

Global Decision Management

Citigroup

June, 2017

Data and Computing power are growing exponentially ...

We are experiencing a data explosion

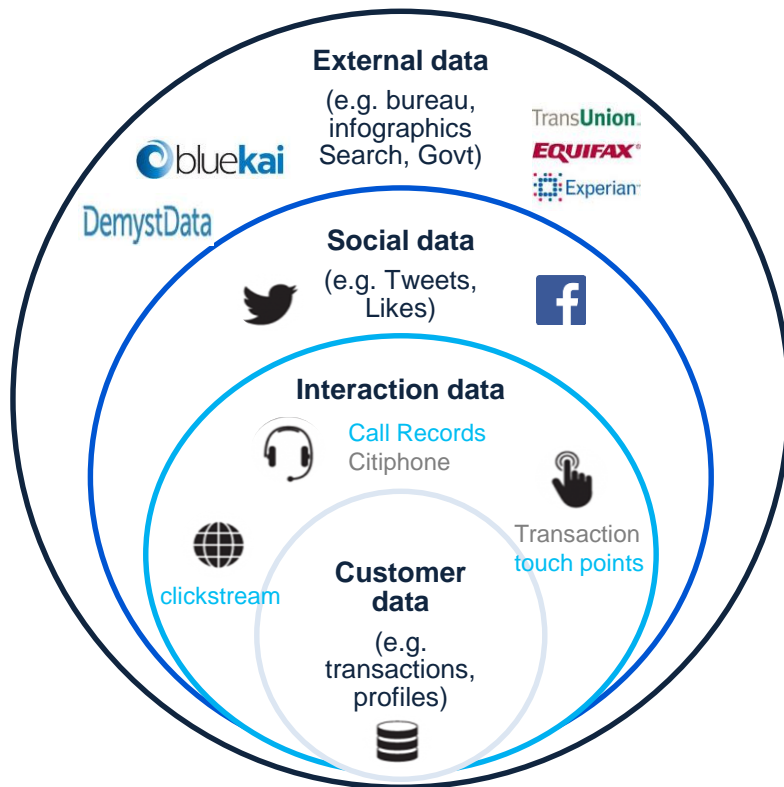
– *Volume, Velocity and Variety*

2.5 Exabyte

of data is being created in
the world every day *

90%

of the data today has been
created in the last 2 years*



Along with advancements in computing

– *Faster, Adaptive and Smarter*

50% decrease

In computing cost ,
every 18 months

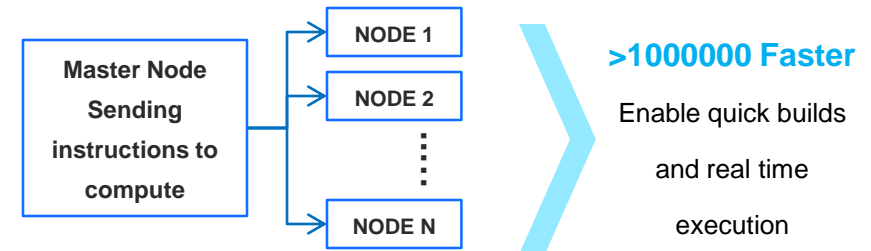
Hadoop

reduces
execution time

Adapt

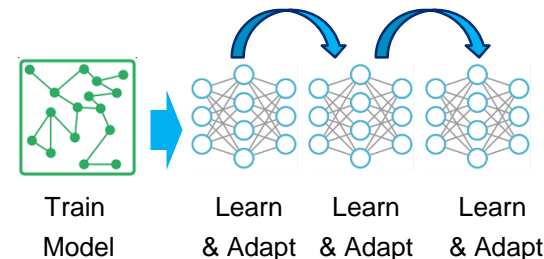
to changes in data,
automate learning

Faster results with distributed computing



Billions of Computations in seconds

Learn Continuously with smarter algorithms



50% better

Adapts to new trends
in consumer behavior

That is changing business models and client expectations ...

Analytics has evolved over this period
has changed client interactions & expectations

Innovation Driver

- Thought Leadership
- Context/Content
- Digitize

Value Delivery

- Increase Revenue
- Drive Efficiency
- Optimize Decisions

Insight Provider

- Share insights
- Standardization & Centralize
- Economies of Scale

<2010

2010-15

>2015

Change in customer expectations demands

New Business Models and Sales strategies

Trigger Real Time Offers based on Location



Who : Macy's , Target , Walmart

Trigger real time offers based on location tracking through the store app

Social Media Offers on Favourite Brands



Who : Amex , Charles Schwab

Offers on favourite brands redeemable on the Amex site / social media page

One Click Commerce through Card Linkage



Who : FB, Twitter, Pinterest

Buy buttons on Posts and one click experience through cards linked to the social media account

Artificial Intelligence will keep replacing manual work ...

In organizations across industries...



Provides customer
service without call
centers



Recommends
products without
sales executives



Authorization without
passwords



Driving cars
without drivers



Identifies you in a
picture without
your input

AI / Machine Learning are replacing key functions ...



Geo location based
Contextual servicing
through the app



Machine Learning Based
Recommender Systems



Biometrics and
Voice Recognition



Artificial
Intelligence



Image Recognition
AI

We need to change ourselves to make it successful ...

Building blocks for Big Data Capabilities ...



360° real time customer data availability in Data Platform with **seamless Frontend integration**

Data



- ✓ Fully Integrated Machine learning Hadoop stack
- ✓ **Automated modeling**
- ✓ End user **visualization**

Tools & Platforms



- ✓ **Layered Structure** – Develop, Deliver, Consult
- ✓ **Industry expertise**
- ✓ **SME** – Digital, Text, Social Media, Research

Talent



- ✓ **Solution in a Box** – faster time to market
- ✓ **Standard processes**
- ✓ **Business Sponsorship** & leadership connect

Processes

Challenges Faced

- **Data Silos** - No 360 view , Non-Standardized Data across markets
- **Traditional toolkit** – limited exposure of Next Gen programming , Access Restrictions
- **Align organization for agile deployment** – Execution systems not capable to deliver instantly
- **Non standard processes** for modeling, approvals and execution
- **Patience & Sponsorship** : Research & Capabilities take time - Rome was not built in a day

Our Journey so far ...

Over the last 2 years, we have developed and implemented multiple solutions to drive revenue and customer experience across markets using new data, algorithms and platforms ...

1 Recommender Systems	<ul style="list-style-type: none">• CF• Association Mining• Content Based Modeling	➡	<ul style="list-style-type: none">• Products• Merchants• Investments
2 Optimization Engines	<ul style="list-style-type: none">• Machine Learning• Optimizer Tools	➡	<ul style="list-style-type: none">• Products• Price• Placement (Channel)
3 Hyper-personalization	<ul style="list-style-type: none">• Machine Learning• Geo-location Tools• 3rd Party Data	➡	<ul style="list-style-type: none">• Online• Merchants on the go
4 Call Optimization	<ul style="list-style-type: none">• Machine Learning/RNNs• Journey Data• NLP	➡	<ul style="list-style-type: none">• IVR• Call Deflection• Sentiment Analysis
5 Pattern Mining	<ul style="list-style-type: none">• Deep Nets• Sequence Mining	➡	<ul style="list-style-type: none">• Event Prediction• Travel, Loans etc

The future beholds more promise ...

Better Algorithms

Faster Execution

3rd Party Partnerships → More Data

Chatbots

Voice & Speech
