



# Big Data Use Case: Technology Business Management in the State of Washington

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Services

# Explosion of Big Data In Public Sector



IN 2009 THE U.S. GOVERNMENT GENERATED  
**848 PETABYTES OF DATA**



IN 2009, US HEALTHCARE ALONE GENERATED  
**158 EXABYTES OF DATA**



AT THIS RATE HEALTHCARE WILL GENERATE  
**ZETTABYTE SCALE ( $10^{21}$  GB)**

Sources: IDC, US Bureau of Labor Statistics, McKinsey Global Institute Analysis, Roger Foster, "Hot to Harness Big Data for Improving Public Health".

# Big Data Categories



## Content

Streamline  
Operations. Store All  
Content In A Single  
Storage Pool



## Analytics

Discover New  
Insights That Impact  
The Business

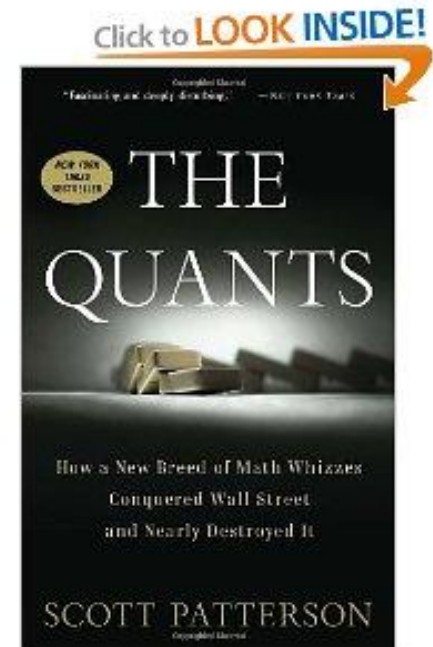


## Applications

Operationalize  
Insights As Quickly  
As Possible

# Big Data Analytics – Not A New Idea!

- Hedge funds and investment firms
- On-line businesses
- Casinos
- Airlines
- Retail



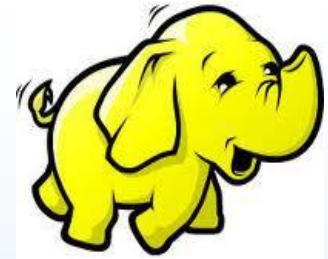
# Why Now? What's Different?



More Data  
Sources Available  
That Can Provide  
New Insight



Cost of Storing, &  
Processing Data  
Dropping Fast



Availability of  
Powerful  
Algorithms &  
Tools

***Goal: Beat The Competition!***

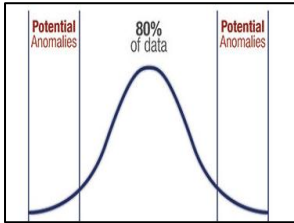
# Big Data Analytics Vs. Traditional BI

big data  
analytics

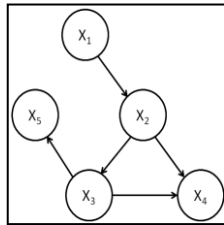


traditional  
BI

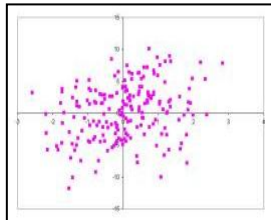
# The Value Of Big Data Analytics



Anomalies



Correlations



Patterns



Predictive

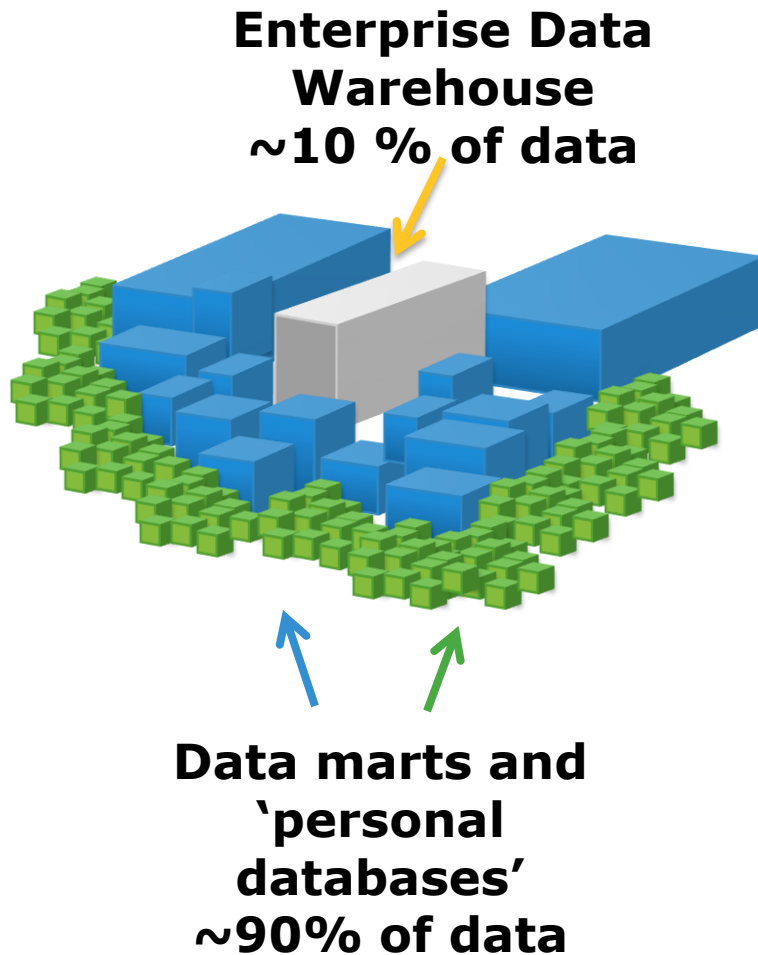
# Technology Overview



**big•data** \ datasets so large  
they break traditional IT  
infrastructures.



# The Challenge With Traditional Databases

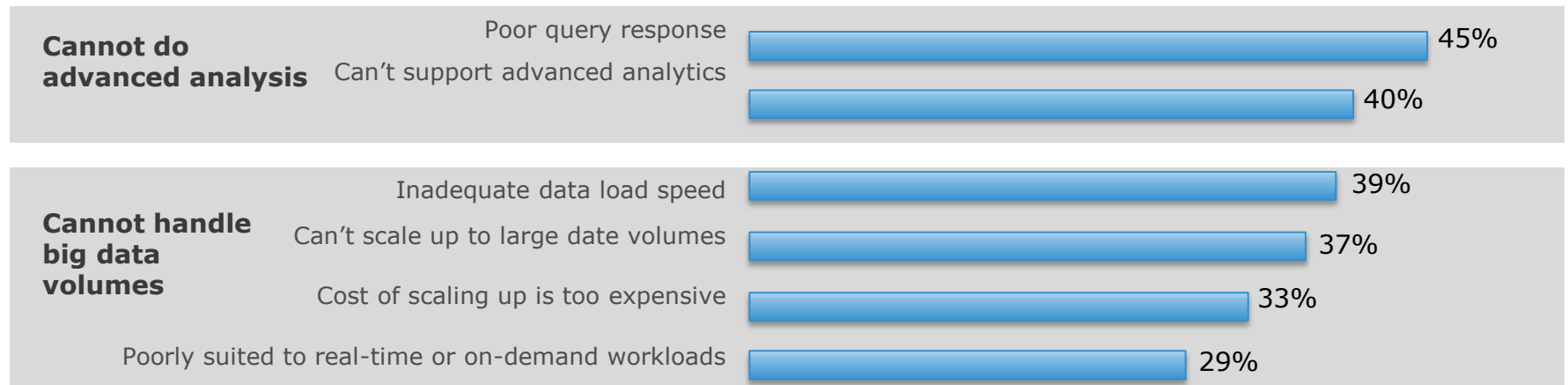


- Traditional databases cannot ingest data fast enough
  - Queries take too long
  - 100s of data marts
  - 'Shadow' databases

# Will Traditional DBs Work For Big Data?

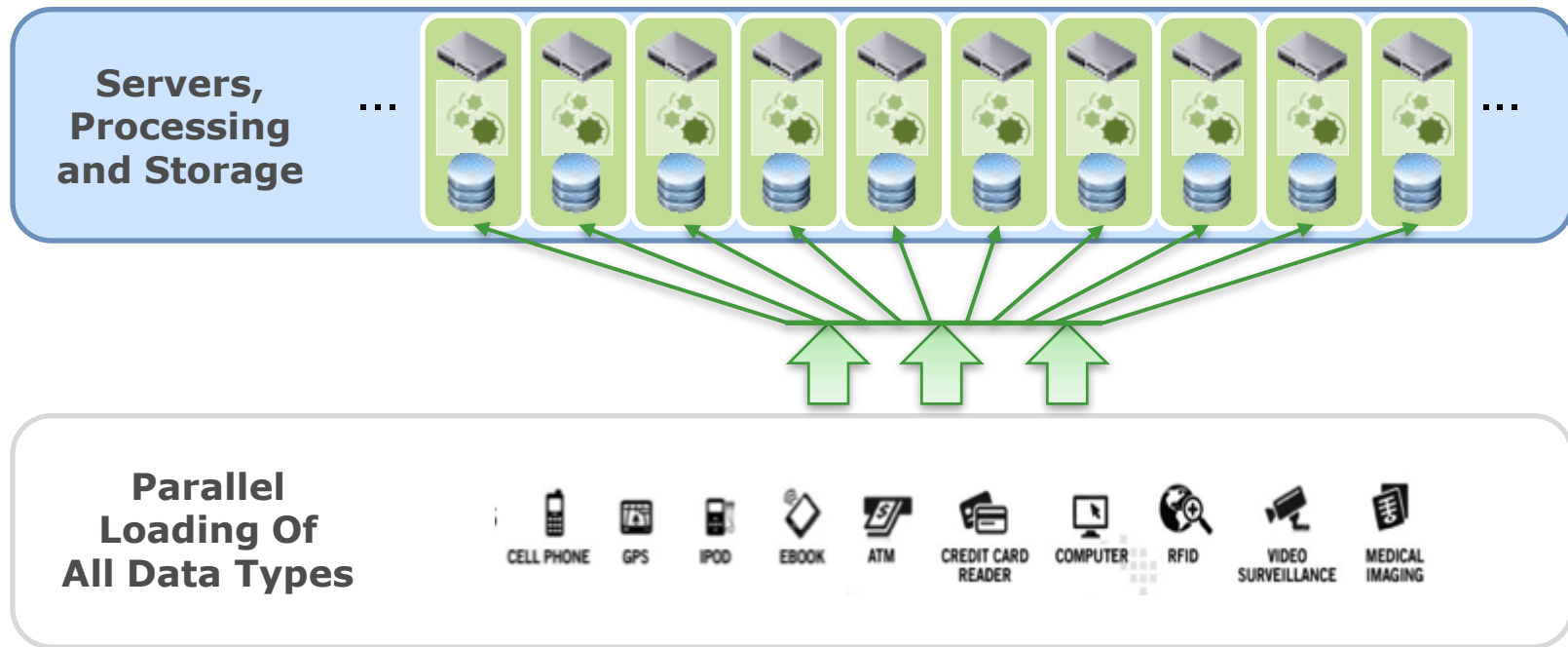
TDWI Survey: Not Optimized for Big Data Analytics

50% of respondents will replace their DW platform in the next 3 years

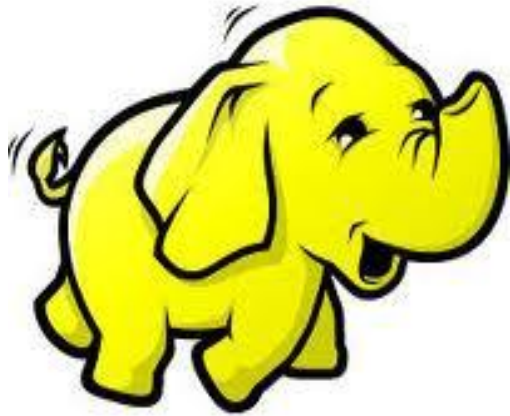


Source: TDWI Next Gen Database Study, 2010

# MPP Databases and Scale-Out Architecture



# To Hadoop Or Not To Hadoop?



Hadoop is more versatile for unstructured data, cost-efficient, scalable



SQL is very efficient on structured data, rich tool set, large developer community

***Look For Hybrid Solutions***

# Big Data Initiatives In the US Government

- Economic Forecasting
  - Mortgage foreclosures
- Operations
  - Fraud, waste, and abuse in taxes, Medicare/Medicaid
- Internet Security
  - Web log analytics
- Healthcare
  - Optimal treatment pathways

# Digital Government Summit

## Technology Business Management

Progress managing IT spending  
Tuesday December 4, 2012

### **Presenters:**

**Bob Zych**, TBM Program Manager, WA Office of the Chief  
Information Officer

**Zayne Elrod**, CFO, WA Central Technology Services

- Background for the Technology Business Management (TBM) Strategy in State Agencies
- How TBM is being used in Central Technology Services



- What is TBM?
  - Practice of managing and communicating the cost, quality and value of IT Services
  - Transparency & accountability
  - Application suite of on-demand software
  - Transformational shift for IT & business

- Growing IT spending leads to demand for more transparency
- Series of “snap-shot in time” studies
- Consolidation of agencies
- Creation of a Cabinet-level State CIO and the Office of the CIO
- Transparency and accountability strategy
- Consolidated State IT Biennial Report

# Progress Since 11/28/2012

- Over 100 staff from 30 agencies completed Apptio classroom training sessions.
- With assistance from Apptio, six agencies have modeled their IT spending into IT “towers” (CTS, DES, DOH, DOR, DSHS & WSP).
- 12 agencies in total each with IT spend >\$10M anticipate completing tower cost models this yr.
- Remaining agencies have smaller IT spend and are awaiting a demonstration of value before preceding.
- Seven agencies beginning modeling of utilization data (CTS, DES, DOC, DOH, DOL, DOR, DSHS)

# Early agency TBM insights and observations

- Opportunities for server virtualization and storage
- Driving their IT culture to be more efficiency-minded
- Causing agencies to rethink processes such as time tracking and AFRS coding to derive more efficiency (LEAN)
- Improving management's visibility into agency IT financial and IT service costs.
- Several agencies recognize opportunities for non-IT services including PARKS and DVA.
- Apptio product and support meeting expectation.

# TBM in the State of Washington

Consolidated Technology Services' journey: where are, and what's ahead

Zayne Elrod, Chief Financial Officer



# Who we are

- Formed by legislation on October 1, 2011
- Carried over existing services, customers, and staff from agency dissolved (Department of Information Services) on September 30, 2011



# Who we are

- Central IT infrastructure provider to state, local, and non-profit agencies (Server/Mainframe hosting, Storage, Network, Security services)
  - Customers not required to use our services
  - Cost-recovery basis (no General Fund support for our services)
  - Competitively-focused



# Big Data, TBM and Government

- “Big Data” defined: “...a collection of [data sets](#) so large and complex that it becomes difficult to process using on-hand database management tools. The challenges include capture, curation, storage, [\[3\]](#) search, sharing, analysis, [\[4\]](#) and visualization”. (Source: Wikipedia)
- Do we have big data? Maybe not, but we do have big data challenges...





# TBM in State Government

- CTS' journey toward Technology Business Management began in earnest in July, 2012, with adoption of toolset
- TBM seen as a way to understand and refine or unwind practices/processes carried over from predecessor
- Ability to conduct “what-if” analysis in hours - not weeks - is key enabler for change
- Initial focus on efficiency and cost optimization and transparency



# Components of successful TBM

- Tools – tools enable data-driven conversations with (and among) business owners, customers, leadership
- Processes – ensure timely, periodic updates, care and feeding of data
- Governance – who can change what, and when is it OK
  - Strategic alignment?
  - Tool/data/model changes
  - Practice/process/business changes
- Institutional curiosity. Find it, use it, grow it, reward it



# On Curiosity...

This may be the most important aspect of TBM.  
Leadership must expect that:

- Not every effort will save money.
- There aren't rainbows under every rock. In fact, you can expect to find some troubling things when you have visibility into your data.
  - Be ok with this...transparency is on the line
- Not a sanctioned “gotcha” exercise – focus on fixing it



# TBM – Cost optimization only?

We spoke with several private-sector companies that are well down the path we're just beginning. In general, we heard:

- Cost optimization is an ongoing effort (new technology, new ways to combine or eliminate costs to take advantage of market changes will always present opportunity)
- BUT...initial utility will diminish. Not as many savings opportunities identified in month 24 as in month 3
  - At 18-24 months, companies seem to settle into a rhythm of reports, and what-if analysis



# Future of TBM in Government (one guy's view)

- Governmental entities have a focus on cost optimization. This is necessary, (and common across sectors) but also presents a “sugar high” challenge. What next? What comes after cost optimization?
- Thinking years ahead...how will we maintain the utility of TBM?
  - How will we maintain continuity of value of TBM across administrative/budget/election cycles?



# Future of TBM in Government (one guy's view)

- Application of TBM in Government...heavy on the “T”, not so much on the “B”
- What about the “B”?
  - IT is not a business in and of itself. We serve customers, who serve their customers. Ultimately, the final “customer” is the citizens government serves.
  - Can we measure the impact of our decisions in IT in terms of outcomes to the citizen?



# Future of TBM in Government (one guy's view)

- Sharing data sets with like entities may lead to synergies/efficiencies
- Sharing data sets with affected entities may give insight into impacts
  - How do my decisions in IT affect outcomes expected by citizens?



# In summary

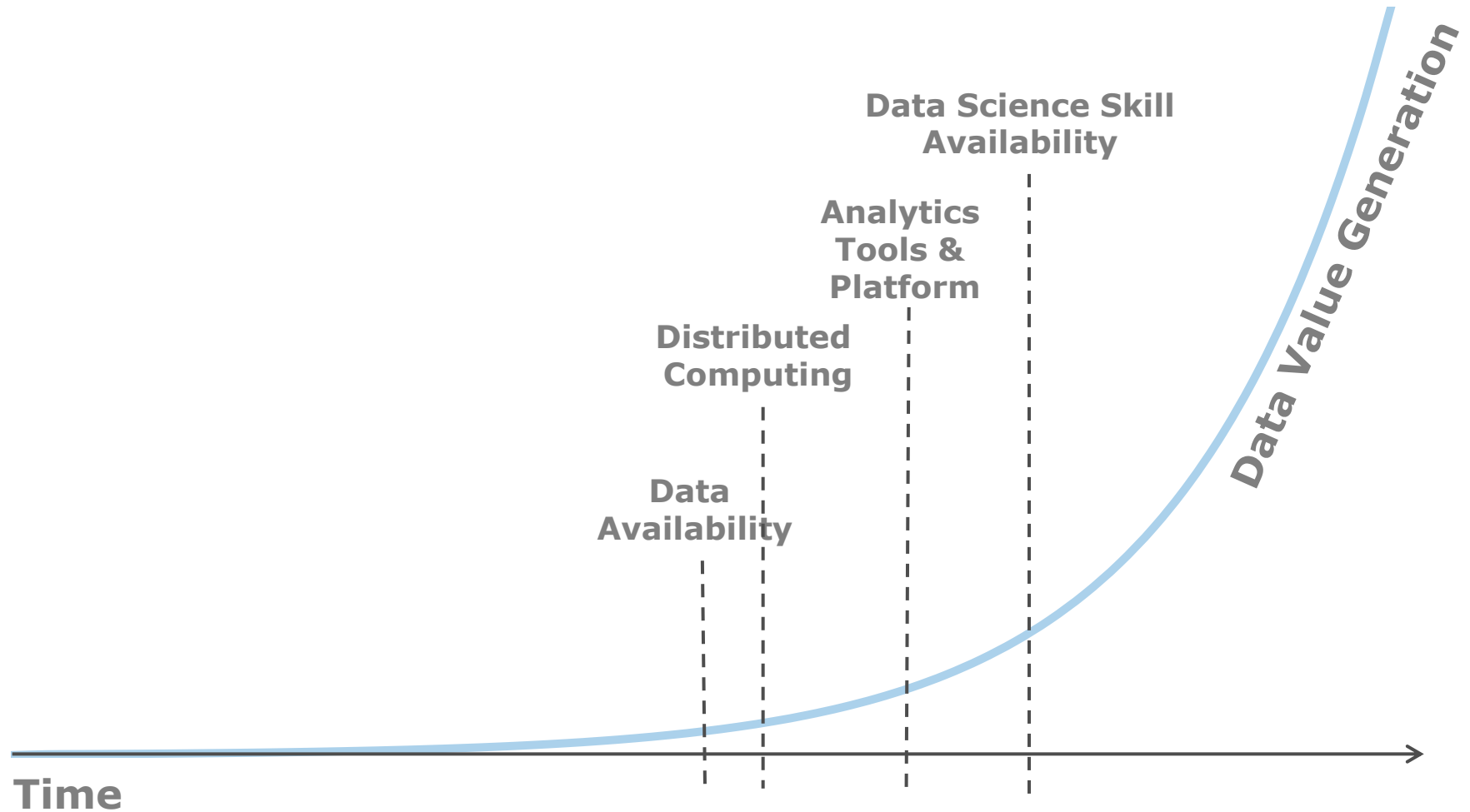
- We're just beginning our TBM journey
  - Early insights are pointing to efficiencies
  - Governance and process are beginning to take form
  - TBM is fueling an even greater desire for transparency; for discovery that will lead to better decisions for IT providers and consumers





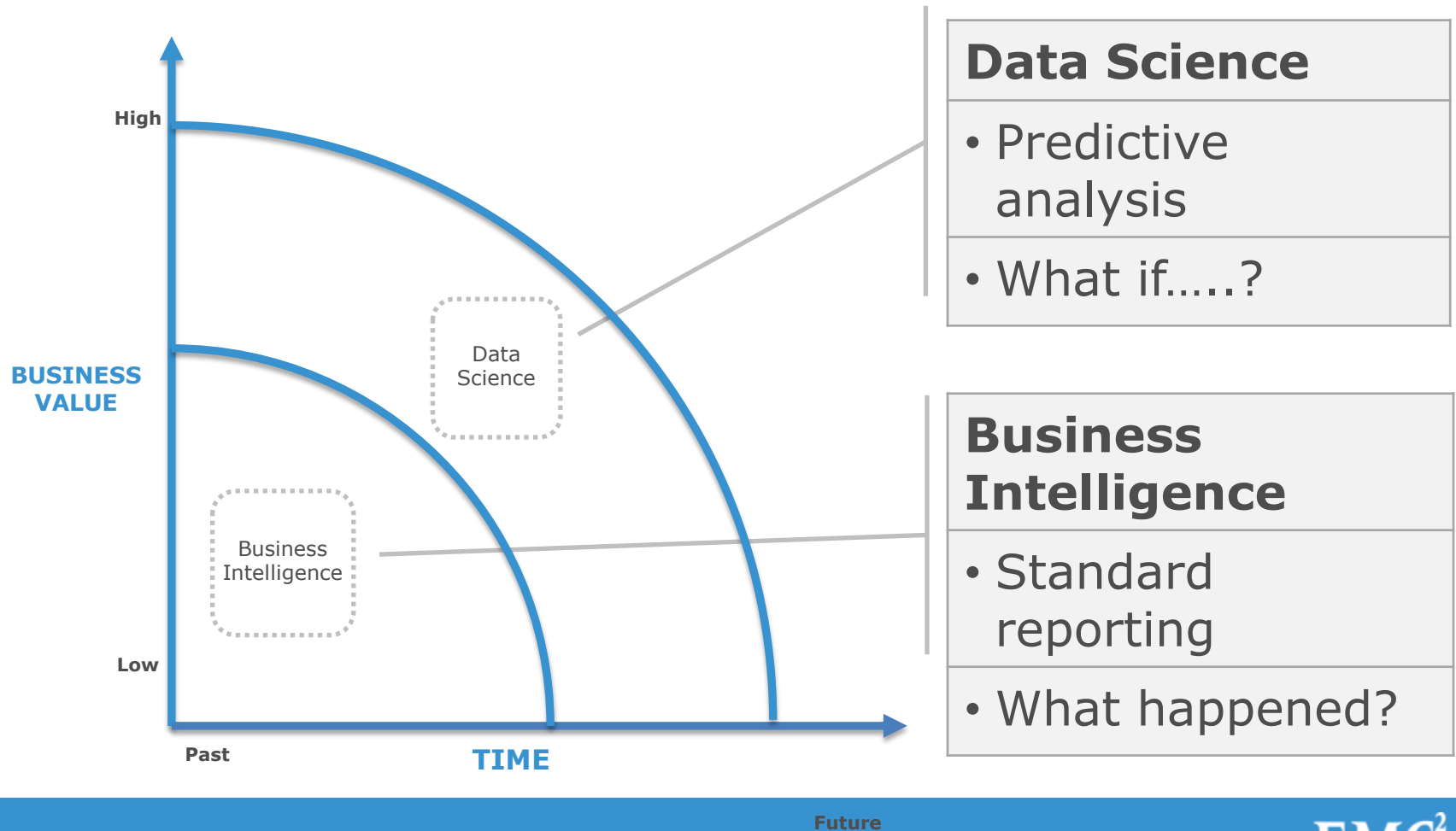
# Beyond Technology: Catalysts for Transformation

# Transformation Catalysts

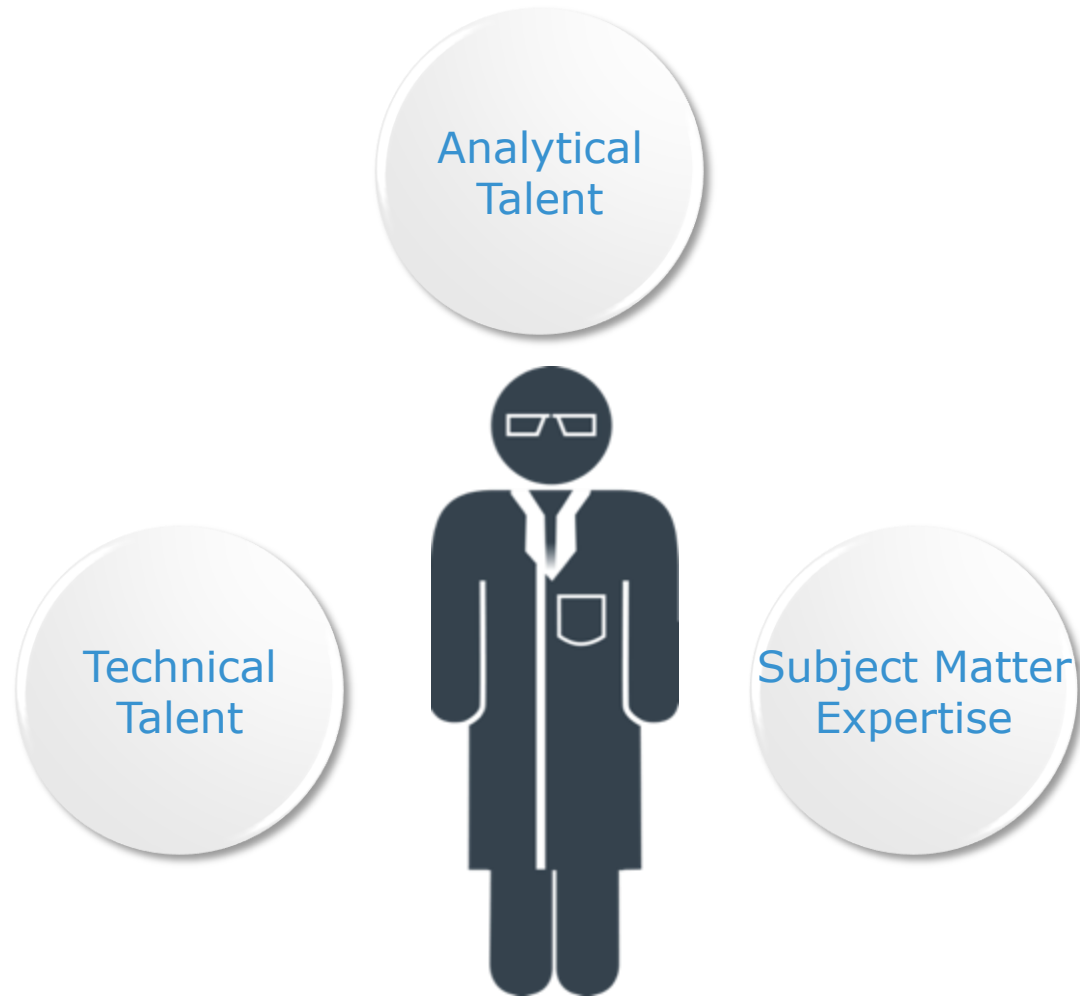


# Big Data Requires Data Science

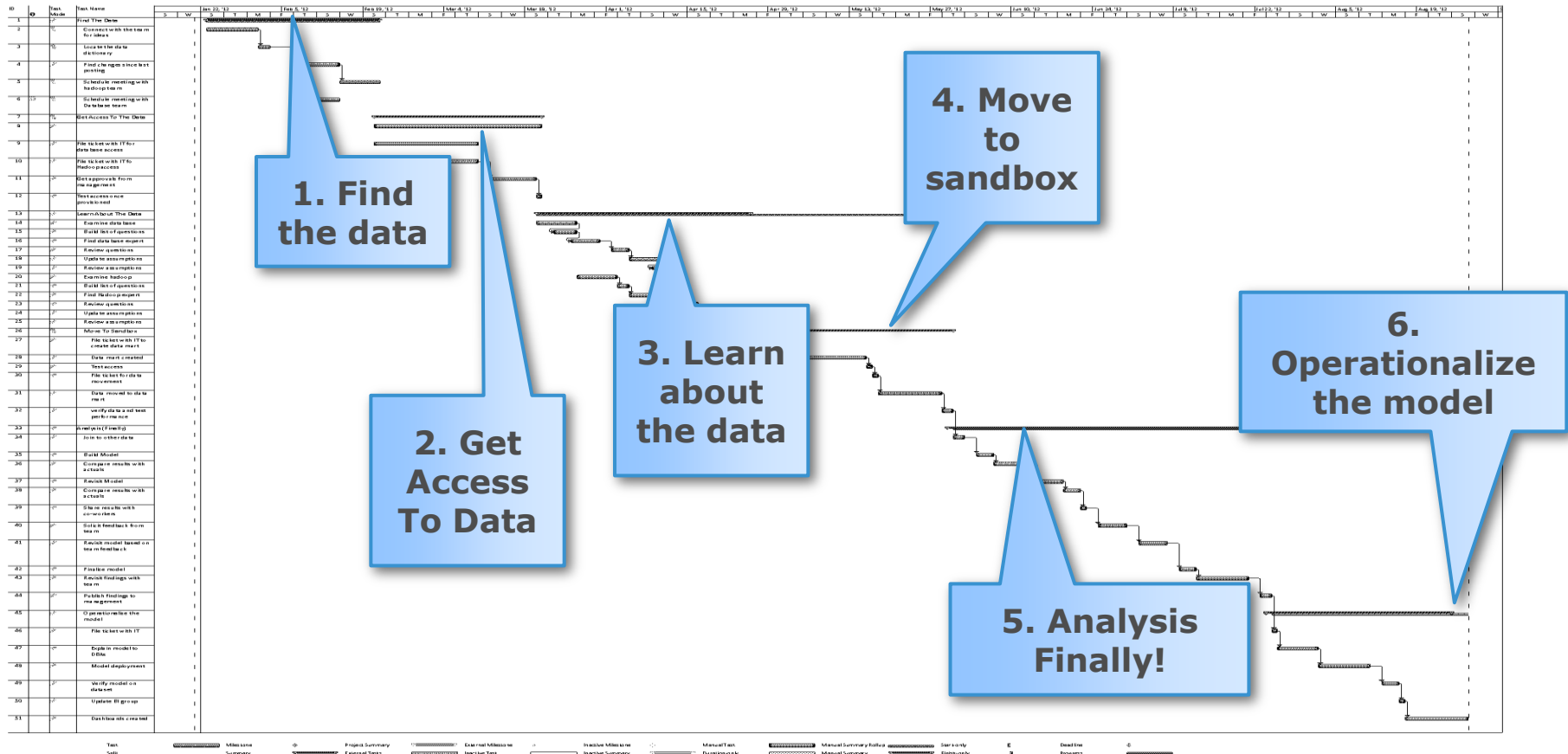
## New Approaches to Analytics



# The Profile Of The Data Scientist



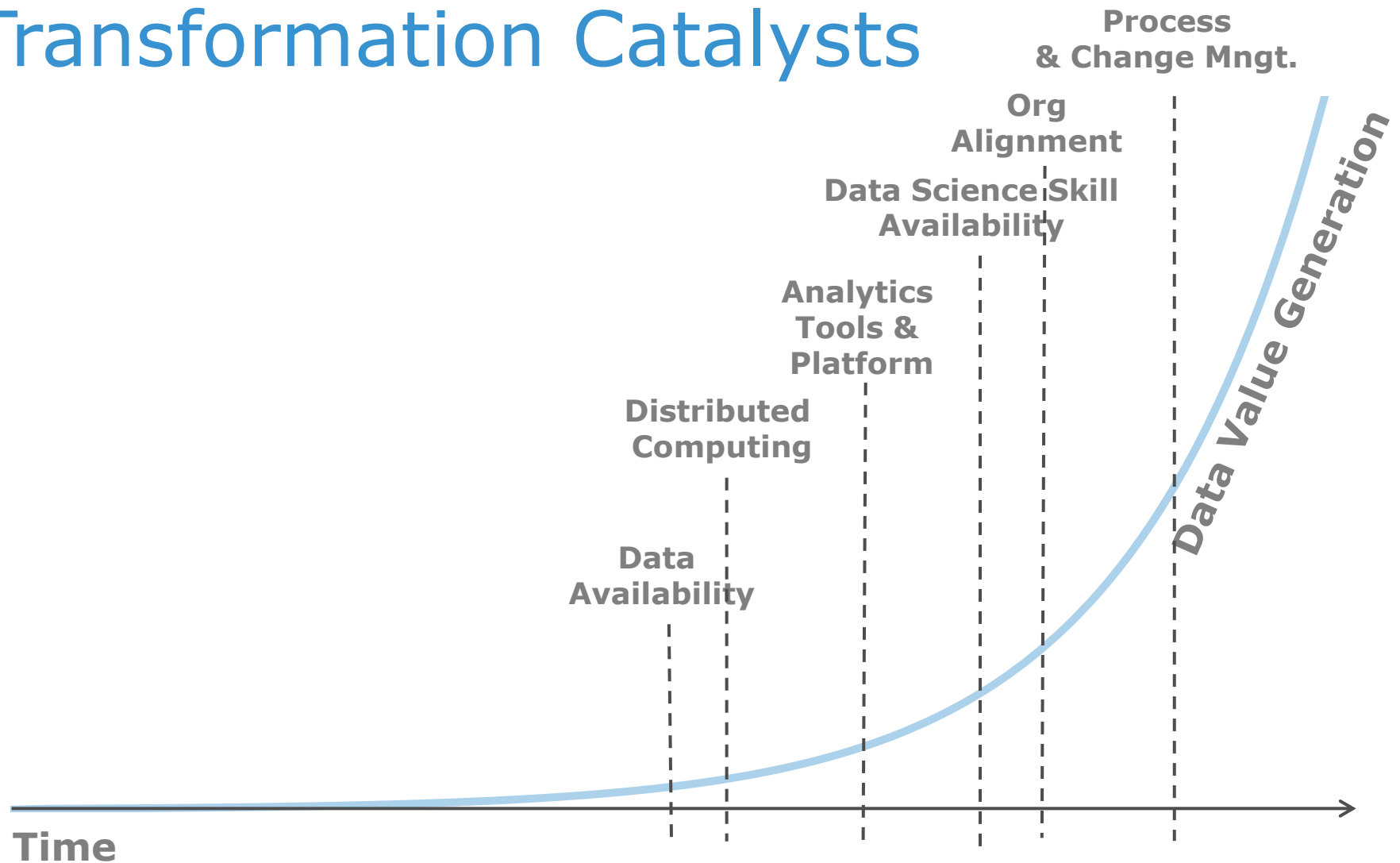
# Legacy Analytics Process



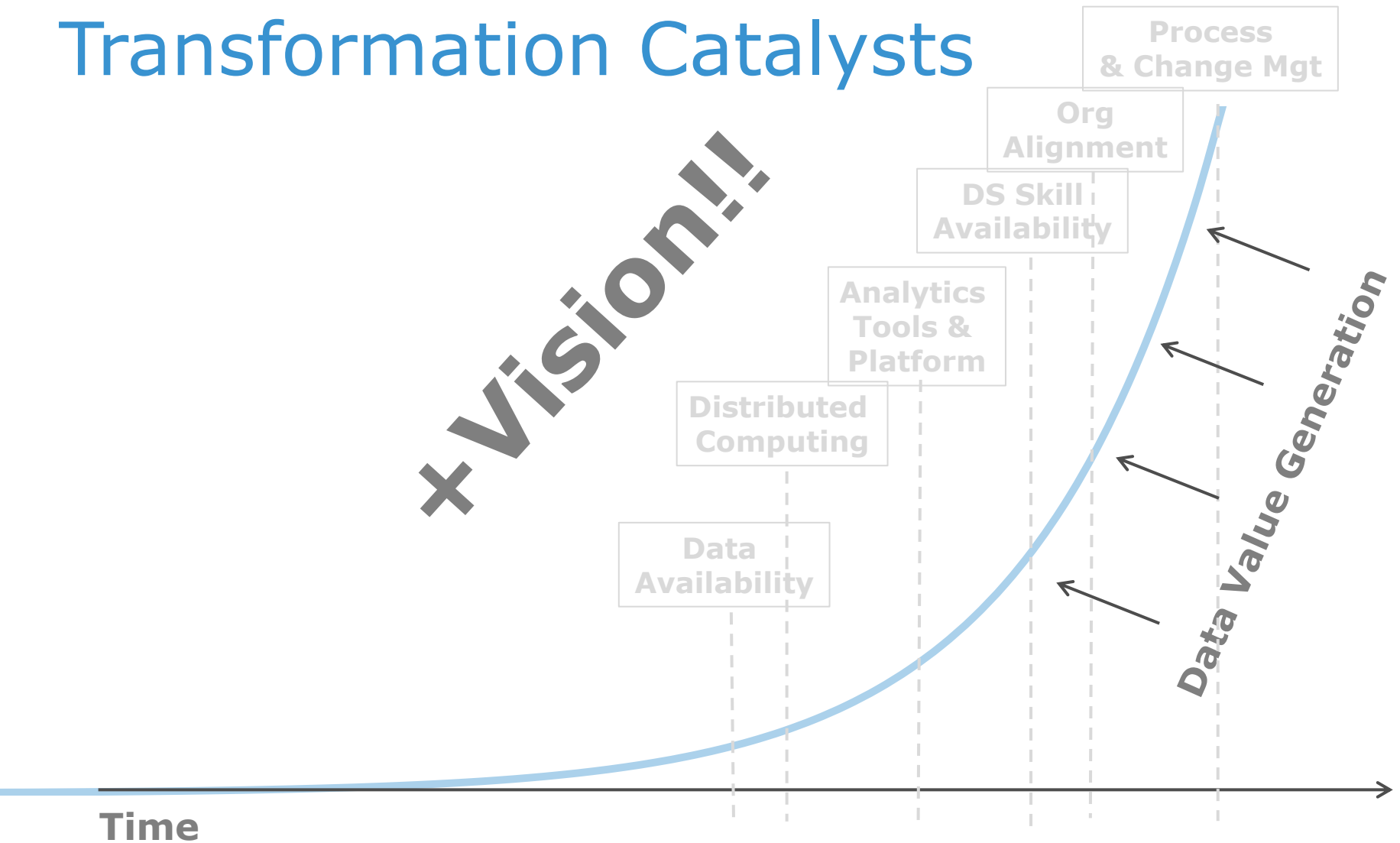
# Empower Your People with Self-Service



# Transformation Catalysts

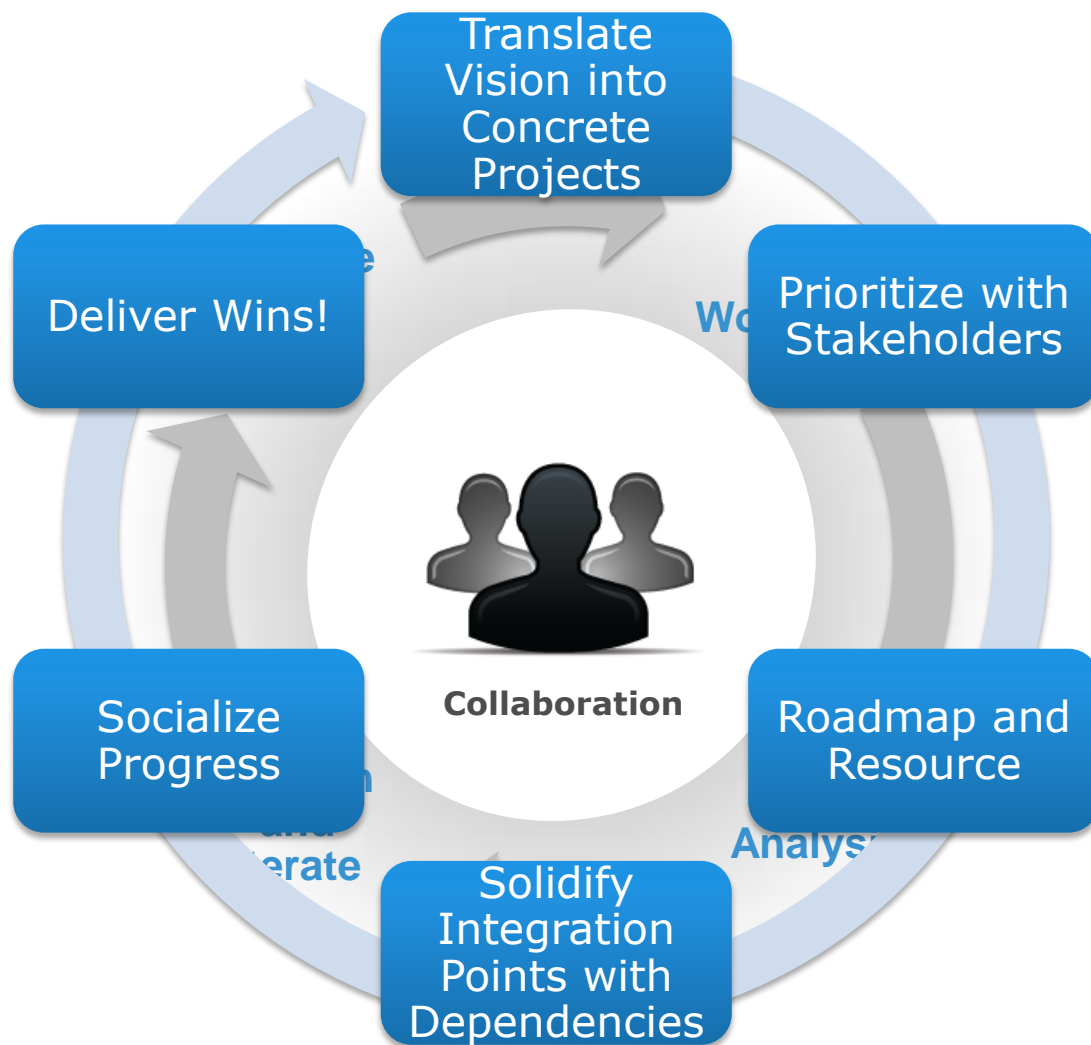


# Transformation Catalysts





# Process & Change Management



# How Can We Prepare For Big Data?

# How To Get Started

Small manageable first project

- Find a first problem that is important, but not mission critical. Show success, ROI.
- Take an existing application that is too slow or not answering questions.
- Involve LOB users from the beginning.
- Set reasonable expectations.
- Hire outside expertise; train your staff.

# Questions?