

# Global Decision Management

## Citigroup

June, 2017

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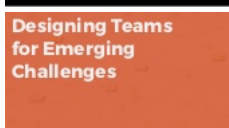
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# Data and Computing power are growing exponentially ...

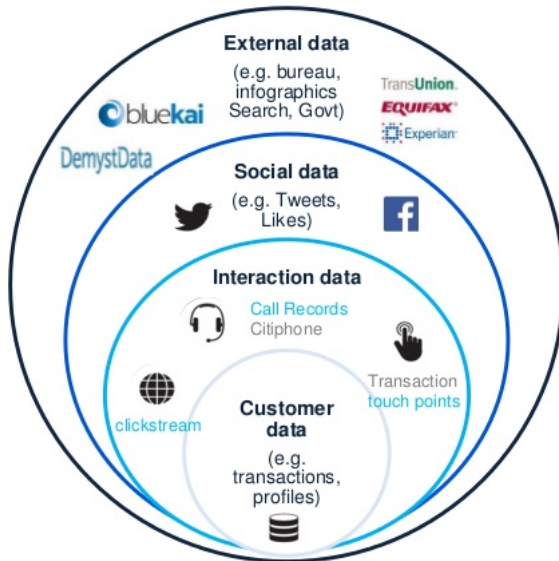
We are experiencing a data explosion  
– *Volume, Velocity and Variety*

**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

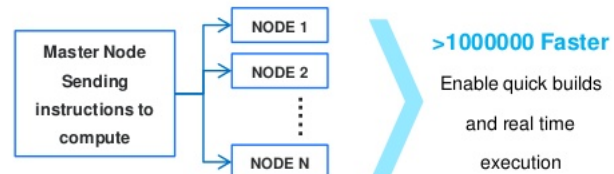
**Hadoop**

reduces  
execution time

**Adapt**

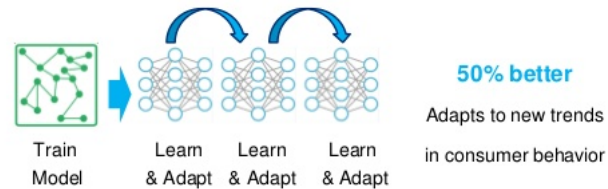
to changes in data,  
automate learning

Faster results with distributed computing



*Billions of Computations in seconds*

Learn Continuously with smarter algorithms



## 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

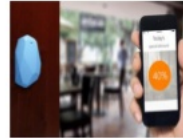
### Insight Provider

- Share insights
- Standardization & Centralize
- Economies of Scale



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

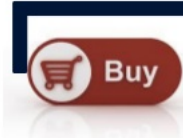
### Social Media Offers on Favourite Brands



**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 ...

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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



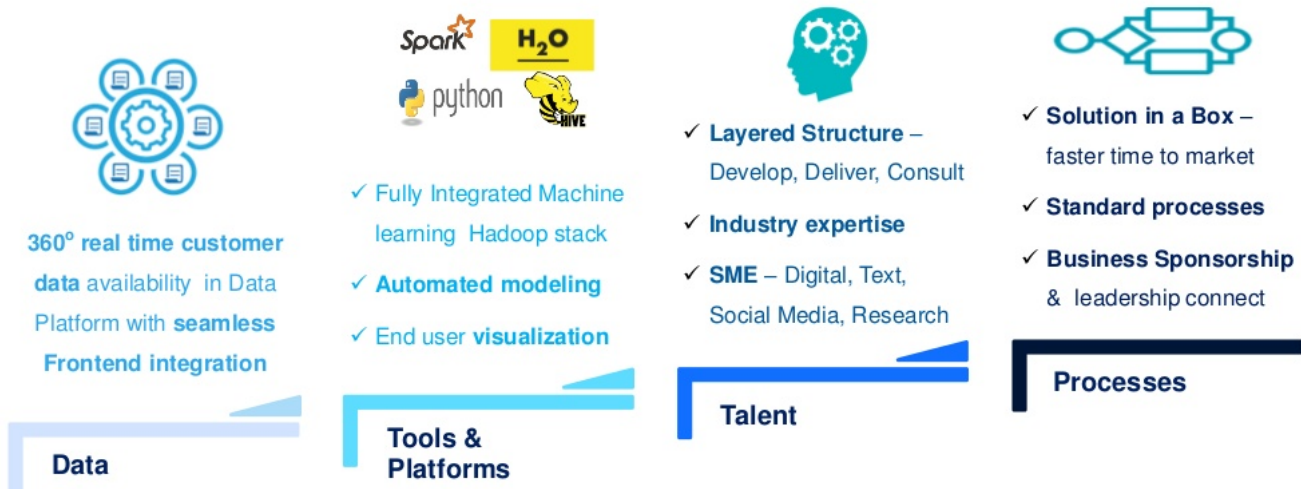
Artificial Intelligence



Image Recognition AI

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

### Building blocks for Big Data Capabilities ...



#### 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 ...

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

## The future beholds more promise ...

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Better Algorithms

Faster Execution

3<sup>rd</sup> Party Partnerships → More Data

Chatbots

Voice & Speech

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