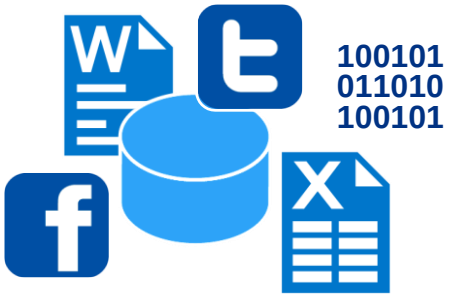
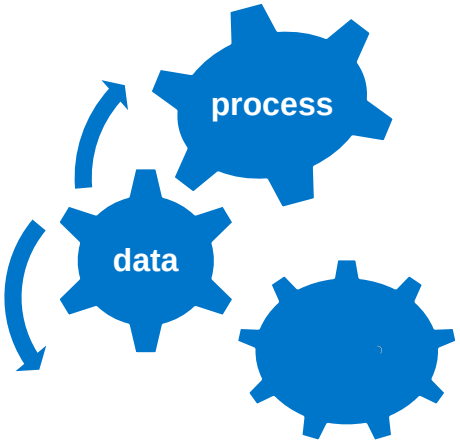
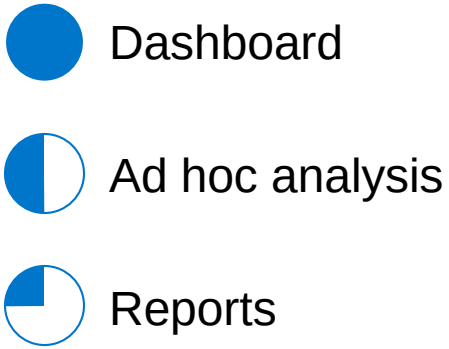

Big Data
Discussion

What is Big Data?

Gaining Instant Insight from data in the format you need for better decisions







Gather All Relevant Big Data

Insight to Action

Data diversity formats make it difficult to analyze

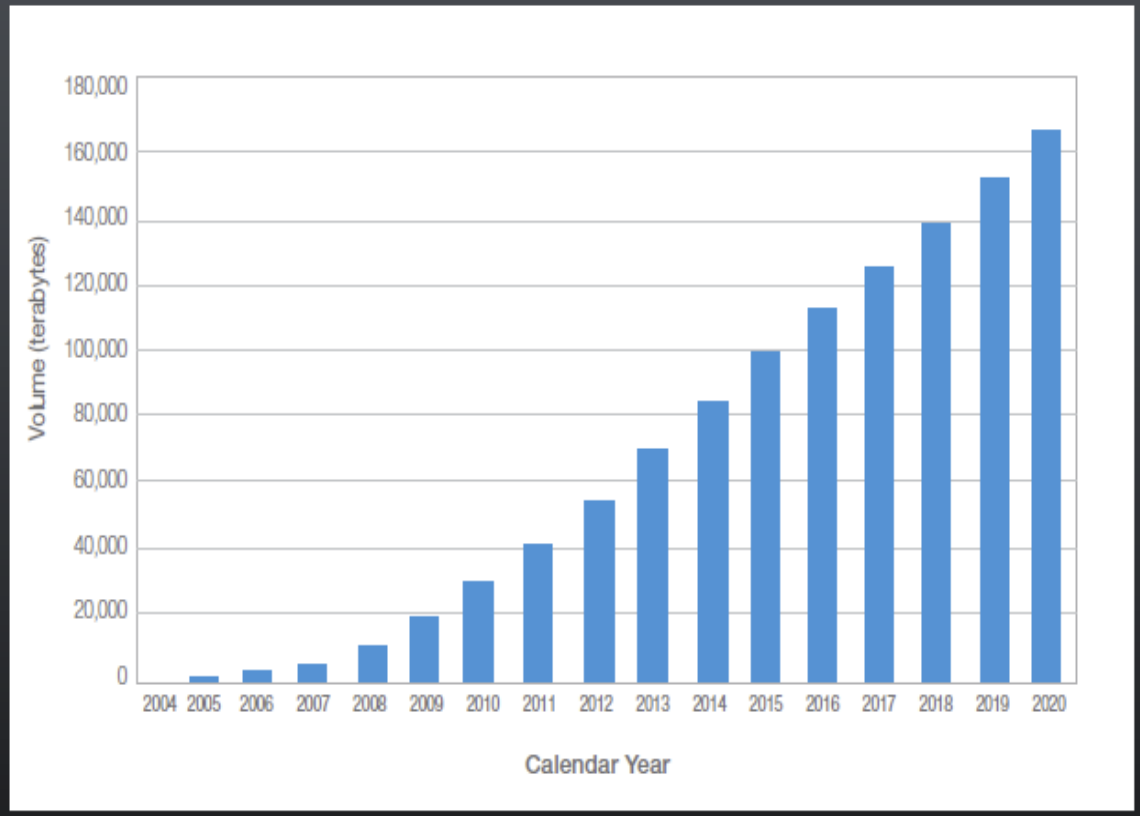
Pressure to gain insight quickly from data

Need to determine the right action from many valuable insights

Exponential Data Growth

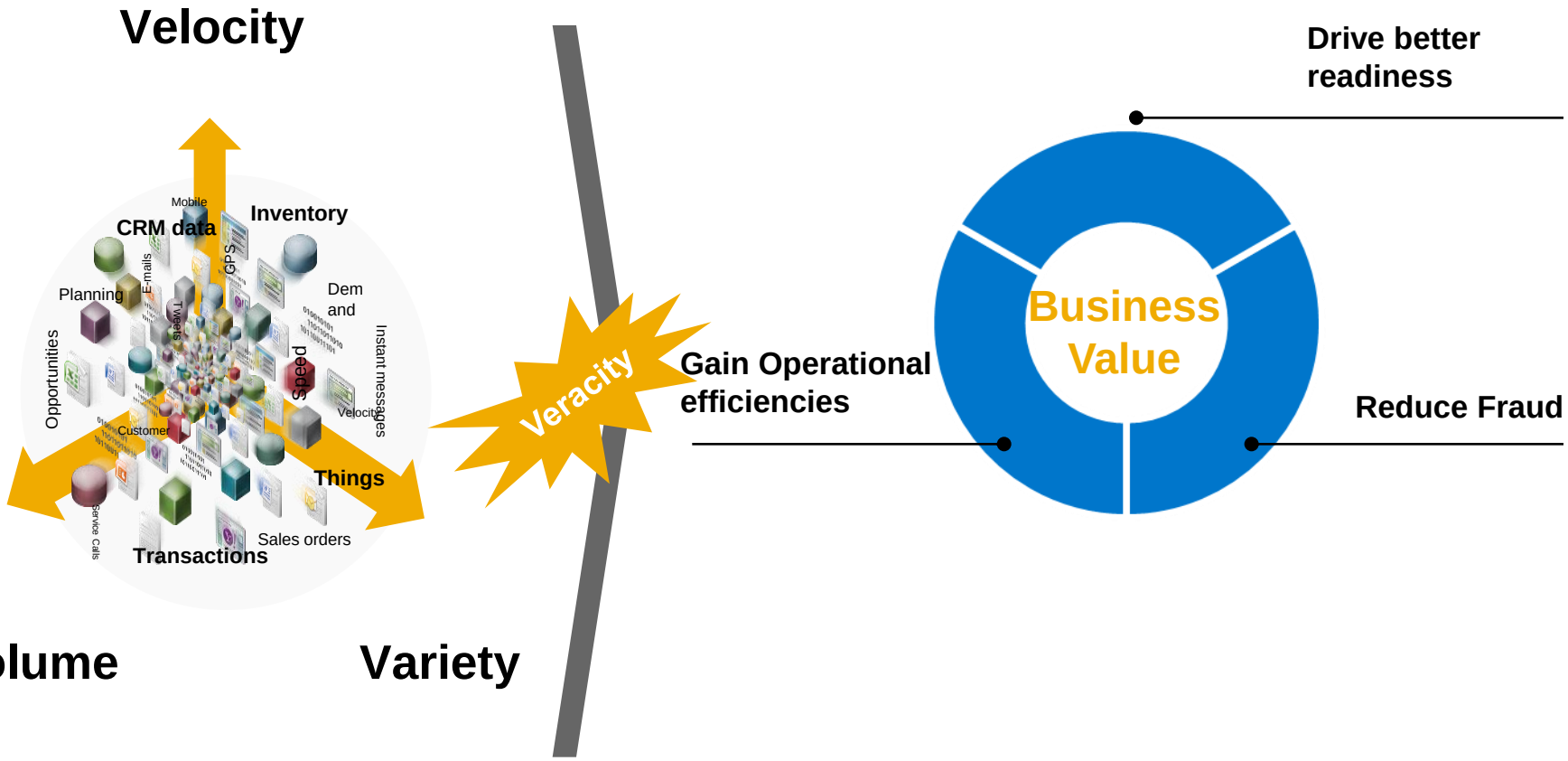
The National Oceanic and Atmospheric Administration's (NOAA) data management system predicts that the agency's amount of archived data will grow to more than 160,000 terabytes (TB) by 2020, due primarily to huge amounts of data being collected by remote sensing of the atmosphere, oceans, land and space.

Exponential data growth isn't limited to large federal agencies like NOAA. For example, the data storage capacity requirements of Clackamas County, Ore., increased from 4 TB in 2005 to around 60 TB in 2010.[19]



Source: http://celebrating200years.noaa.gov/visions/data_mgmt/side1_class.html

3V's… Versus 5 V's



What are the government problems that require insight with Big Data?

The Use Cases Are Endless

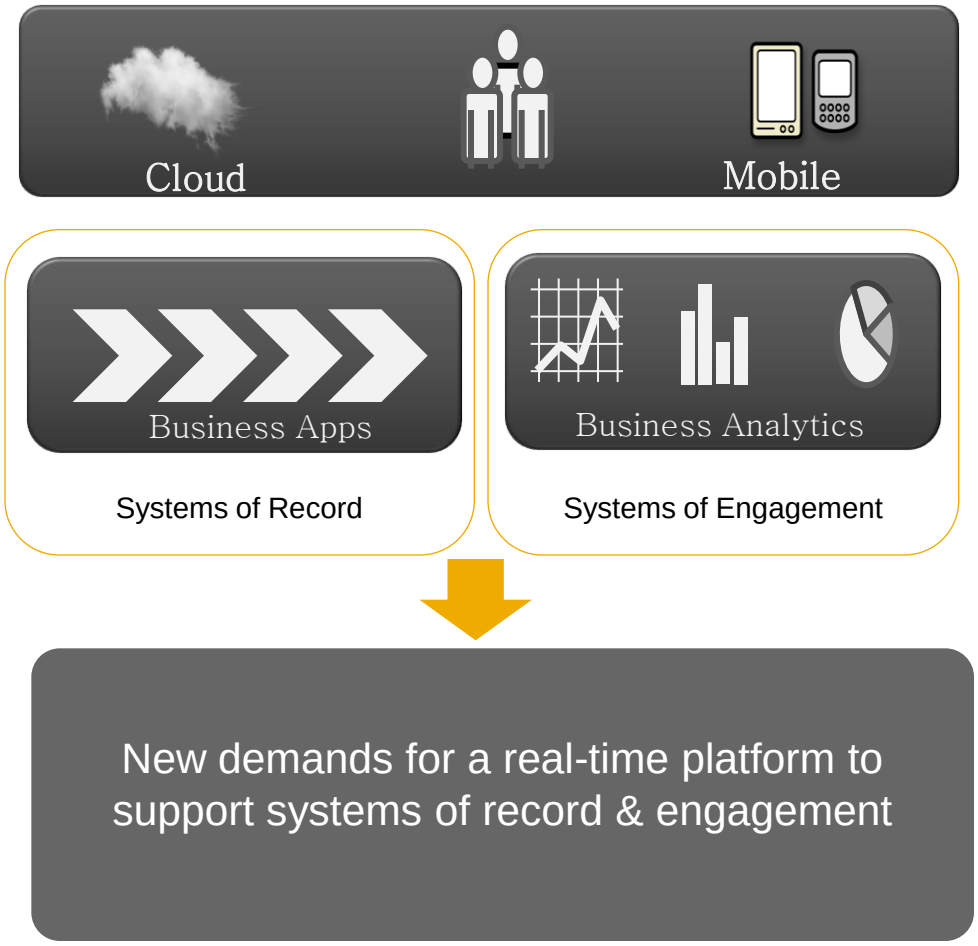
Optimize evacuation routes • Model economic growth • Real-time situational awareness • Boost cyber security • Expedite intelligence gathering • Rapid funds availability • Improve spend analysis • Enhance predictive maintenance • Increase asset availability • Better predict system failures • Sense & respond in real-time • Traffic impact • Stop Improper payments before they are paid• Model economic impacts • Predict weather impact • Understand Citizen Sentiment • Optimize use of excess energy • Pinpoint environmental risks • Understand crime trends •

Where/How Do We Start?

Setting an Enterprise Big Data Vision and Strategy

- Invest time up-front in identifying use cases for Big Data, segmenting the targeted users and understanding the Value
- Bring together mission areas, with IT stakeholders and executives…
- Learn by putting yourselves in the shoes of the end user or customers customer
- Focus on outcomes NOT outputs
- Identify, define and develop use cases that could create public value
  - Explore the data available within the government ecosystem for the use cases.
  - Assess your current capabilities and architecture against what is required to support your objectives

Rethink Technology and innovate without disruption…



Rethink Data – volume, variety, velocity, **Veracity**, complexity, quality, real-time interaction

Rethink flow of information – as fresh as it can be

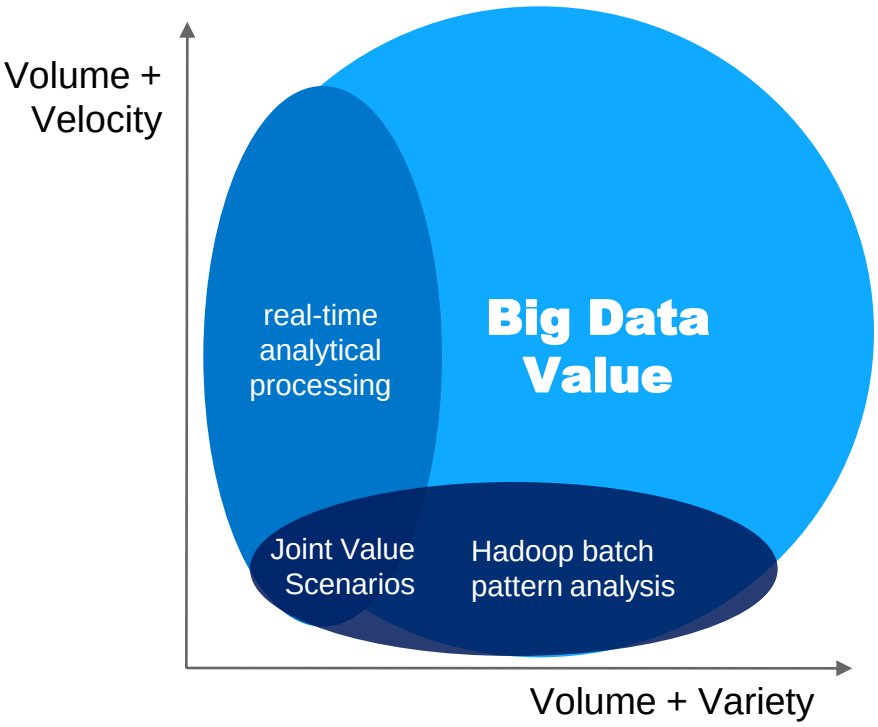
Rethink Processes – agility, within and across organizations

Rethink Collaboration – consumer like interface, **Mobile**, collaborate with colleagues for action

Rethink delivery – enable end-users the freedom and self-service they require to creatively answer the questions they are asked every day

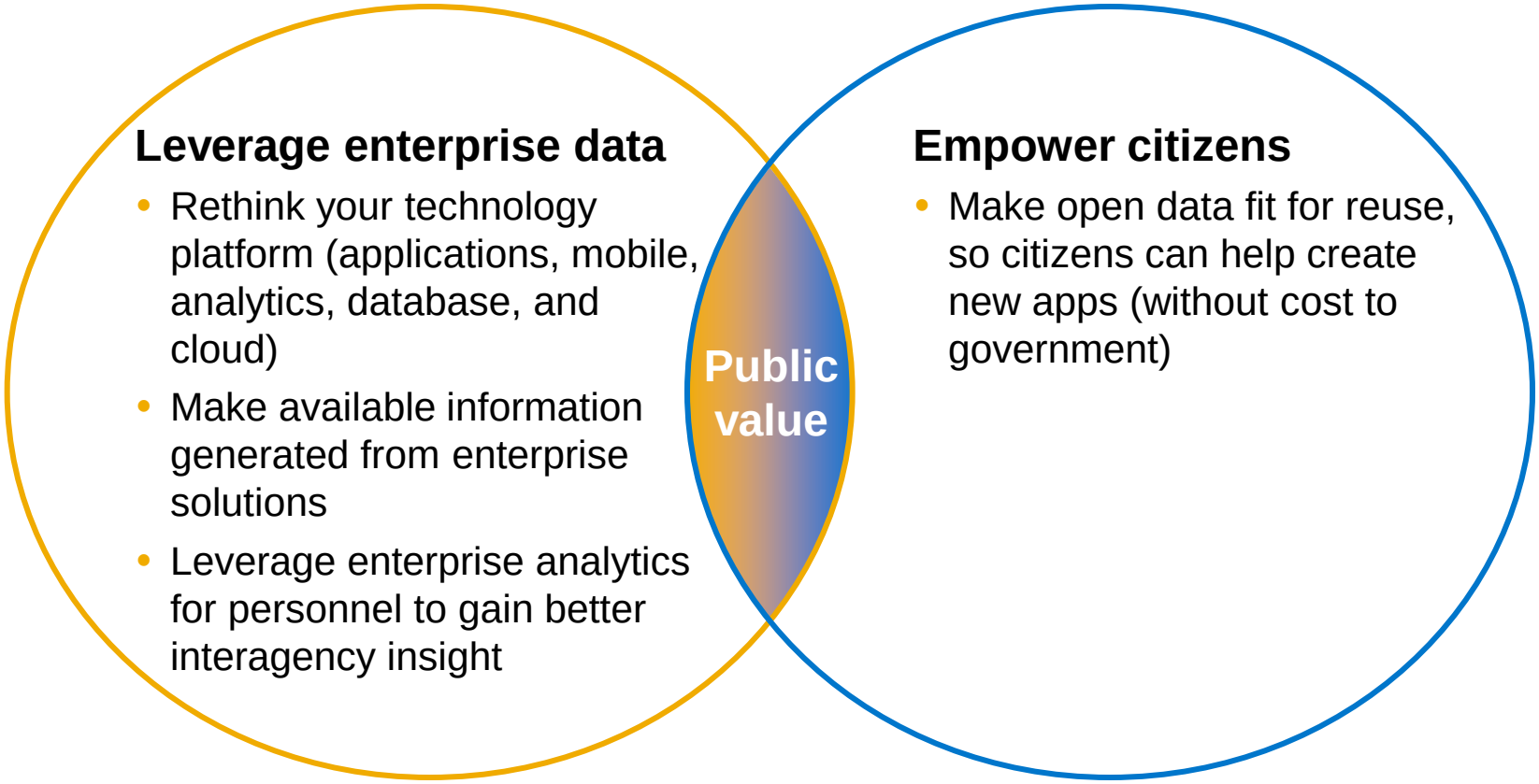
One Size Does Not Fit All

Understand how Big Data enables new ways to execute your mission



- Gain actionable, **real-time insights** in **business process context**
- Combine real time analytical processing with **batch deep behavior + pattern recognition**
- Deploy on a **Big Data Processing Framework** that is optimized across devices, technology combination and deployment options

Build and execute a holistic strategy in the context of maximizing citizen return on investment



Rethink how government can take advantage of new citizen engagement models

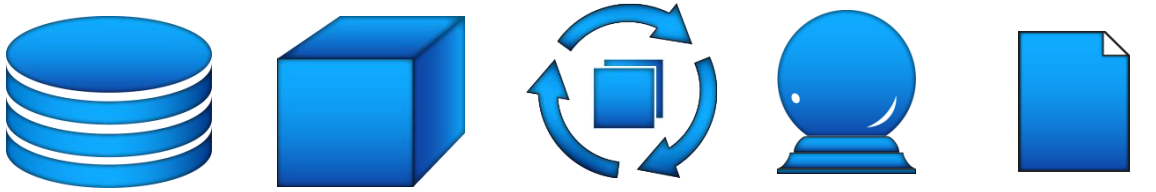
Move from reporting on the past to predicting the future

Traditional Analysis

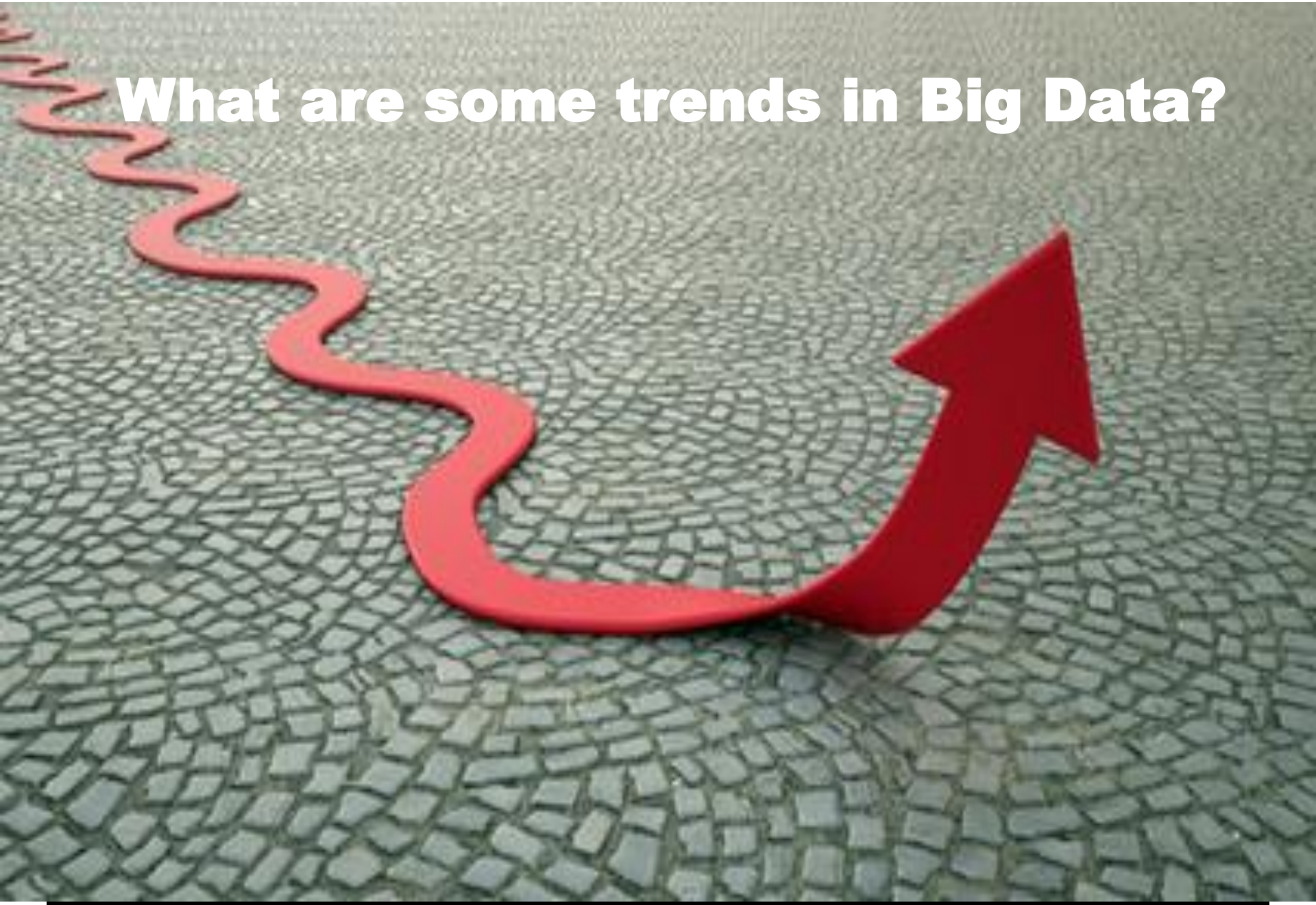
- Transactional data
- Extract, transform, load from op systems
- Stored in warehouse or data mart
- Request-based query (report/dashboard)
- Analysis after data is consolidated
- Make decisions and take actions based on *what has already happened*

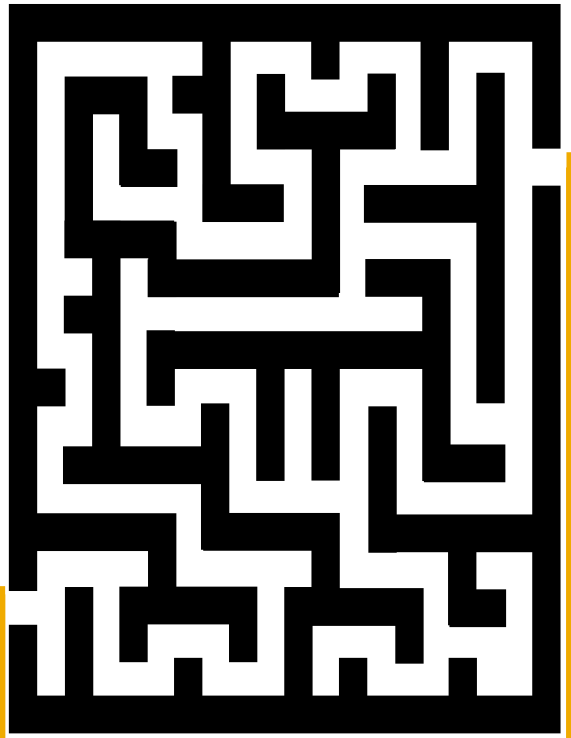
Real Time Analysis

- Operational, transactional, event data
- Rapid bulk loads or event processing
- Store in-memory or process in real-time
- Ad-hoc or continuous query
- Analysis during processing
- Make decisions and take actions based on *what is happening now*



What are some trends in Big Data?





FASTER

SIMPLER

Open Data

Analytics for non analytics people

Mobile Analytics

Sentiment Analysis

Combined with… Cloud, Mobile

Predictive

Real-time

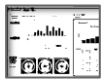
Changing citizens' lives through innovative organizations

MKI

Faster
Genome analysis

Better
Insight to support the needs of cancer patients in real-time

Greater
Personalization to individual patient needs



Leverages **R, Hadoop, in-memory**

MRI - Tokyo

Better traffic flow via on-demand modeling to redirect traffic via multiple applications

Incorporates **data from multiple sources** including real-time traffic, construction and road closures

Improved livability of city

Recovery.Gov

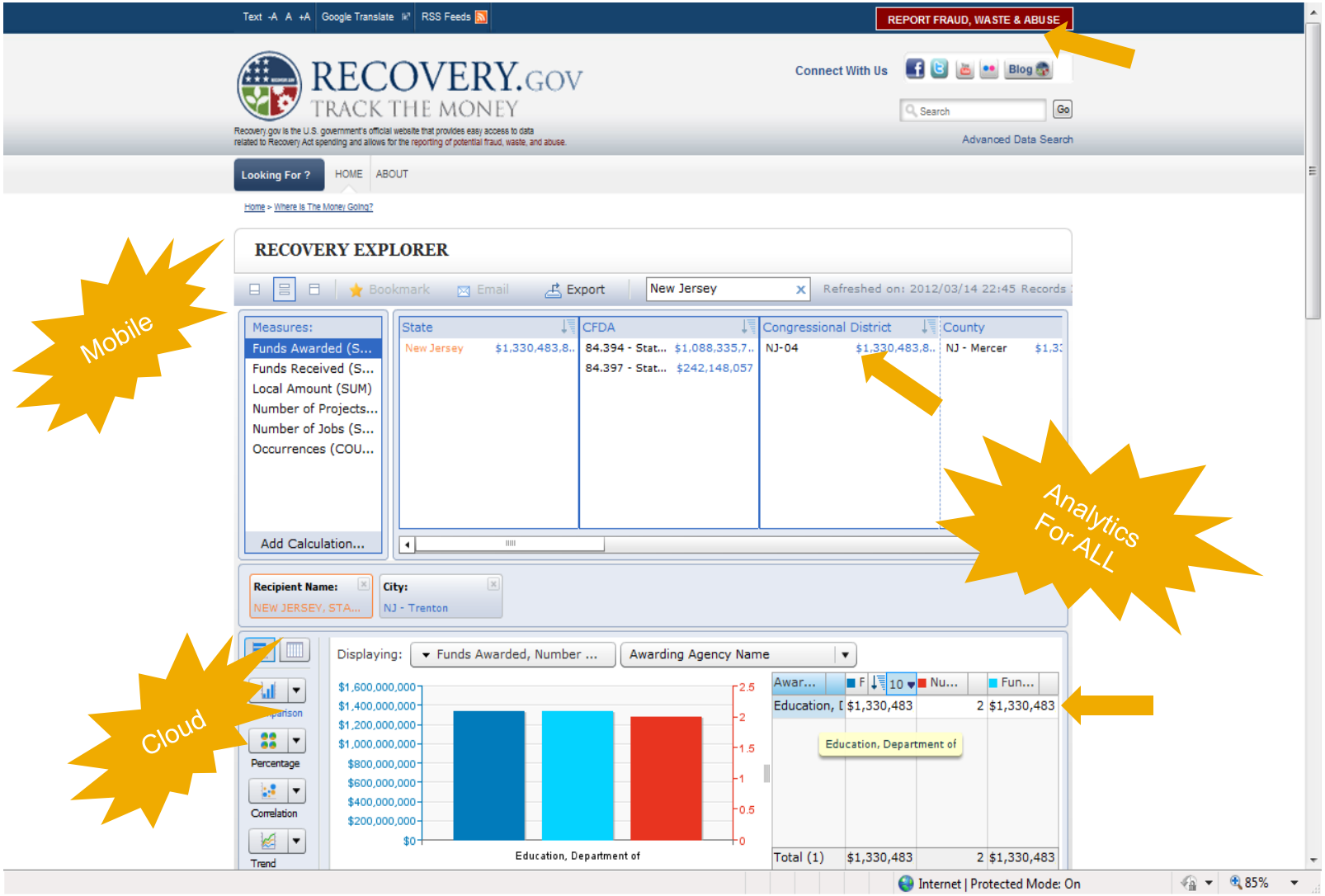
Transparency and accountability

Leverages **cloud, mobile, and analytics**

Analytics **for Non-Analytics People**

Recovery.gov

Transparency, Accountability, Prevention



From Rear-view, Batch-processing….
To Real-time, Predictive Intelligent Data. . .

- ✓ **Analytics for Non-Analytics People –** ELIMINATE pre-fabrication requirements -
- ✓ **Deeper Insight** – interrogate more structured and unstructured granular data, over a larger span of time
- ✓ **Ability to transact and analyze data simultaneously** to enable real-time business
- ✓ **Enable the Real-time enterprise – unwire the enterprise with big data visualization on mobile devices**
- ✓ **Go deeper** – predictive analytics via R on SAP HANA + Apache Hadoop
- ✓ **Tap into open data sources from multiple agencies for new insights** via data services, enabling extraction, text analysis, and data quality…