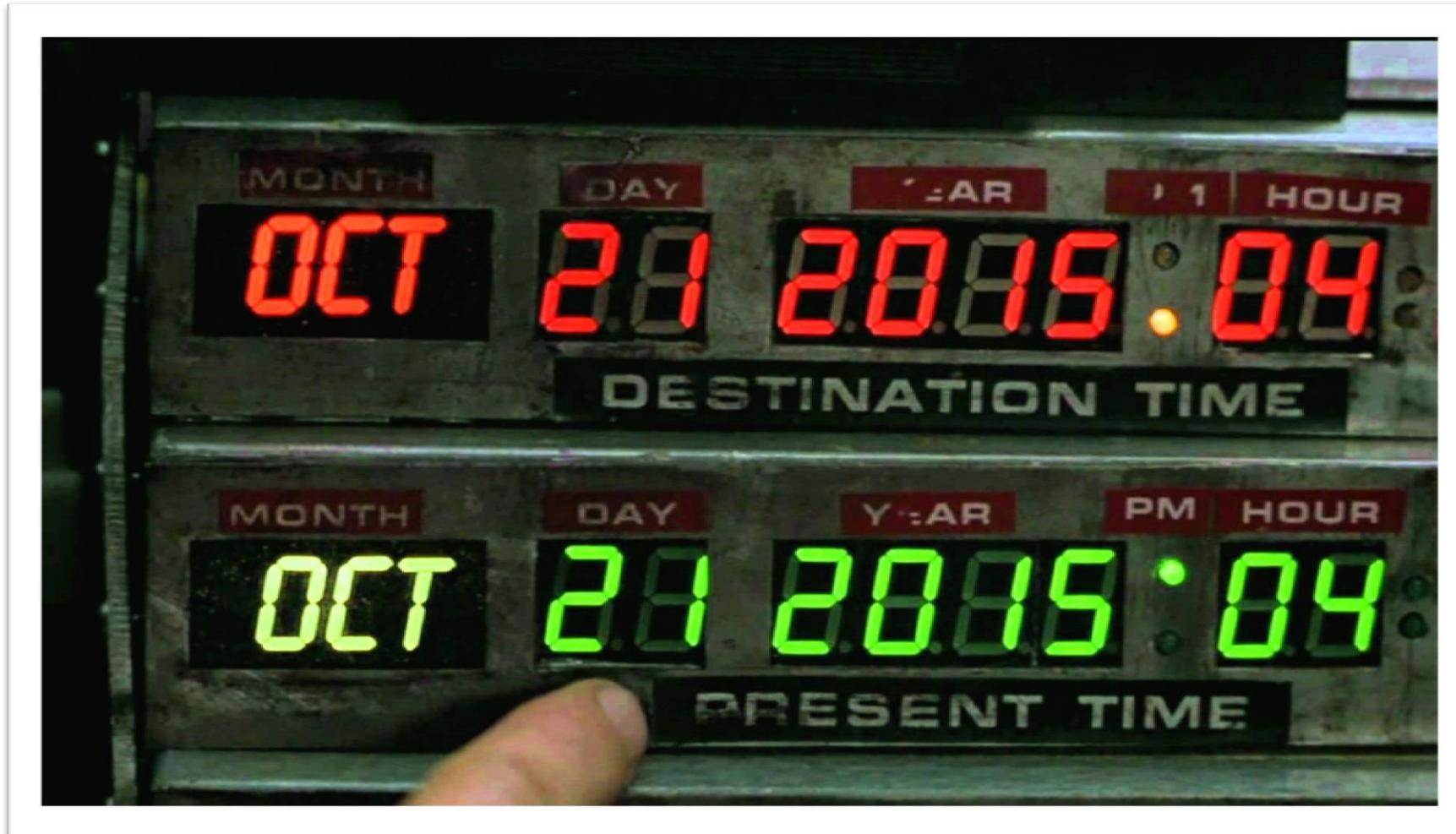




SAS ANALYTICS IN ACTION
DEEPAK RAMANATHAN

THE MOTHER OF DASHBOARDS



DATA IS THE FOUNDATION



Regardless of the

- Amount
- Complexity
- Pace

It is NOT insurmountable

WHAT WE DO WITH DATA: DISCOVERY



- Raw material
- Creativity
- Prototyping

HOW WE OPERATIONALIZE THE RESULTS: DEPLOYMENT



- Finished product
- Governance
- Enterprise-ready

SAS ANALYTICS IN ACTION



SAS is Uniquely Positioned

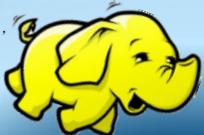
- To Enable and Empower your Analytics in Action
- To BRIDGE the gaps between Data, Discovery and Deployment
- To Accelerate your...

Analytics in Action



ANALYTICS REALITIES
DATA MANAGEMENT
T→0

BIG DATA



Streaming Analytics



... it is about applying **analytics** while the data is **in motion**

STREAMING ANALYTICS

MARKET POTENTIAL



Potential economic impact of IoT in 2025

- **\$11 Trillion**
- 11% of world economy

Size in 2025¹
\$ billion, adjusted to 2015 dollars

■ Low estimate □ High estimate

Settings	Total = \$3.9 trillion–11.1 trillion	Major applications
Human	170–1,590	Monitoring and managing illness, improving wellness
Home	200–350	Energy management, safety and security, chore automation, usage-based design of appliances
Retail environments	410–1,160	Automated checkout, layout optimization, smart CRM, in-store personalized promotions, inventory shrinkage prevention
Offices	70–150	Organizational redesign and worker monitoring, augmented reality for training, energy monitoring, building security
Factories	1,210–3,700	Operations optimization, predictive maintenance, inventory optimization, health and safety
Worksites	160–930	Operations optimization, equipment maintenance, health and safety, IoT-enabled R&D
Vehicles	210–740	Condition-based maintenance, reduced insurance
Cities	930–1,660	Public safety and health, traffic control, resource management
Outside	560–850	Logistics routing, autonomous cars and trucks, navigation

¹ Includes sized applications only.
NOTE: Numbers may not sum due to rounding.

SOURCE: McKinsey Global Institute analysis

Streaming Analytics Ecosystem



Edge Analytics

Network Systems, Surveillance



Monitor equipment on the platform for failures and safety issues, and take action.

In-Motion Analytics

Transactions, Logs, Clickstreams



Identify fraudulent transactions and be alerted in real-time.

At-Rest Analytics

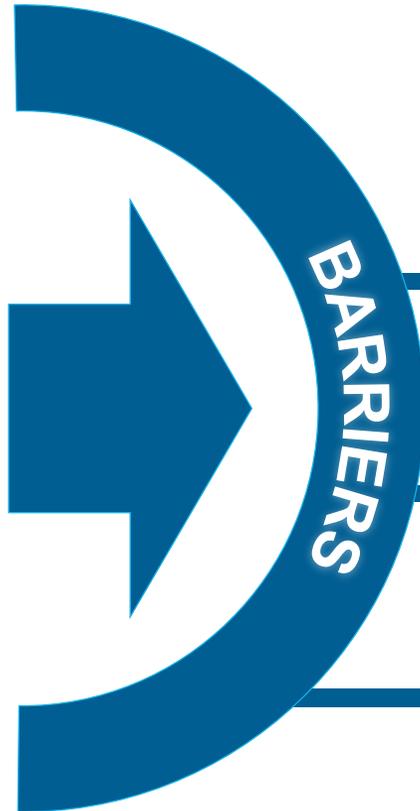
Strategic Data Integration



Intelligently integrate customer information with real-time streaming data



**ANALYTICS REALITIES
DISCOVERY DRIVES
INSIGHTS**



Scarcity of analytical skills

The need to grow analytical talent from within

Tools that aren't right for the job

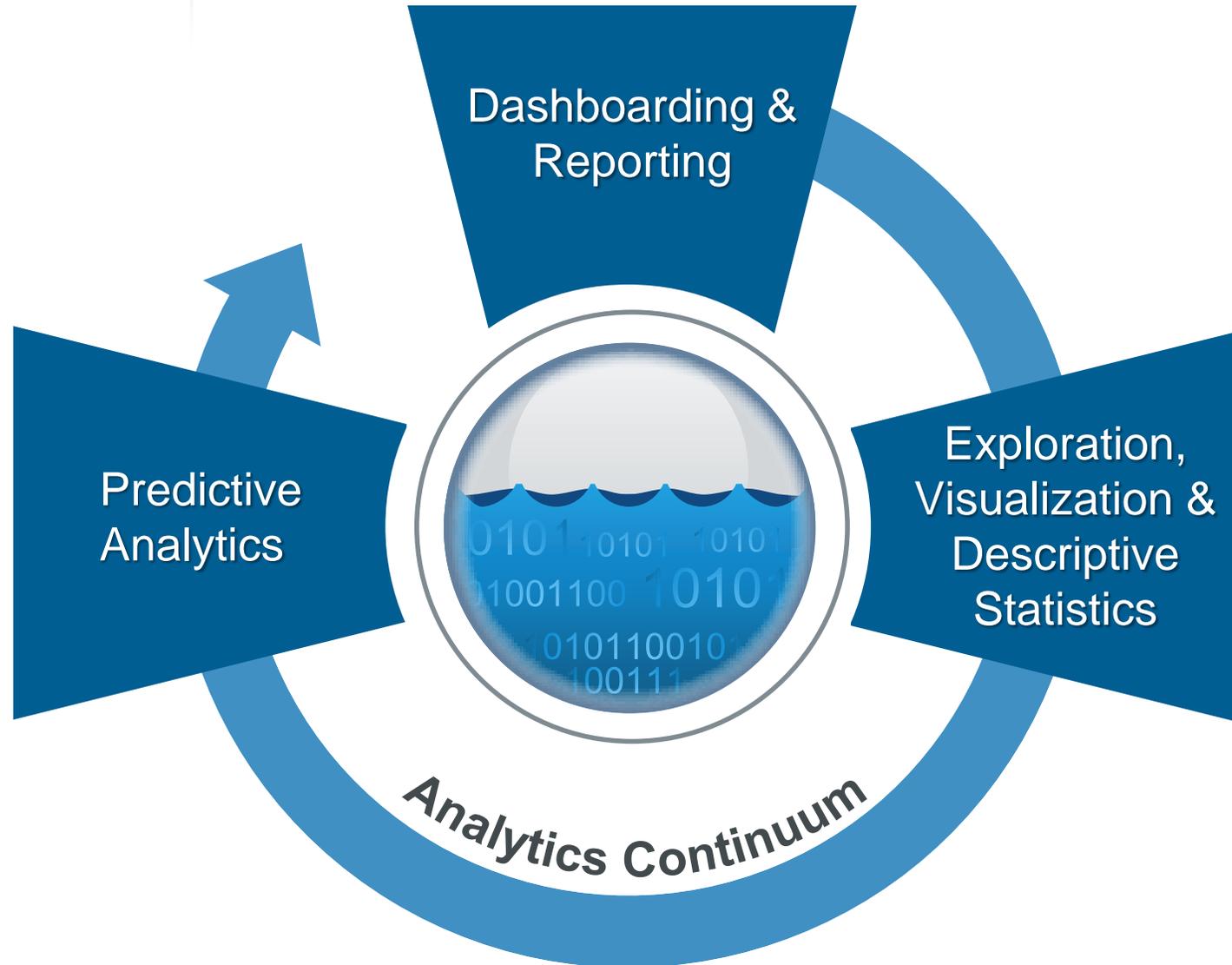
Learning curve to create, share and collaborate

Disjointed, inefficient workflow

How can you fail fast & learn to refine quickly

APPROACHABLE ANALYTICS

Analytics Continuum





**ANALYTICS REALITIES
SCALE OUT YOUR MODELS
AND DEPLOY THEM**

What is a model?



$$F(x) = \frac{\beta}{\left(\frac{N_{50}}{x}\right)^a + 1}$$



Most organizations see the value in Analytics.

They want to:

Solve *MORE Problems*

Solve them *Faster*

Solve them *More Accurately*

Solve them with the *Same Resources*

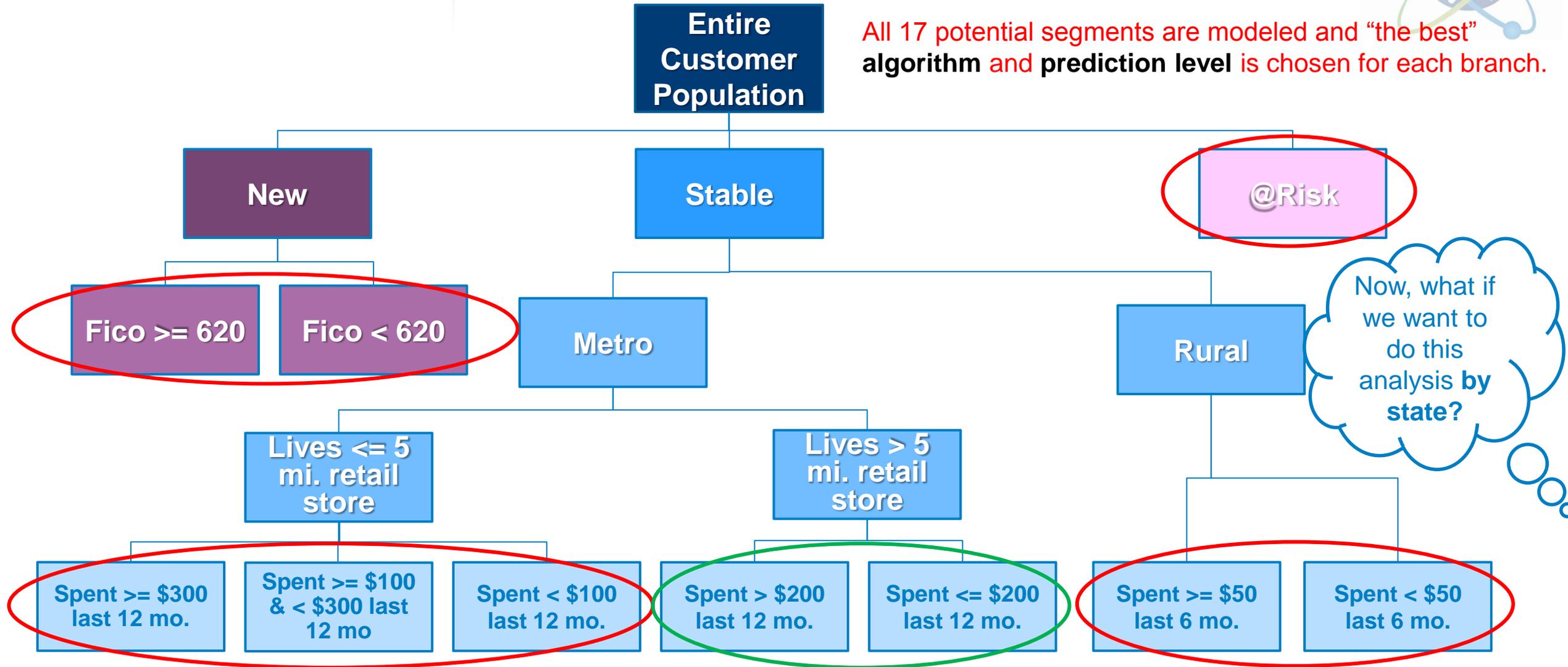
They need to expand their capabilities and be able to *MODEL AT SCALE*

DECISIONS AT SCALE

CREATING EVEN MORE GRANULAR MODELS



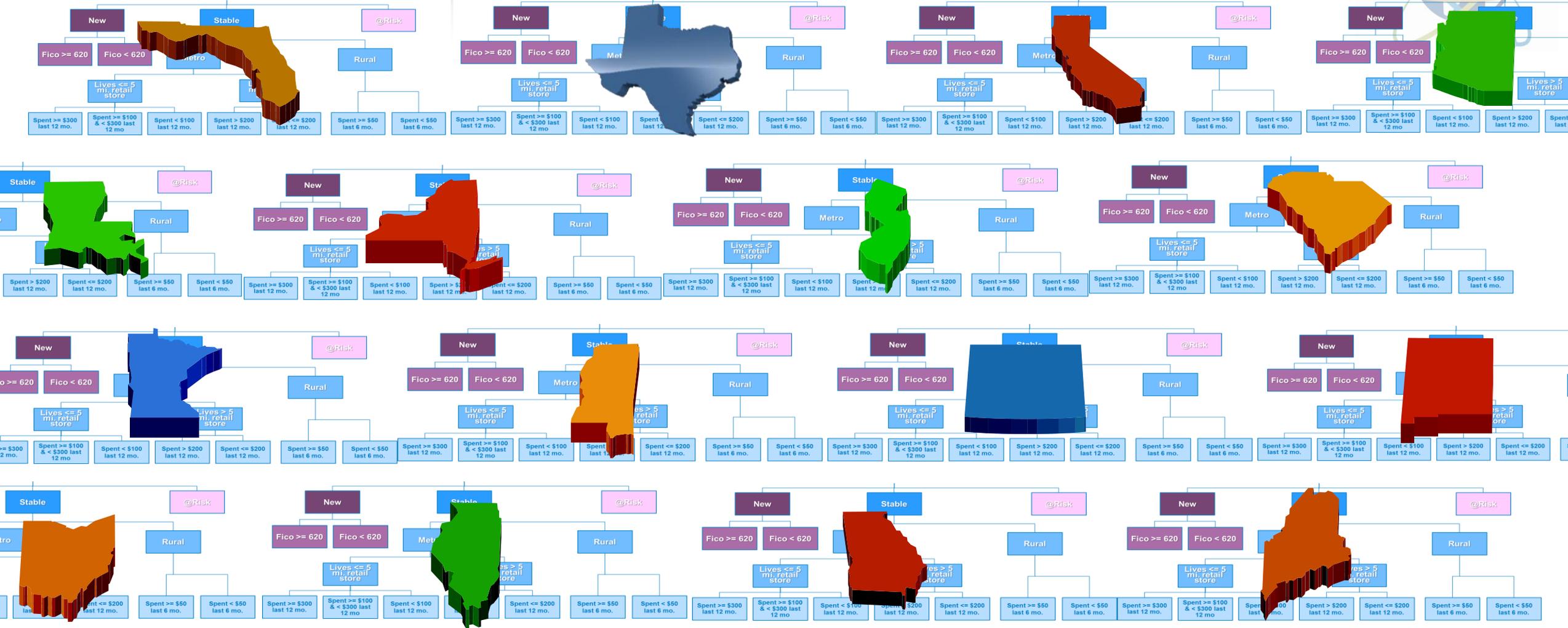
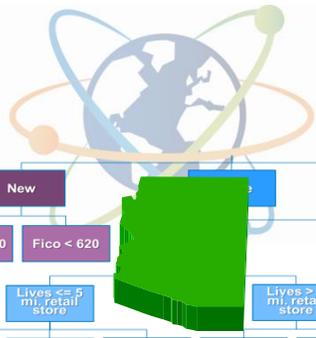
All 17 potential segments are modeled and “the best” algorithm and prediction level is chosen for each branch.



Now, what if we want to do this analysis by state?

DECISIONS AT SCALE

850 POTENTIAL MODELS TO EVALUATE



DECISIONS AT SCALE

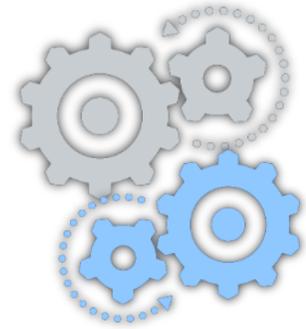
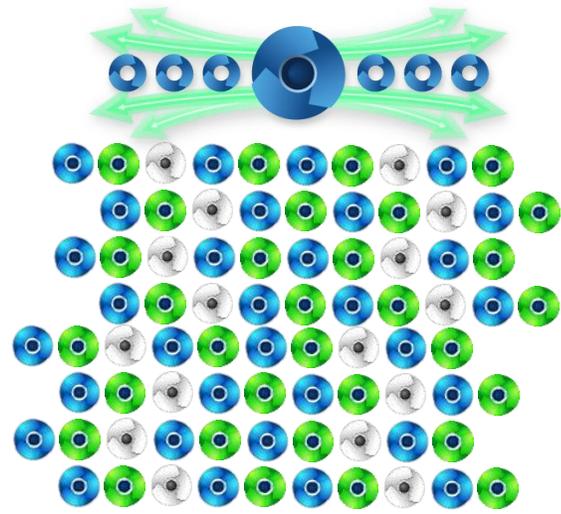
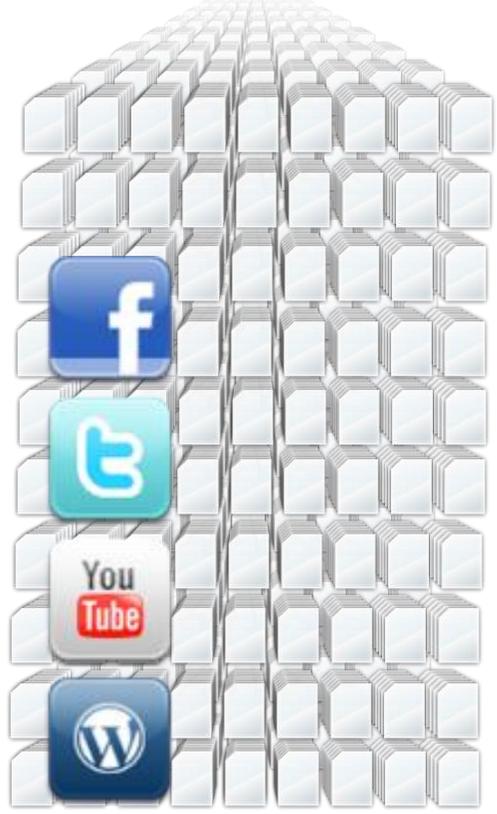


Massive Data Sets

Integration with Operational Systems

Iterative, Machine Learning Algorithms

Hundreds, if not thousands, of separate models

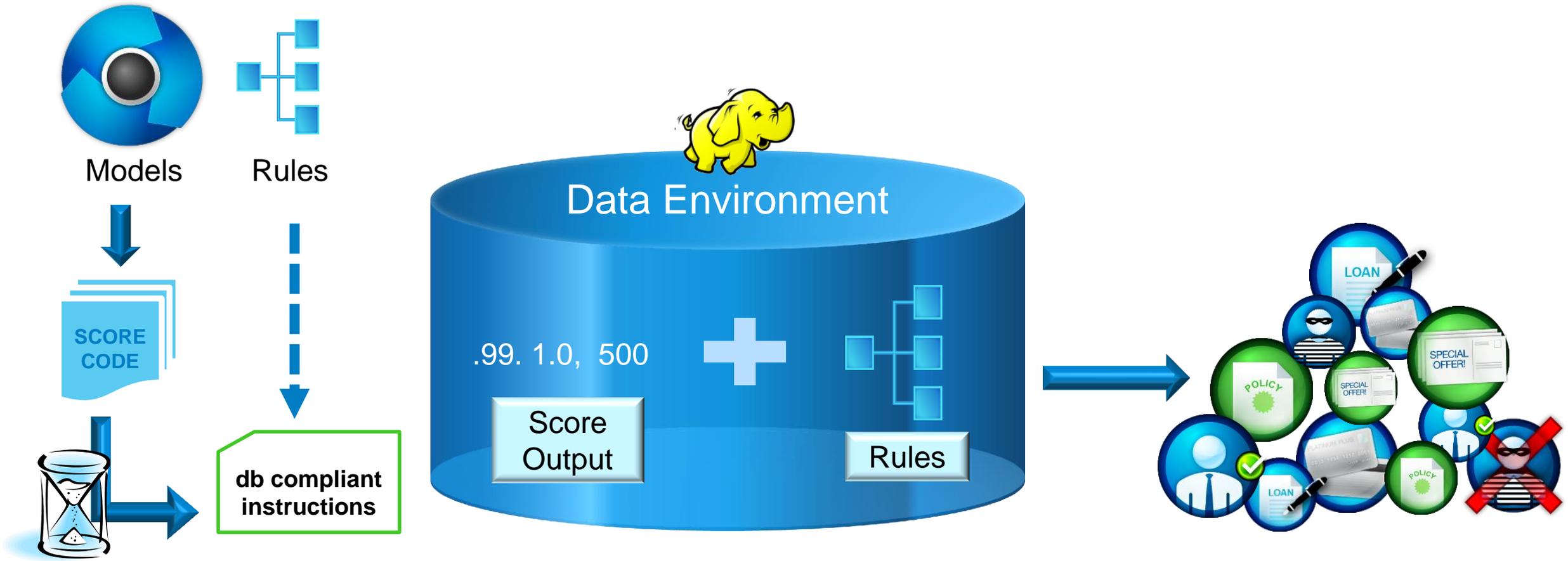


Enterprise Level Model Monitoring and Deployment

Diverse Sets of Inputs

DECISIONS AT SCALE

OPERATIONALIZING DECISION-MAKING



CASE STUDY: A FORWARD LOOKING & AGILE ORGANIZATION

10 YEARS AFTER IBM PC DEAL, **LENOVO KEEPS ON EVOLVING**



In the Beginning, There Was Legend
Launched in Beijing in November 1984, over the years it grew into China's largest PC vendor. It went public in 1994.



Legend Becomes Lenovo
By 2002, CEO Yang changed the name to Lenovo to avoid competition with the multitude of businesses internationally that used the name Legend.



Lenovo Hits It Big
IBM sold its PC business to Lenovo for \$1.25 billion in April 2005. Lenovo immediately became a significant player in the PC industry.



Lenovo Reaches the PC Summit
It took awhile—about 7 years—but Lenovo in August 2012 moved past HP and Dell to take the top spot on the list of the world's largest PC vendors.



Lenovo Partners With NEC
In 2011, Lenovo and NEC created a joint venture called Lenovo NEC Holdings to produce PCs. To-date, Lenovo has bought more than 3,800 mobile technology patents from NEC.



Lenovo and EMC Join Forces
Lenovo and storage giant EMC in 2012 created a joint venture called LenovoEMC to build x86 servers for SMBs.



Lenovo Reshapes Its Enterprise Business
Company officials in January 2014 announced a \$2.1 billion deal to buy IBM's x86 server business. Lenovo became the world's third-largest server maker.



Lenovo Also Targets the Mobile Space
Lenovo buys Motorola Mobility from Google for \$2.91 billion and became the third-largest smartphone maker in the world.



Lenovo and Its PC Plus Strategy
Lenovo not only wants to be the largest PC vendor in the world, but also the biggest computer maker, whether it's PCs, tablets, servers or smartphones. The acquisitions of IBM's server businesses and Motorola help accelerate Lenovo's PC Plus ambitions.



A Look at the Next 10 Years
Lenovo hosted Lenovo Tech World in Beijing 2015, its first global tech conference. At the show, company officials shared plans for future devices, including smartphones, wearable technologies and smart connected devices...



LENOVO USES SAS ANALYTICS TO RETHINK ITS REDESIGN: HOW?



Lenovo
Corporate
Analytics
Unit



Crawling the web, sifting through text data for Lenovo mentions

Unearthed a previously unknown forum, where an existing customer had written a glowing six-page review of the current design, especially the keyboard. The review attracted 2,000 comments!



The analysis-driven discovery of an issue with docking stations provided the 2nd big win for Lenovo.

Customers were calling tech support to say they were having issues with the screen, or the machine shutting down abruptly, or the battery wasn't charging.

Similar accounts were turning up on social media posts.



SAS
Contextual Analysis
Sentiment Analysis
Visual Analytics
Text Miner

LENOVO DIDN'T SET OUT TO GAUGE SENTIMENT AROUND OBSCURE BLOGGERS OR DISCOVER NEW FORUMS...



..they wanted to inform quality, product development and product innovation by studying data – its own and that from outside the four walls.



“We’re mainly focused on supply chain optimization, cross-sell/up-sell opportunities and pricing and packaging of services. Any improvements we make in these areas are based on listening to the customer,” SAS provides the framework to “manage the crazy amount of data” that is generated.



Mohammed Chaara

Director of Customer Insight & VOC Analytics



BEFORE

Traditional methods of gauging sentiment and understanding quality have built-in weaknesses and time lags:

- Customer surveys only surface information from customers who're willing to fill them out.
- Warranty information often comes in months after delivery of the new product.
- It can be difficult to decipher the myriad causes of customer discontent and product issues.
- It takes 60 to 90 days for the reports to come back from the field

NOW

- Feedback now takes just 15 to 30 days - Over 50% reduction in issue-detection time.
- The reduction in detection time has driven a 10 to 15 % reduction in warranty costs for those issues.
- As warranty claims cost the company about \$1.2 billion yearly, this is a significant savings!

