



# Demystifying Big Data

## *Government Agencies & The Big Data Phenomenon*



Today's Discussion

*If you only remember four things*

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**1** *Intensifying business challenges coupled with an explosion in data have pushed agencies to a tipping point*

**2** *Agency leaders embrace this, are defining the new requirements, and are demonstrating success*

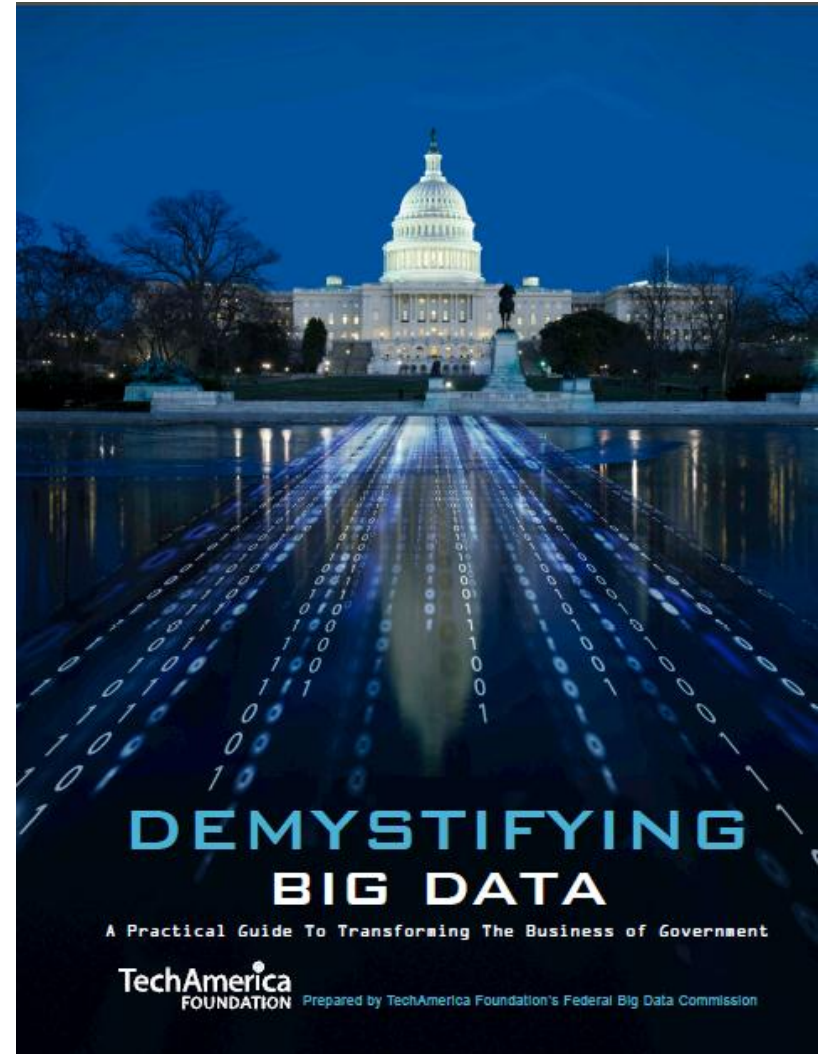
**3** *The path to success lies in starting with business challenges and imperatives, versus the technology.*

**4** *The time is now – the experience & assets exist to help you define a strategy and a roadmap to guide your transformation*

## Quick Summary

### Big Data Commission Report Released 3 October

- The Commission was formed in May
- IBM & SAP Named as Chairs
- Brought together experts from Government, Academia and Industry
- The report seeks to “De-Mystify” Big Data, and focus on the business and mission value it will deliver
- Intent is to Provide clear recommendations and a roadmap for getting started



Big Data Commission  
*Scope & Approach*

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**The Big Data Commission will provide guidance to the White House and Congress on the use of Big Data to improve government efficiency, services and capabilities, and drive innovation and the economy.**

***Overall Approach***

- 1. Approach the work from the perspective of Government Business/Mission Imperatives, and the potential value that leveraging Big Data can provide.***
- 2. Frame the discussion through the lens of early best practices, and key lessons learned***
- 3. Extract recommendations on how to assess potential operational business value; technical underpinnings; policy, security, privacy and governance considerations***
- 4. Provide a practical, experience based roadmap for getting started***

## Something Profound is Happening

*Continuous transformation is the new normal*

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### 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*

Government's Must Lead In The Face of Global Challenges –  
*Key Drivers Of Transformation Creating New Expectations*

**Key Drivers of Transformation**



**Required Business Outcomes**



**Intensifying Information Requirements**

- Recognize and optimize service to the citizen, soldier, veteran, and patient at any point of contact
- Leverage improved insight to manage effectiveness, predict future demands and requirements
- Pro-actively recognize and mitigate patterns of fraud, abuse and non-compliance
- Enabling defense, intelligence and law enforcement organizations to achieve situational awareness
- Provide transparency to an ever more demanding public
- Share information across and between agencies

# What Is Big Data, Really?

*Big Data is all data from everywhere - the next natural resource*

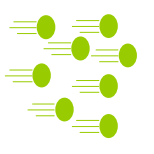
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*“We have for the first time an economy based on a key resource [Information] that is not only renewable, but self-generating. Running out of it is not a problem, but drowning in it is”  
-- John Naisbitt*



**25 zettabytes** worth of data will exist by 2020

## Volume




**30 billion** RFID sensors and counting

## Velocity



**80%** of the world's data is unstructured

## Variety



**1 in 3** business leaders don't trust the information they use to make decisions

## Veracity

*...harvesting this resource requires mining, refining and delivering*



Agencies Leading The Way  
*Optimize decision making with actionable insights*

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**Prior Path to Success**

**Today's Leaders**





Leading The Way  
*Government Agencies Harnessing The Value of Big Data*

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Smarter Revenue:  
Tax Compliance



Advanced return review analytics through *Fraud Analytics*

Smarter Social Services



In Four Hours Identified \$140M in Improper Payments

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 spot hidden trends and relationships

Smarter Law Enforcement



30% Reduction in Violent Crime

Leading The Way  
*Government Agencies Harnessing The Value of Big Data*

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National Border & Security



State of The Art covert surveillance system based on Streams platform

Smarter Social Services:  
Smarter Health Care Analytics



Optimized Neo-Natal care through early detection, prevention, testing hypotheses

Smarter Cities



Reduced traffic congestion, shorter travel times, enhance emergency services

Smarter Energy:  
Wind Infrastructure



Optimized wind turbine energy production with longer life span and reduced maintenance

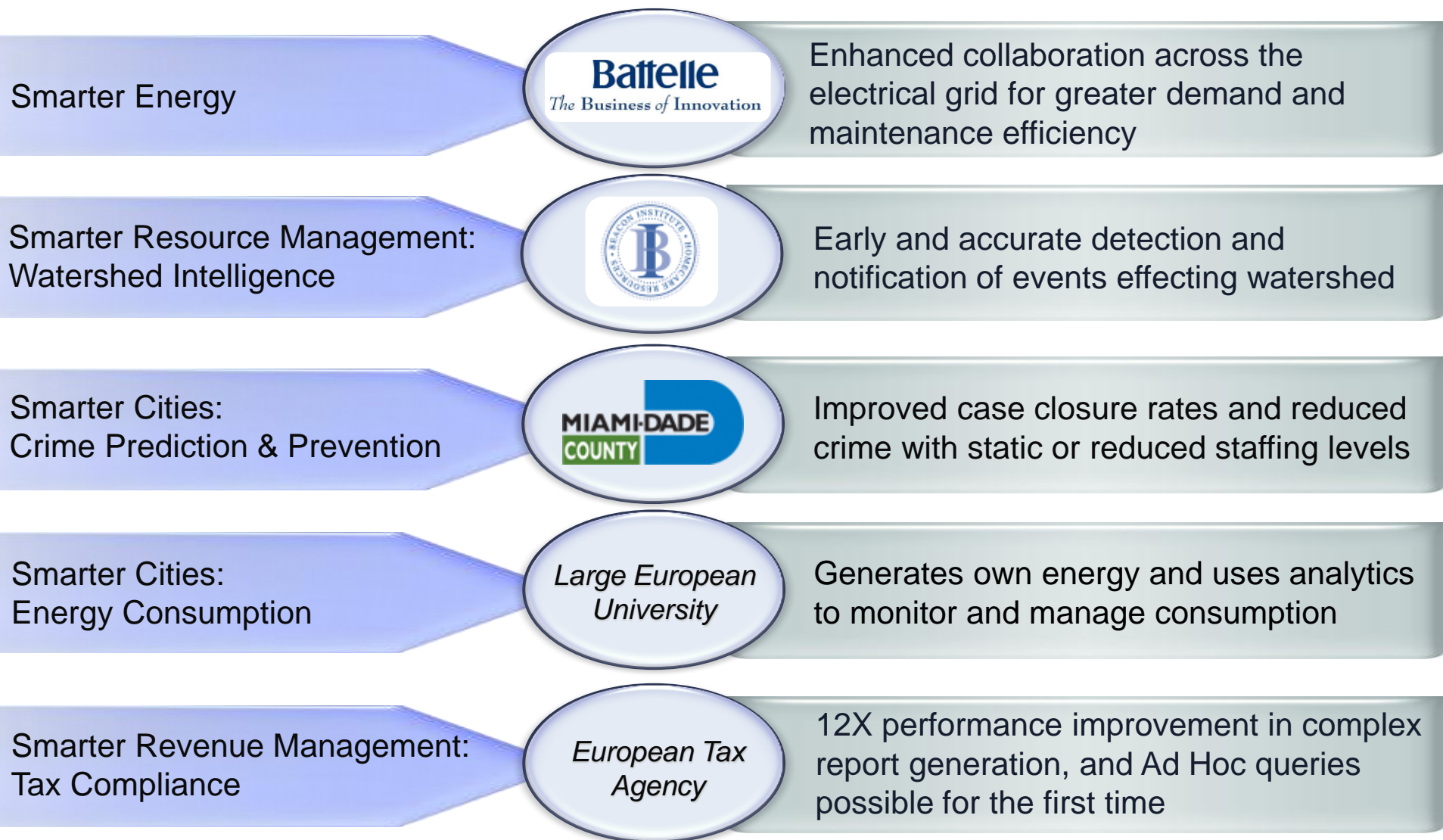
Smarter HealthCare Analytics



High performance analytics across a vast volume of data to spot hidden trends and relationships with Netezza

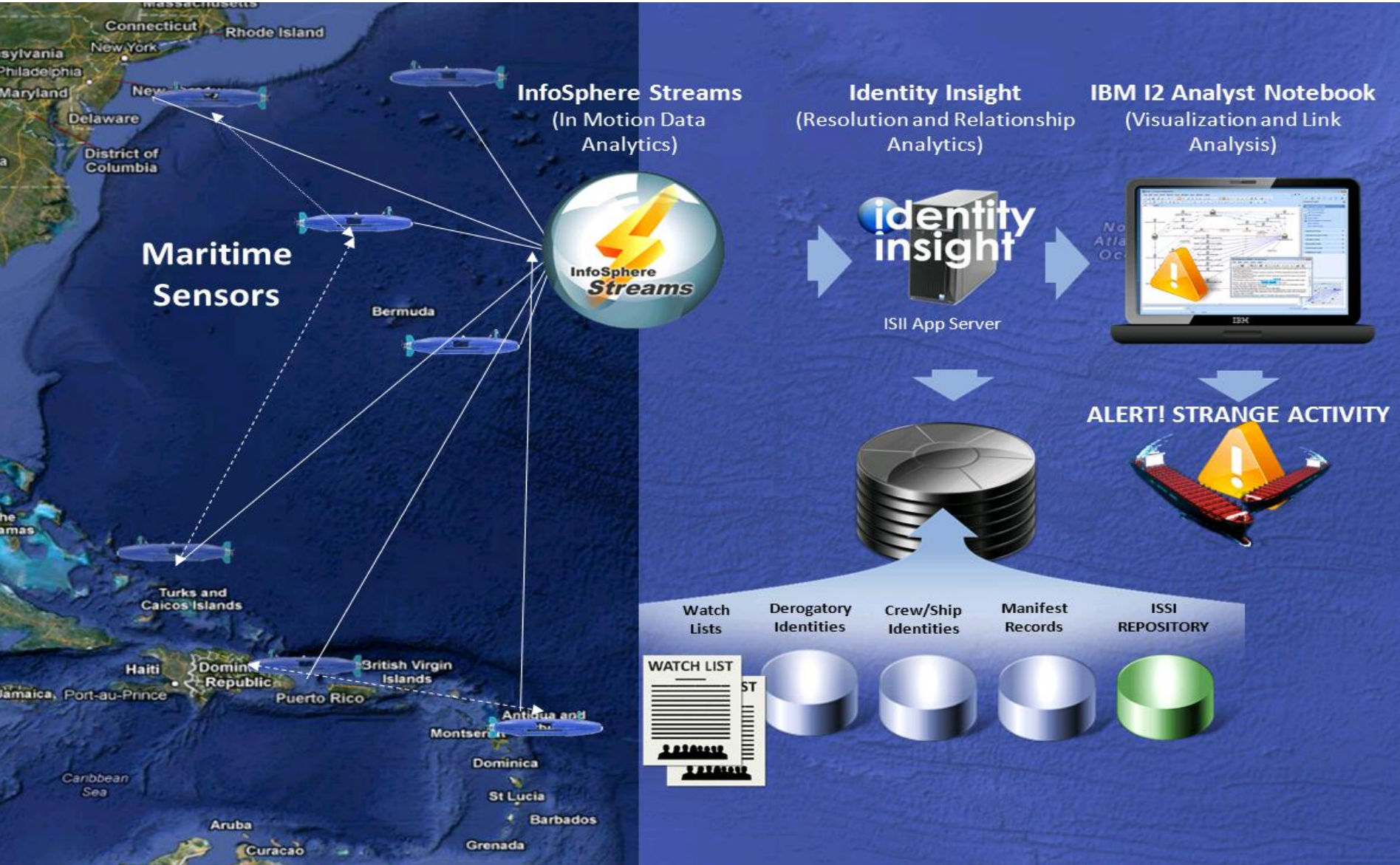
Leading The Way  
*Government Agencies Harnessing The Value of Big Data*

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## Leading the Way *Naval & Maritime Threat Intelligence*



## Big Data Commission Report

### *Key Findings*

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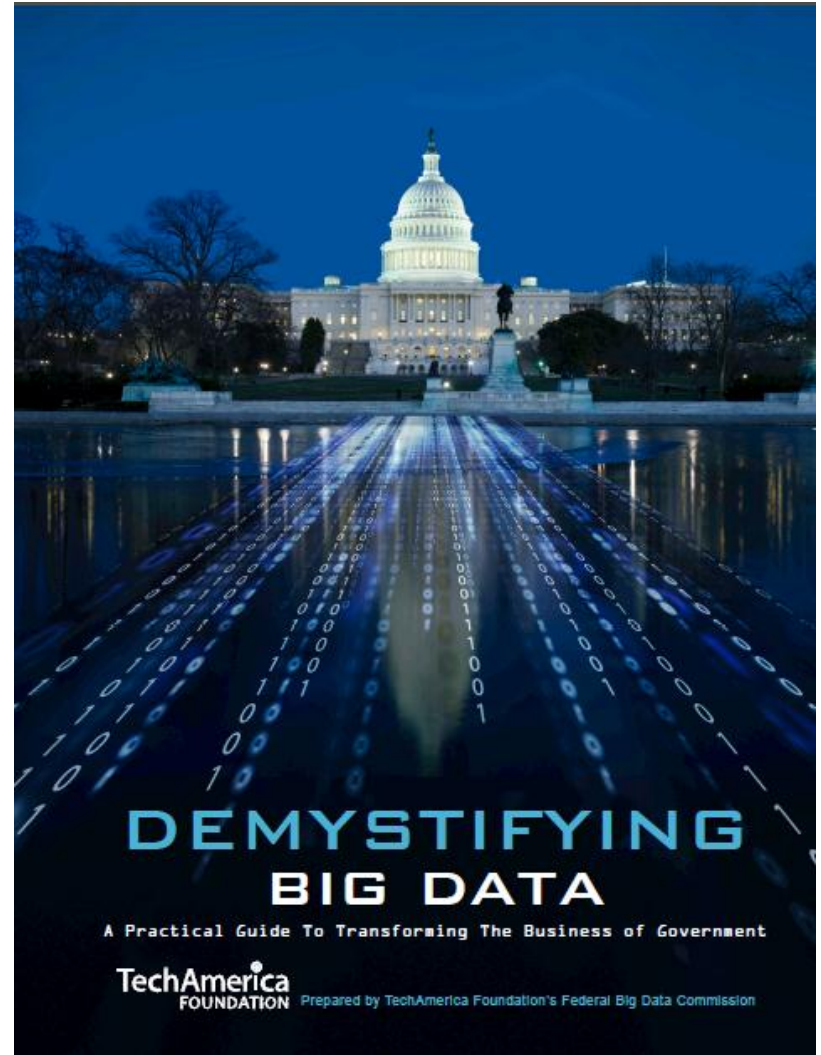
Big data has the potential to profoundly transform Government and the society that it serves.

The great paradox is that as Big Data is continually produced and information is create, we struggle to keep pace. Our ability to make sense of it is reduced.

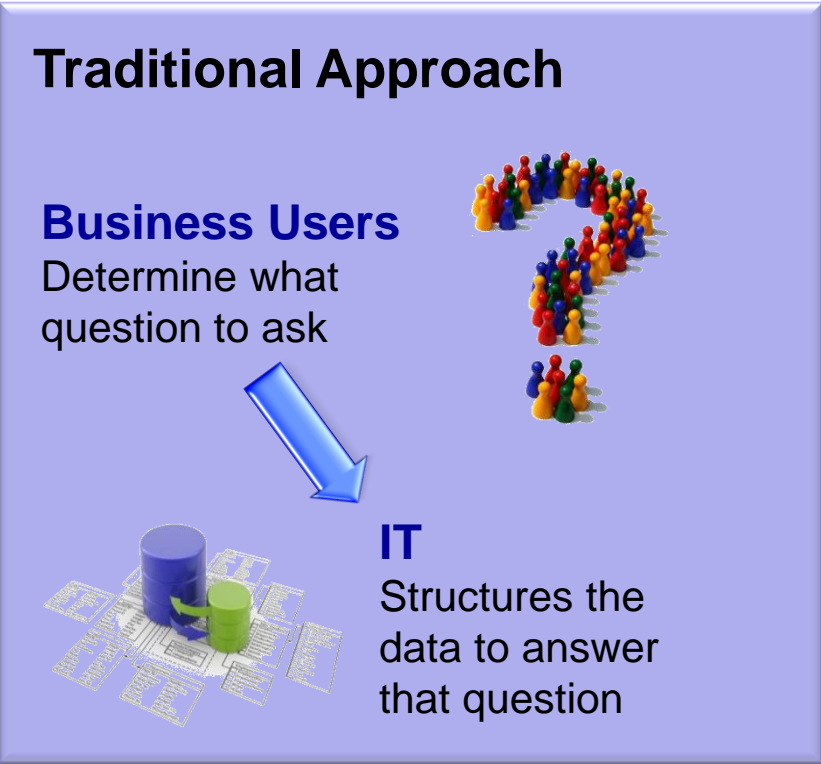
Leaders across government, academia and private industry have made investments, have demonstrated success, and we now know what success looks like.

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

It starts with understanding the business requirement, the data available, and the “Art of the Possible”



What We Have Learned  
*Big Data Requires A Different Approach – It Breaks The Traditional Analytics Model*



**Structured & Repeatable Analytics**

- Query Based -- Question Drive Data
- Citizen Surveys - Push
- Monthly, Weekly, Daily
- Data At Rest

**VS.**

**Iterative & Exploratory Analytics**

- Autonomic -- Insight Drives Answers
- Citizen Sentiment -- Pull
- Persistent & Ad Hoc
- Data In Motion



## What We Have Learned

### *A Set of Capabilities That Move the Analytics Closer to the Data*

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New analytic applications drive the requirements for a Big Data platform

- Integrate and manage the full variety, velocity, and volume of data
- Apply advanced analytics to information in its native form
- Visualize all available data for ad-hoc analysis
- Development environment for building new analytic applications
- Workload optimization and scheduling
- Security and governance

## Analytic Applications

|                   |                                |                   |                 |                         |                      |
|-------------------|--------------------------------|-------------------|-----------------|-------------------------|----------------------|
| BI /<br>Reporting | Exploration /<br>Visualization | Functional<br>App | Industry<br>App | Predictive<br>Analytics | Content<br>Analytics |
|-------------------|--------------------------------|-------------------|-----------------|-------------------------|----------------------|

## IBM Big Data Platform

Visualization  
& Discovery

Application  
Development

Systems  
Management



Accelerators

Hadoop  
System



Stream  
Computing



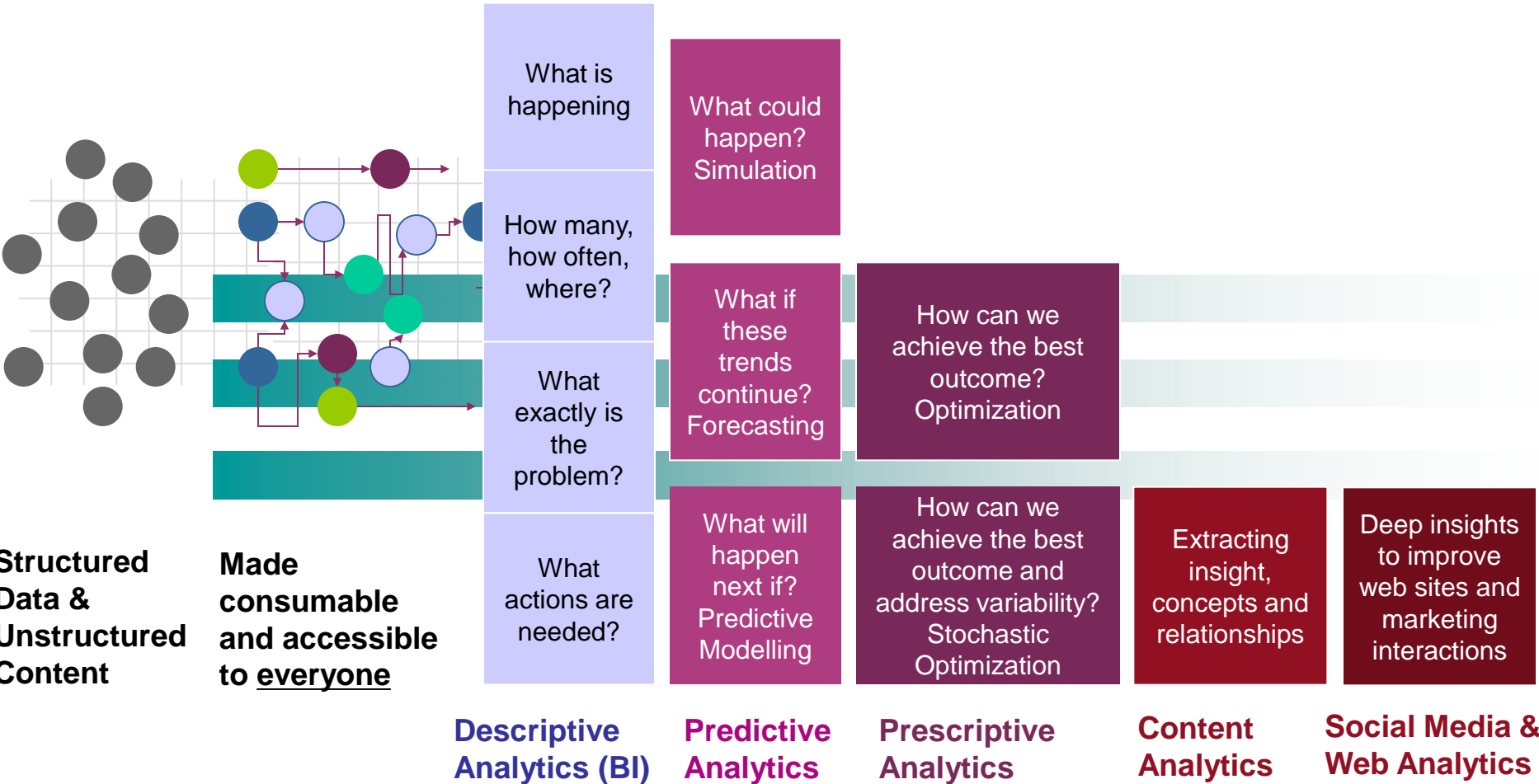
Data  
Warehouse



Information Integration & Governance



Taking It To The Next Level  
*Applying advanced analytics to improve decision making*



## Big Data Commission

### *Getting Started – Recommendations For Agencies*

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Big Data is here -- and it is accelerating.

For government agency leaders focused on taking the first steps, the Commission makes the following recommendations:

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.

What We Have Learned  
The Key Lies in Building Trusted Information Is Critical -- On Multiple Levels



**Insightful**

Comprehensive analytics to drive new meaning from your data

*Can I extract new Insight to make it all worthwhile?*



**Governed & Secure**

Rules are in place and tools are deployed to limit visibility, secure sensitive information, and protect privacy

*Can I Trust My Partner and My Own Agency?*



**Accurate & Complete**

Complex and disparate data transformed, cleansed, reconcile and delivered

*Can I Trust The Information?*

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