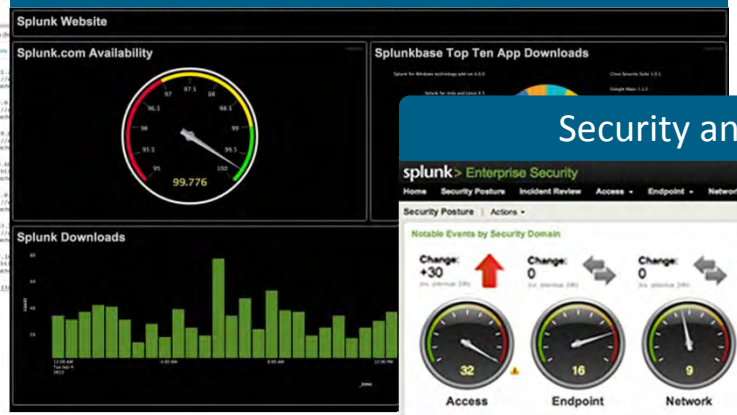
Visibility Across IT and the Business

IT Operations Management

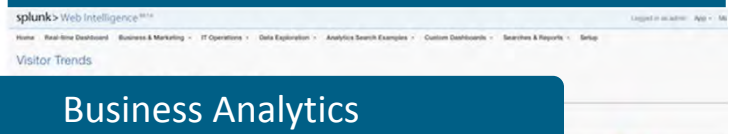


Application Management



Security and Compliance

Web Intelligence



Business Analytics

Customer Support

Operations Teams

System Administrator

Application Developers

Security Analysts

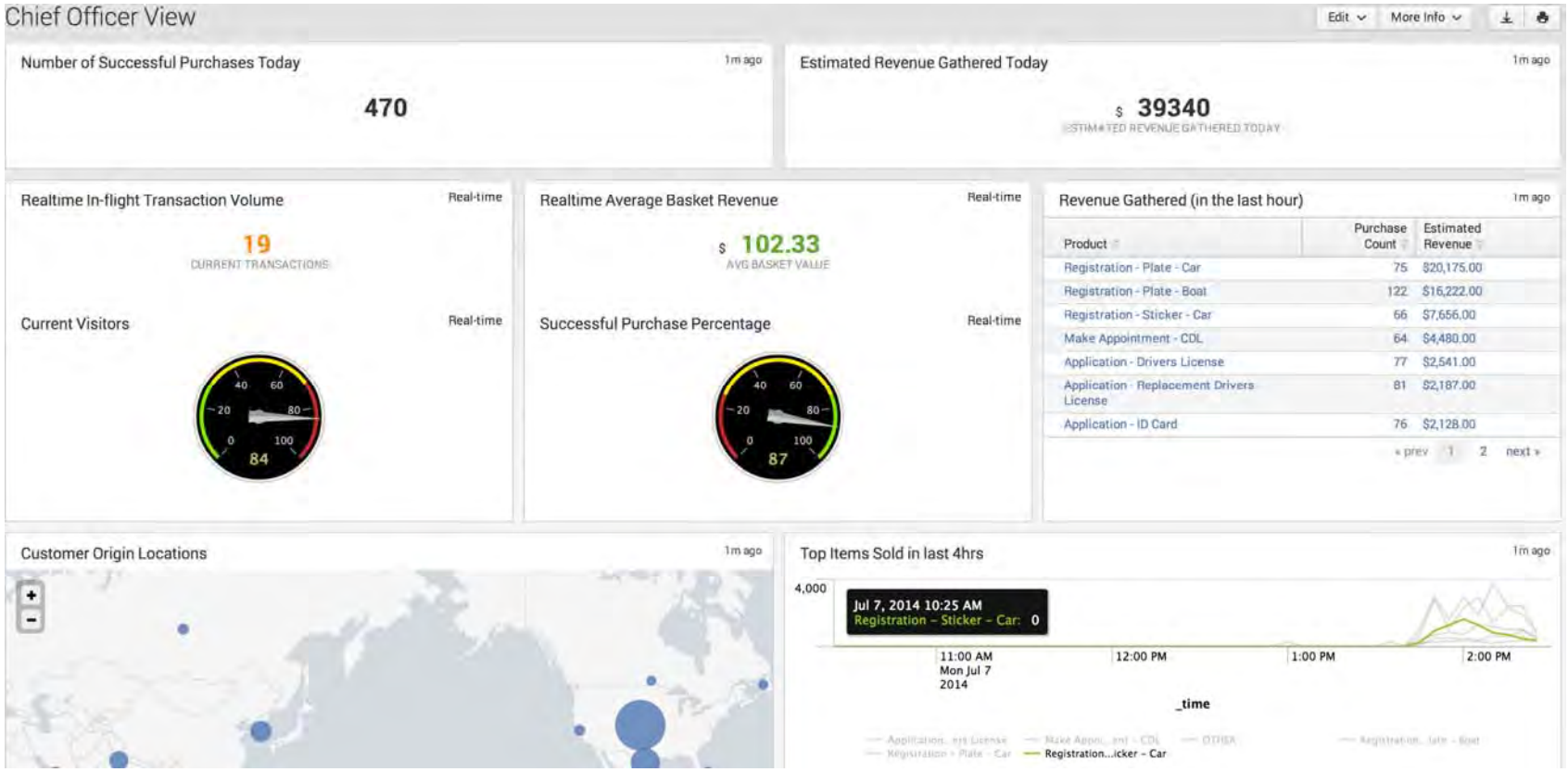
Auditors

IT Executives

Website/Business Analysts

LOB Owners/ Executives

Chief Officer View



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Machine Data Insight to Improve Government IT

Benefits Gained by Splunk Government Customers

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- Improve Constituent Engagement
- Ensure HIPAA/ PCI/ FISMA Compliance
- Mitigate Security Threats
- Gain Client Data Insights
- Deliver Better Eligibility Experience
- Accelerate Transaction Processing
- Reduce IT Costs
- Improve Operational Efficiency

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Use Splunk for All Data, Even Non-IT

Select a city from the list

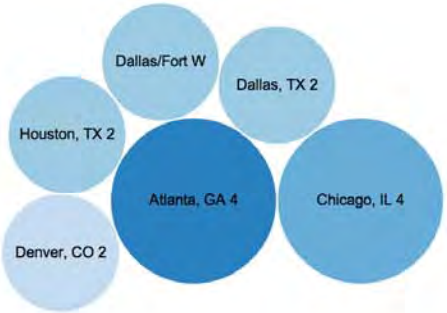
Little Rock, AR

Arrival volume in Little Rock

Total arrivals **16**

Origin cities for Little Rock air traffic

Click a bubble to select a city



Origin city location

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Use Splunk for All Data, Even Non-IT

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Security and Fraud Detection

Suspicious Activity Locations (Likely Bot Traffic) 1m ago

Suspicious Traffic Origins 1m ago

_time	Suspect's Originating IP Address	Service Offering	What were they doing?	City	Country
2014-07-07 14:01:39	212.235.92.150	Registration - Plate - Boat	purchase_or_commit		Israel
2014-07-07 14:01:35	90.205.111.169	Application - ID Card	purchase_or_commit	Burley in Wharfedale	United Kingdom
2014-07-07 14:01:27	125.17.14.100	Application - Drivers License	purchase_or_commit	Delhi	India
2014-07-07 14:01:22	92.1.170.135	Application - Learner Permit	purchase_or_commit		United Kingdom
2014-07-07 14:01:21	1.19.11.11	Registration - Plate - Boat	purchase_or_commit	Seoul	South Korea
2014-07-07 14:01:20	131.178.233.243	Application - Replacement Drivers License	purchase_or_commit	Monterrey	Mexico
2014-07-07 14:01:17	62.216.64.19	Registration - Sticker - Car	purchase_or_commit		Romania
2014-07-07 14:01:09	27.96.191.11	Make Appointment - CDL	purchase_or_commit	Kisa	South Korea
2014-07-07 14:01:05	94.229.0.21	Registration - Plate - Car	purchase_or_commit		Cyprus
2014-07-07 14:00:56	194.215.205.19	Registration - Plate - Car	purchase_or_commit		Finland

« prev 1 2 3 4 5 6 7 8 9 10 next »

Session Spoofing - One Session ID Shared By At Least One Client IP Address 1m ago

Client IP Addresses	Dollar Value	JSESSIONID
130.253.37.97	25.00	SD6SL4FF3ADFF7
131.178.233.243	33.00	

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Service Health Dashboards

Monitor and maintain applications – asset management, customer information, geospatial, mobile, Web services, REST services

Dashboards provide visibility into

- Current performance and availability
- Historical performance (trending) and availability
- Average daily performance
- Recent issues (uptime, failures)

DENVER WATER

Higher internal customer satisfaction

Reduced downtime

Improved efficiency

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Integrated Eligibility Case Study

- Enhanced capacity planning through the use of real-time web analytics and transaction analysis from start to finish.
- Advanced indexing and search capabilities resolve problems faster and reduce downtime, correlate events across all layers of the agency's infrastructure and reduce the costs of providing IT services
- Issue/defect analysis across 1000+ different log files (96 applications) for 200+ developers. It used to take days to connect log file data across these log files now it can be done in minutes for both production and development environments.

"Splunk is a very powerful tool that takes the "drinking from a fire hose" syndrome and reduces it to a simple sip of filtered water"

TEXAS Health and Human Services Commission

Patrick Nobles
Operations,
Command and Control Team

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DOT Security Operations

"Splunk has empowered us to plug security gaps, improve efficiencies and save taxpayer money. We're limited only by our imaginations as to all the ways we can leverage the platform"

Information Security Officer, Nevada Department of Transportation

- Optimized security posture
- Cost savings and improved operational efficiencies due to identifying misconfigurations
- Rapid issue resolution and immediate operational visibility
- Improved public safety

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Security Services for The City and County of San Francisco

Using Splunk:

- Gain immediate results that can easily be interpreted
- Ability to become more proactive than reactive
- Easily identify what is normal and not normal in web traffic
- Understand security risks in mere minutes
- Save time and resources

City & County of San Francisco
Department of Technology
Powered by Innovation

"With Splunk, instead of spending 40% of a FTE's day to understand what the web filters are telling us, we now just look at the dashboards. In seconds, it shows us the abnormalities."

Security Services Group
The City and County of San Francisco

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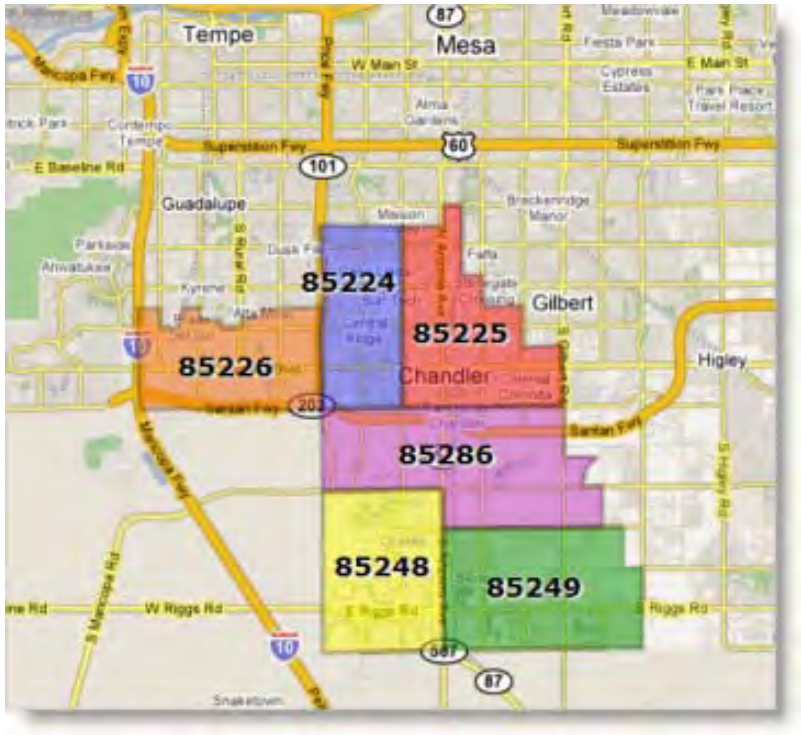
Delivering Analytics to Law Enforcement

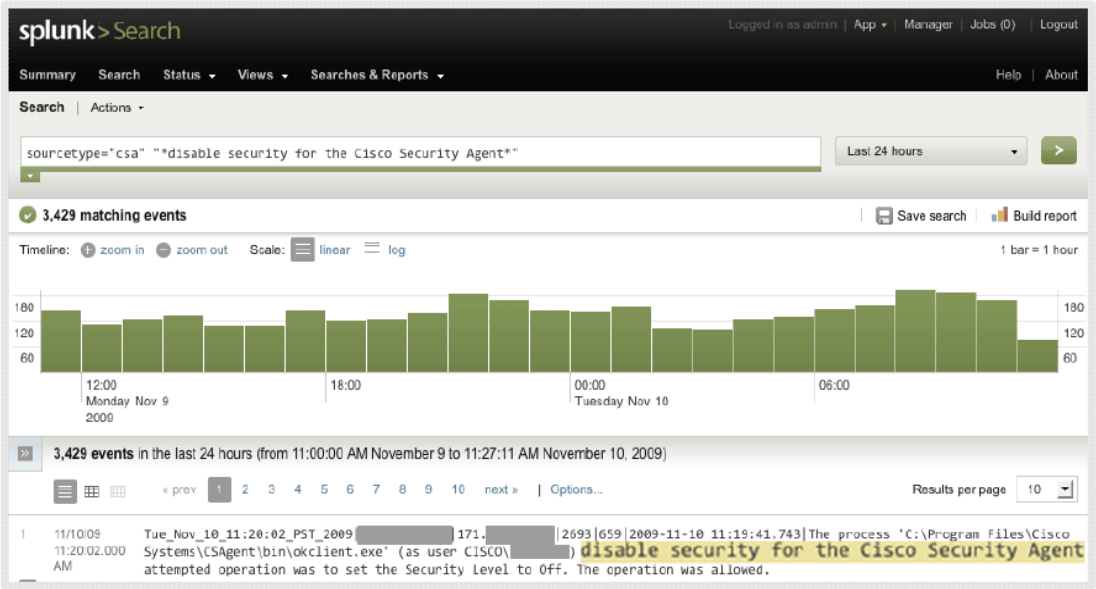
- Calculate response rates to citizen reports for real time and historical trends, trending for crime reports
- Track and monitor the health of their network infrastructure – RMS, CAD, servers & virtual environment
- Provide operational analytics, business intelligence, quality control, internal compliance, and security



splunk> listen to your data™

Proactive Security Monitoring and Forensics

"Splunk allows us to quickly consolidate and correlate disparate log sources, enabling previously impractical monitoring and response scenarios."



- Enabled proactive threat assessment, mitigation planning, incident trending with analysis, security architecture, incident detection and response
- Delivered a centralized view into user activities and in-scope systems

Dave Schwartzburg
Computer Security Incident Response Team

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Reducing Your Power Bills with Splunk

- Gaining insight into building/ facility energy use and expense
- Correlates data generated by building control systems, enterprise applications, asset management systems and other associated facility management applications
- Monitoring temperature, humidity, power quality for environmental monitoring, modeling and real-time alerting
- Optimizing facility and asset spend across campuses or globally distributed chains

McKenney's Inc

Brian Gilmore
Program Manager,
Enterprise Intelligence and
Automation Control Solutions

"Splunk helps us bridge the gap between building intelligence and operational intelligence to power the intelligent enterprise."

splunk> listen to your data™

Machine Data Insights for Government Ecosystem

Representative Splunk Use Cases

- Performance/Uptime (e.g. Web Portals)
- Application Monitoring
- Infrastructure & Operations
- Claims / Billing (Medicaid, UI)
- HIPAA/PCI/FISMA Compliance
- Security & Fraud Identification
- Data Visibility Provider, Family, Economic
- Mobile Apps & Device Insights

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Proven at 7,400+ Customers in 90+ Countries

Over 2/3 the Fortune 100

Cloud and Online Services

Education

Energy and Utilities

Financial Services and Insurance

Government

Healthcare

Manufacturing

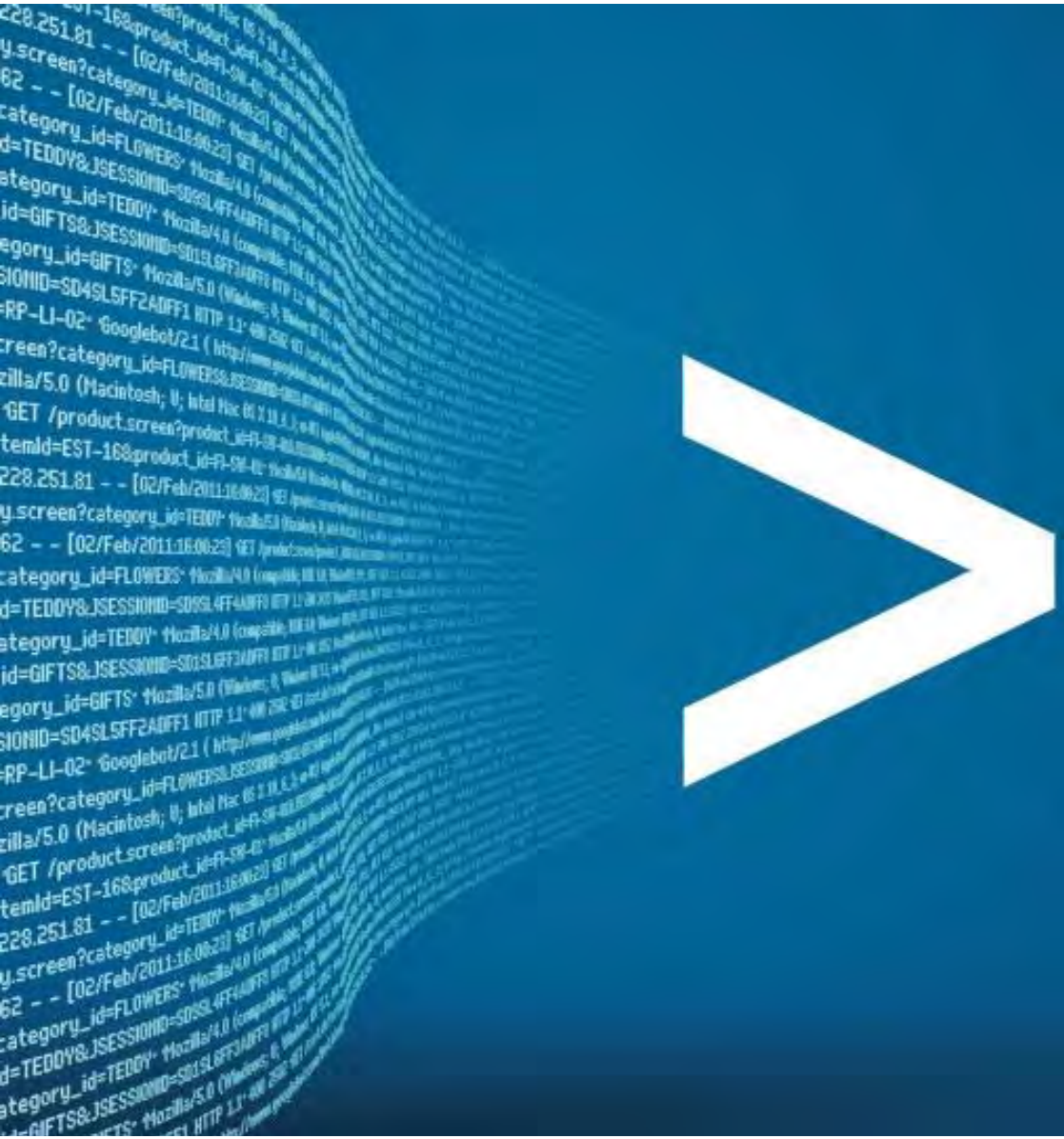
Media

Retail

Technology

Telecommunications

Travel and Leisure



Thank You

splunk>

Transforming the Business of Government through Information and Insight

IBM Point of View

Don Bahash
Sr. Consultant – Government
IBM Software Group
dbahash@us.ibm.com

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Today's Agenda

- Information Led Transformation
- U.S. Federal Big Data Commission Report
- Key Use Cases in State and Local
- Client Case Stories
- IBM Security & Privacy for Big Data

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Something Profound is Happening

Continuous transformation is the new normal

Business models are under constant threat

- **Shift of power to the consumer and the citizen**
- **Accelerating pressure to do more with less**
- **Great relationships trump great products**

Convergence of technology disruptors creates opportunity

…not changing is the same as losing

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Harnessing All Data Creates a Challenge – And an Opportunity

Yet requires a shift in thinking and an evolution of approach

All people
All departments
Experts and non-experts
Executives and employees
Partners and customers

All perspectives
Past (historical, aggregated)
Present (real-time)
Future (predictive)

All decisions
Major and minor
Strategic and tactical
Routine and exceptions
Manual and automated

From
structured, linear, repeatable, IT-driven, information delivery

To
creative, dynamic, iterative, business-driven analytics environment

Data | Media | Content | Machine | Social

All information

…analytics is moving closer to the data

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Societal, technological, economic and regulatory forces are intensifying Government missions and business challenges

Increased Threats to Public Safety

From terrorism to armed conflict to pandemics to natural disasters, the character of threats is changing. High crime rates affect quality of life and economic development of our cities. Natural disasters and emergencies need better response methods.

Rising Environmental Concerns

Societies and governments are becoming more attuned to what the earth can provide and what it can tolerate. Managing scarce resources and protecting the environment will continue to grow in importance

Increased Citizen Expectations and Engagement

Citizens are demanding greater participation in public affairs and are seeking opportunities to actively participate in shaping the policies that affect their lives. Citizens are demanding greater transparency and accountability from their governments

Rapid Urbanization

It is estimated that 100 million people are moving to cities every year. As city populations increase, so does the demand for government services and supporting infrastructure

Changing Demographics

The populations in many countries is aging, having a profound effect on demand for services, the tax base and the employee base.

Continued Economic and Budgetary Pressures

While the world economy is beginning to recover from the recent recession, government budgets in many countries will continue to be constrained

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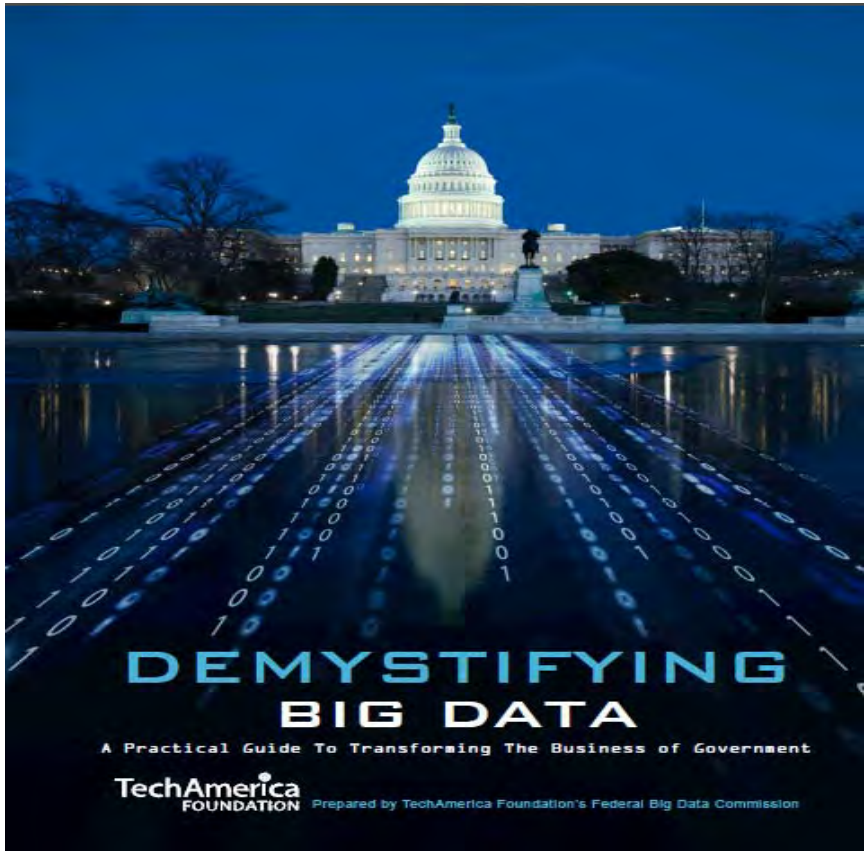
U.S. Federal Big Data Commission Report Summary

Released October 2012

- Sponsored by the White House to bring together experts from Government, Academia and Industry
- The report seeks to “De-Mystify” Big Data, and focus on the mission and business value it will deliver
- Frame the discussion through the lens of early best practices, and key lessons learned
- Extract recommendations on how to assess potential operational business value; Provide a practical, experience based roadmap for getting started



Source: http://www.techamericafoundation.org/bigdata

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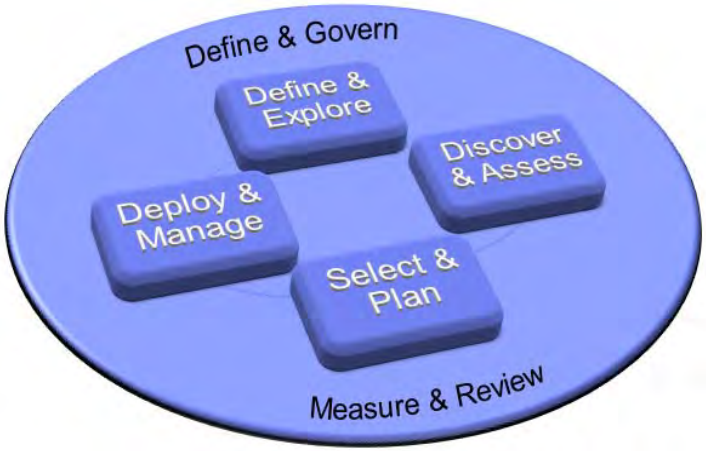
What We Have Learned

A Deliberate Approach Is Required

These experiences reveal a great irony -- that while the impact of Big Data will be transformational, the path to effectively harnessing it is not. The journey is evolutionary versus revolutionary, incremental and iterative

– Demystifying Big Data, TechAmerica Report, October 2012



1. Understand the "Art of the Possible".
2. Start with a clear mission or business requirement, and fully define a discrete set of use cases.
3. Take inventory and understand your data assets.
4. Assess your current set of capabilities and technical architecture against what is required to support your initial use cases.
5. Explore which data assets can be exposed for public consumption, to drive innovation and the development of Big Data solutions.
6. Focus on developing skills and talent
7. Do not seek to develop new policies on governance, security and privacy. Rather, help agencies understand how current policies apply

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Key Use Cases in State & Local Government

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Leading The Way

Government Agencies are Harnessing the Value in Their Information

Smarter Revenue and Tax Compliance	**Increased ability to recover funds from erroneous returns to over US$200 million**
Smarter Social Services	**Direct savings of over US$11 million through waste reduction**
Social Media Analytics	**Efficiently read, process and analyze large volumes of political debate-related, public feedback in real-time**
Smarter Healthcare Analytics	**High performance analytics across a vast volume of data to genetic and environmental factors contributing to multiple sclerosis**
Smarter Law Enforcement	**30% Reduction in Violent Crime**

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Key Government Use Cases for Information Led Transformation

Social Program Effectiveness

How can I accurately predict citizen needs, manage program performance, improve outcomes and fight fraud?

Analytics for Budget, Finance & Tax Revenue

How can I optimize revenue collection, identify non-compliance, deter fraud, and enforce strict regulatory compliance?

Public Health and Policy

How can we improve the health of the State's population, inform policy, provide coordinated care and manage costs?

Crime Prediction & Prevention

How can I reduce crime and security incidents while efficiently deploying limited resources?

Threat Prediction & Prevention

How can I connect the dots and apply analytics to anticipate, discover, evaluate and respond to threats in real-time?

Environmental Monitoring & Management

How can I efficiently manage scarce resources and protect the environment?

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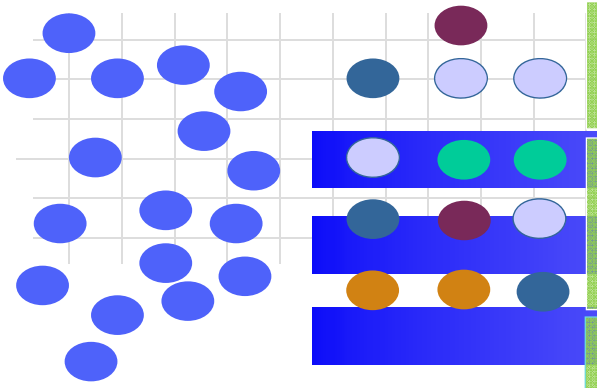
Analytics maturity is a journey that IBM can help accelerate



Structured data and unstructured content - made consumable and accessible appropriately

Entity Analytics	Descriptive Analytics	Predictive Analytics	Prescriptive Analytics	Content Analytics	Web/Social Analytics
Who is who?	What is happening?	What could happen? *Simulation*	How can we achieve the best outcome? *Optimization*		
Who knows who?	How many, how often, where?	What if these trends continue? *Forecasting*			
What is the nature of their relationship ?	What exactly is the problem?	What will happen next if? *Predictive Modeling*	How can we achieve the best outcome and address variability? *Stochastic Optimization*	Extracting insight, concepts and relationships from unstructured volumes	Insights and intelligence from streaming data sources and the internet
How are persons, objects, locations and events connected?	What actions are needed?				

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Improving Social Programs Effectiveness

Clients

Family

Programs

Cases

Budgets

Service Providers

Payments

Gain a holistic view of client and family

Improve efficiency through streamlined case management

Reduce fraud, abuse and errors

Measure, monitor, analyze program performance and client outcomes

Payment Accuracy	*15 to 18% improvement*
Successful Program Completion	*18 to 20% improvement*
Untouched cases for 30 days	*15 to 20% decline*
No. of improper payments made	*15 to 18% decline*
Employee Productivity	*18 to 25% improvement*

Achieving Business Maturity

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North Carolina Tackles Improper Payments in Medicaid

Analyzes claims of nearly 2 million patients and 60,000 providers

north carolina medicaid

Program Integrity Challenges

From 2009 to 2011, Outpatient Behavioral Health has seen a significant increase in number of providers paid high dollars for assessment and therapy

- Total Behavioral Health Expenditures are $2.4 billion
- Outpatient Behavioral Health is $640 million (27%) of that total

Identified over $221M in suspicious claims from the initial 250 providers targeted

The State handles approximately $12 billion in annual paid claims (2009)

Suspected Schemes

- Billing for services not rendered
- Billing for excessive recipients per workday
- Excessive billing beyond a 24 hour period
- Billing for care and services that are provided by an unauthorized, unqualified, or unlicensed person
- Failure to provide supervision of staff when required Program

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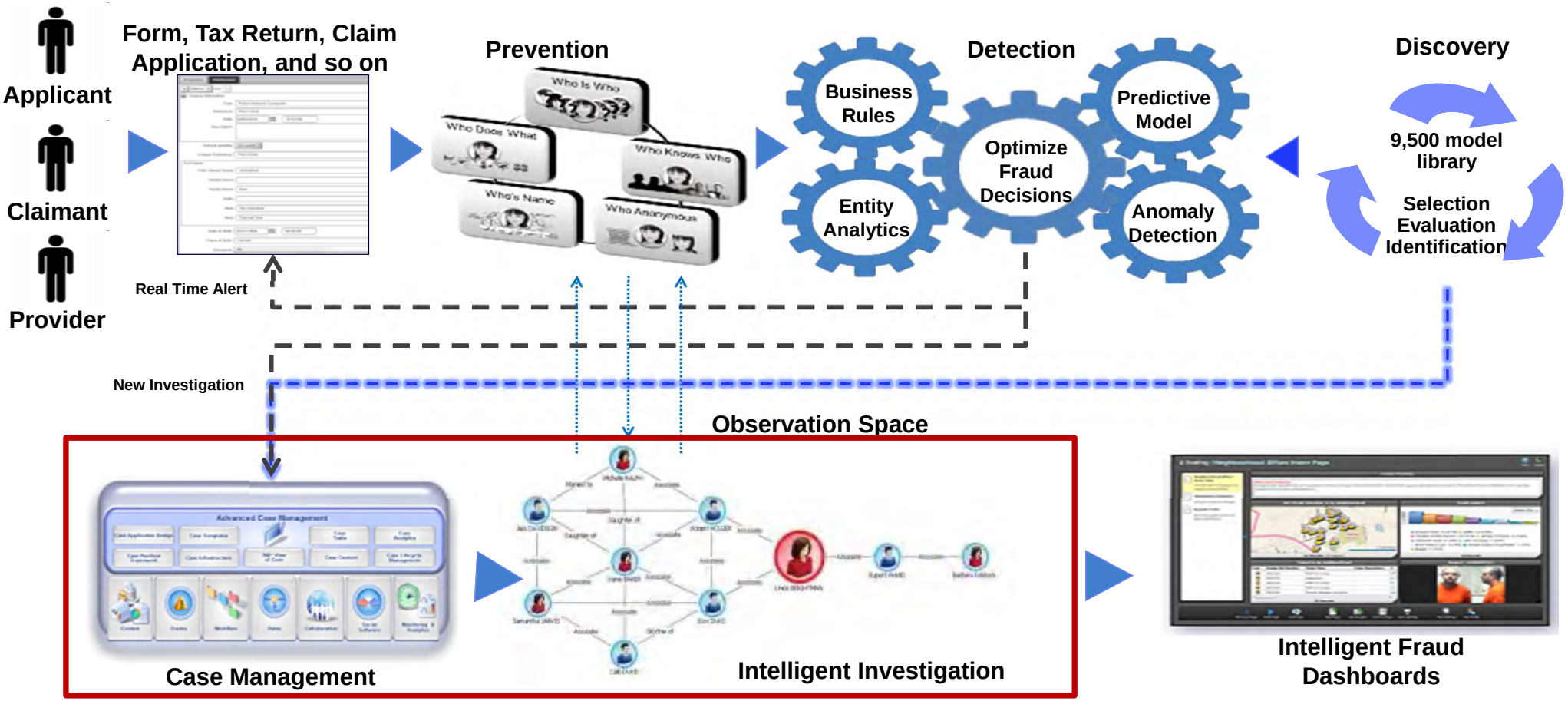
Driving Program Integrity through Fraud Management



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Improving Public Health and Informing Policy

Patients

Providers

Facilities

Health Plans

External Research Data

Aggregate data sources to help identify population health characteristics for policy

Analyze claims and encounters for managed care transformation

Optimize outcomes based on health patterns and treatment alternatives

Analyze genomic markers for disease management

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Population Risk Analytics	***Optimize Outcomes***
Similarity and Cohort Analytics	***Utilization Rates***
Effective Cost of Healthcare	***Public Health Policy Determination***

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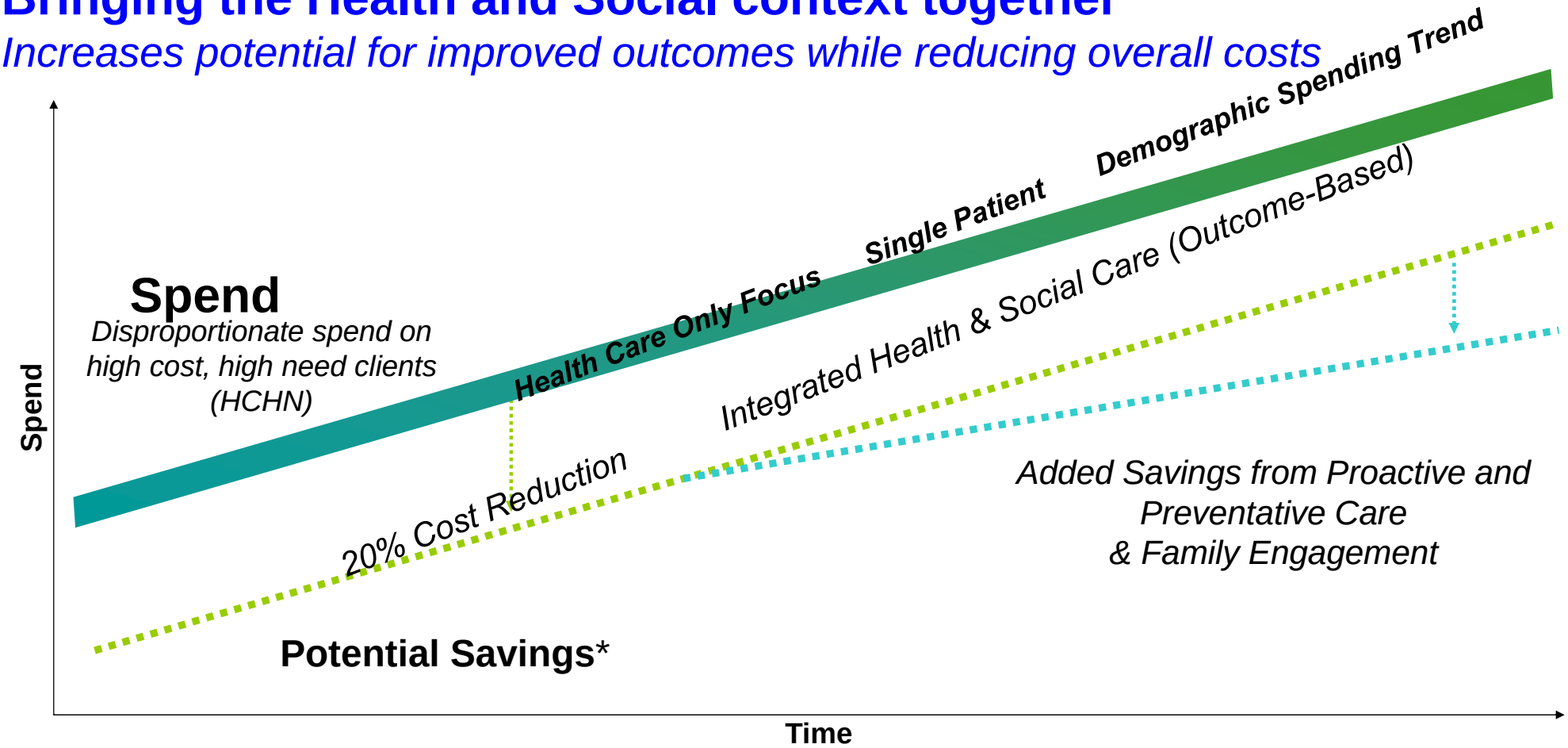
Bringing the Health and Social context together

Increases potential for improved outcomes while reducing overall costs



HCHN – High Cost, High Need

Spend and enrollment from http://www.health.ny.gov/health_care/medicaid/program/medicaid_health_homes/docs/nys_health_home_spa_and_app_summary.ppt

** HCHN Care Coordination pilots have shown a >40% reduction in visits and costs – example see http://www.pbs.org/wgbh/pages/frontline/doctor-hotspot/*

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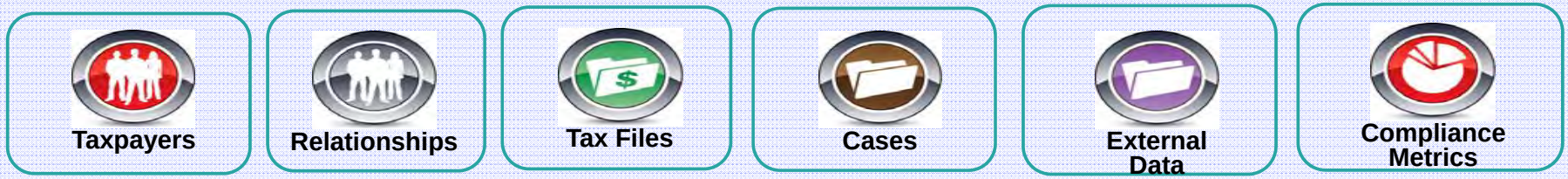
Optimizing Revenue Management and Tax Compliance



Identify and link taxpayer identities

Identify and segment non-filers, under-reporters and under-payments

Manage audit and collections cases

Analyze compliance and outcomes

Audits completed vs Audit Revenue	*10 to 15% improvement*
Dollars Collected from flagged returns	*10 to 15% improvement*
Average Age of Return Exceptions	*8 to 10% decline*

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Reducing Fraud and Enabling Better Outcomes

New York State Dept. of Taxation and Finance

New York State e-file www.tax.ny.gov

Decreased revenue drain due to improper payments of ***$200 Million annually, $1.2B since inception***

Challenge Enhance audit case selection methods for detection of audit issues at the time a return is processed.

Solution IBM's Tax Audit and Compliance System applies business rules and predictive models to categorize and score returns nightly and identifies the 'next best case' for audit selection.

Benefits
- Increase in revenue from refund denials over an 8 year period
- Increased screener and auditor productivity
- Enhanced taxpayer correspondence

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Strengthening Public Safety through Crime Prediction and Prevention

Persons

Objects

Locations

Events

Aggregate data sources to help ID individuals, analyze crime patterns

Dynamic ability to redeploy resources in response to crime patterns and trends

Predict potential criminal patterns based on events, weather and historical data

Harness social media for real-time situational awareness

Call Response Time	*15 to 20% reduction*
UCR Part One Crime	*16 to 20% reduction*
Case Closure Rate	*8 to 12% increase*
Average Time to Close Case	*13 to 18% reduction*
Average Time to ID Suspects	*13 to 18% reduction*
Overtime Costs for Patrol	*31 to 50% reduction*

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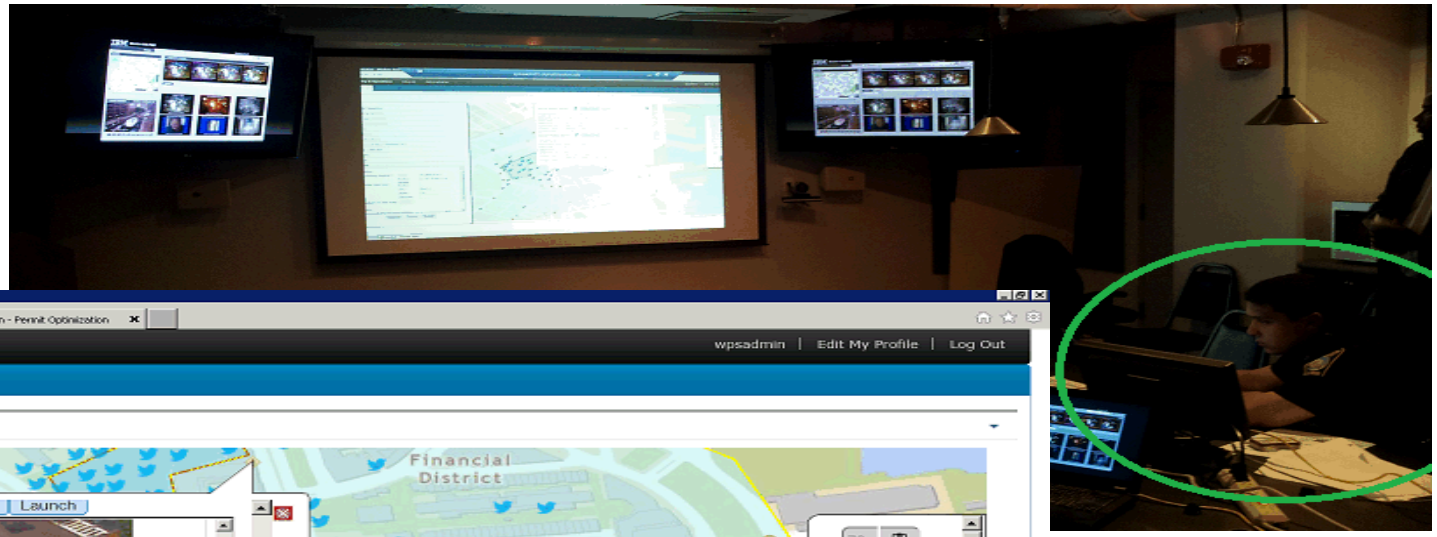
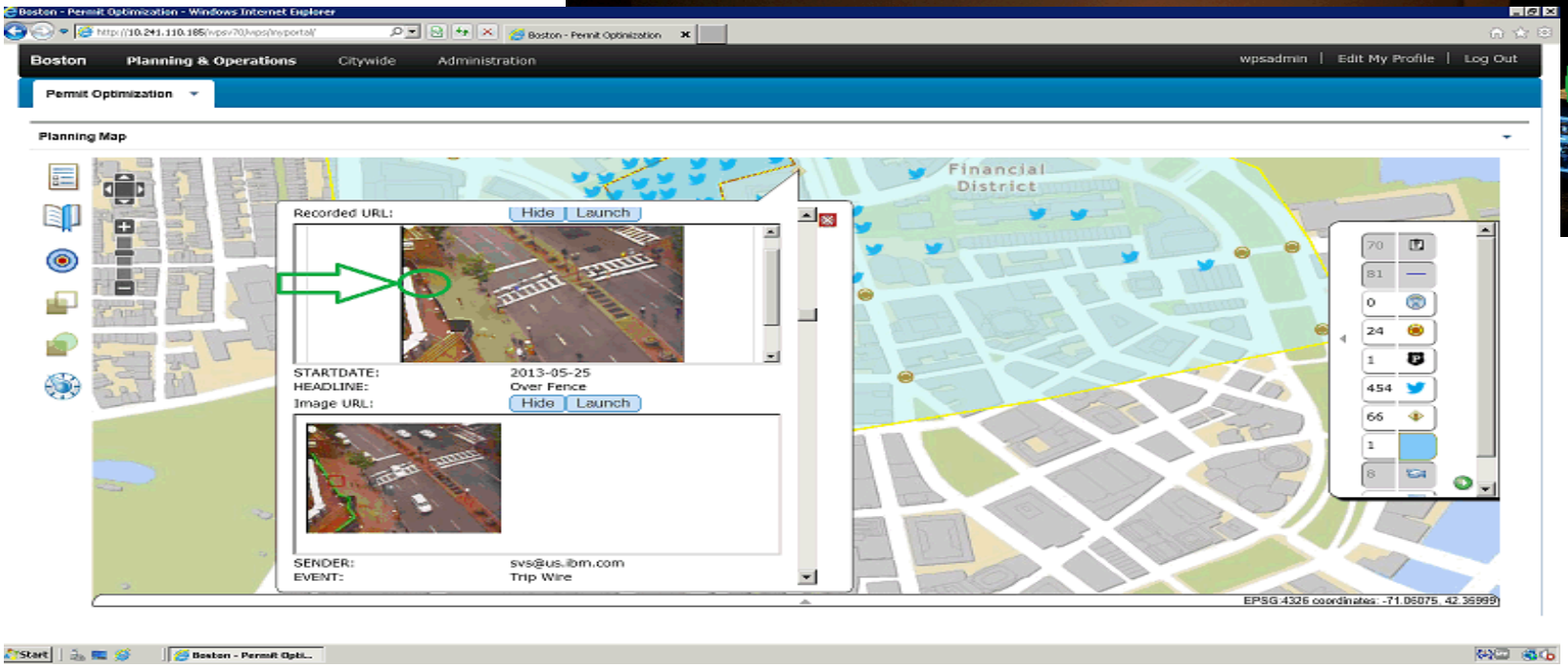
City of Boston

Video Surveillance
Proof of Concept
with streaming data





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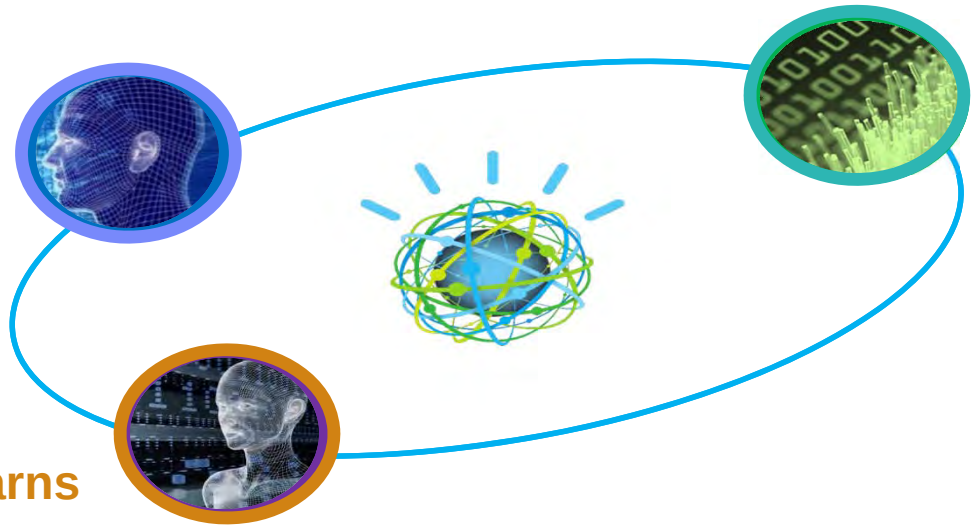
The Future: IBM Watson

Combines transformational technologies for cognitive computing

1 **Understands natural language and human communication**

2 **Generates and evaluates evidence-based hypothesis**



3 **Adapts and learns from user selections and responses**

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THINK

BIG

Arkansas
Chief Technology Officer

Quarterly IT Leader Meeting

July 9, 2014

Arkansas Cooperative Extension Service