IBM SOCIAL AND ANALYTICS CONFERENCE 2017

Redefine work with Watson

Machine Learning

Защо ML е ”game changing”технология за бизнеса?

IBS

IBM Machine Learning for zOS

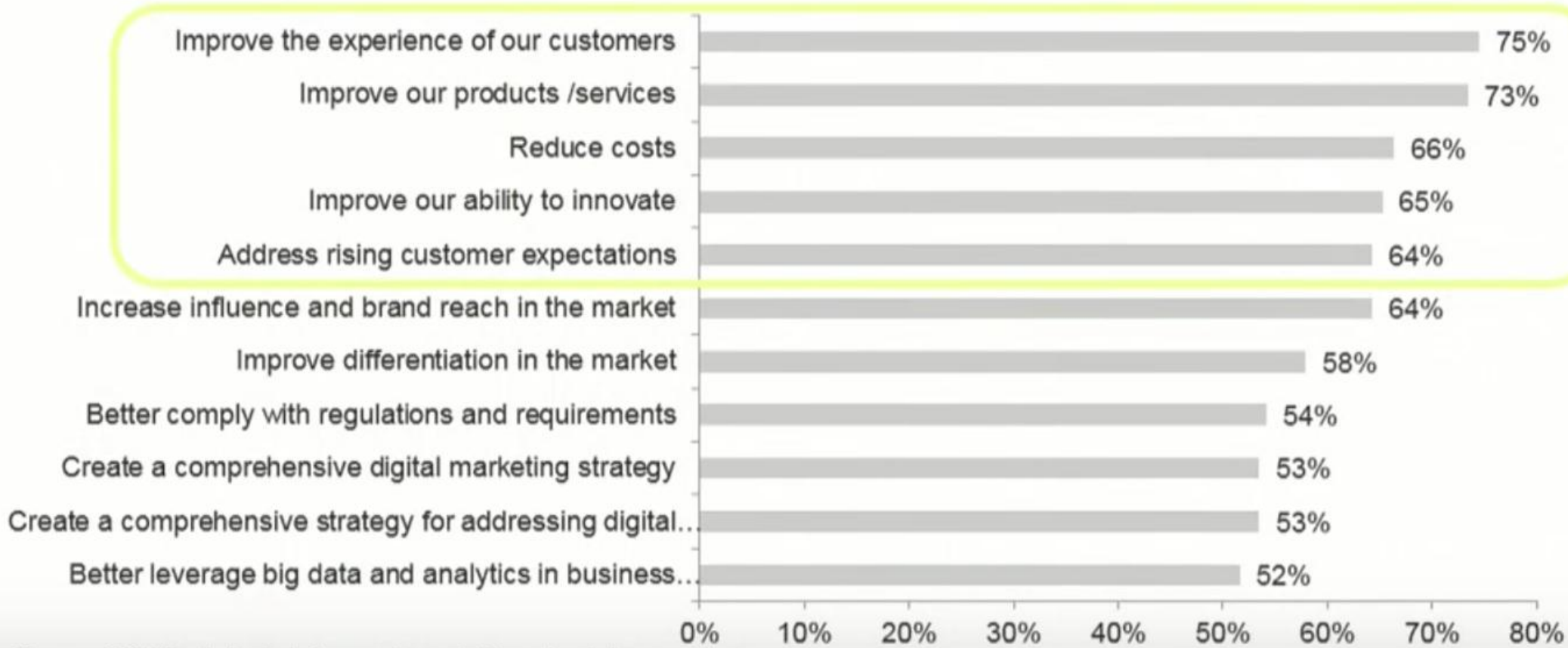
Key features

- Simplify model creation
- Easily deploy models
- Easily manage models
- Ensure model accuracy

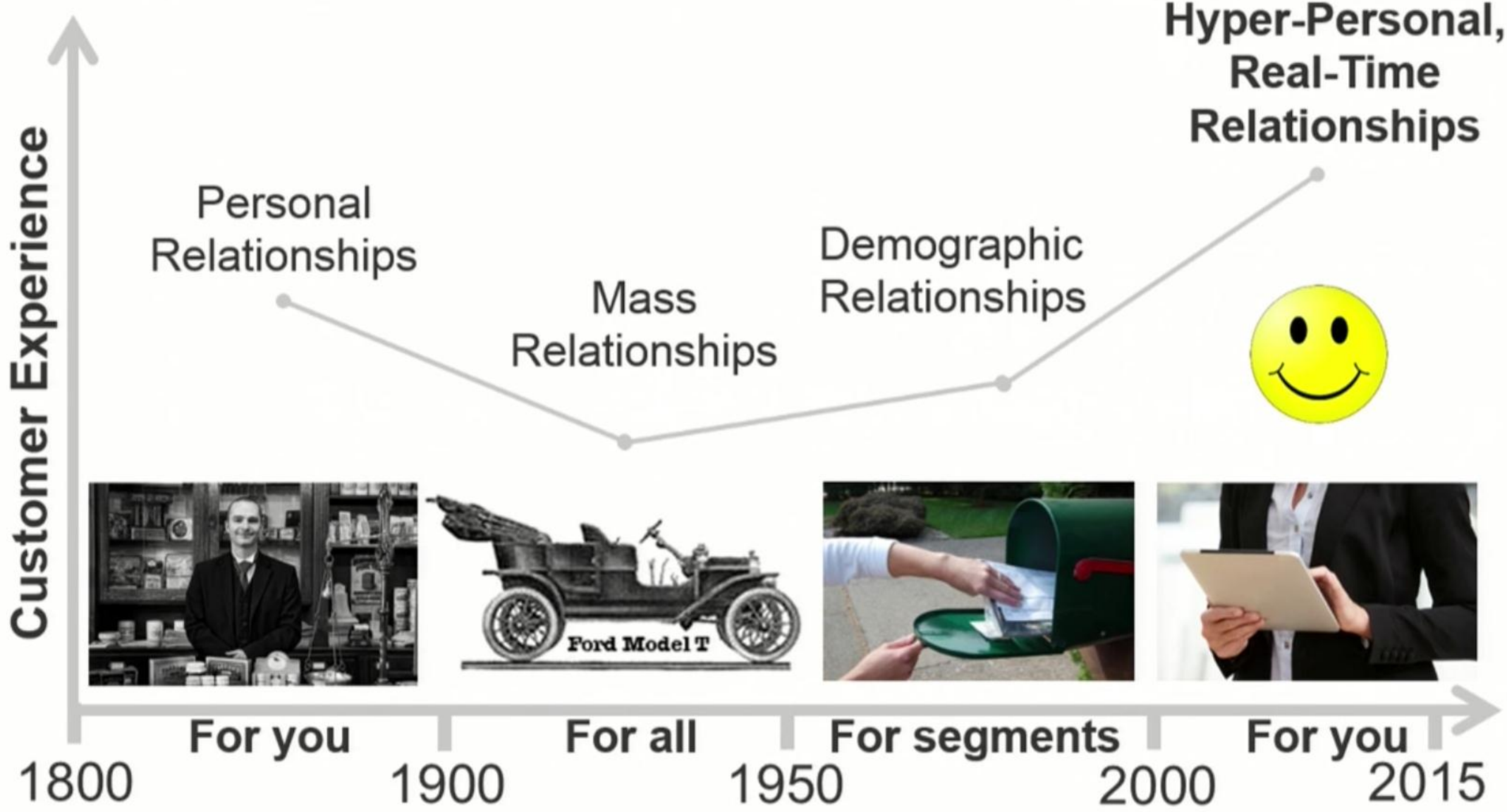
https://youtu.be/Xs-4sRZ133I

#priorities

Customer experience is a top priority for business data and analytics decision-makers

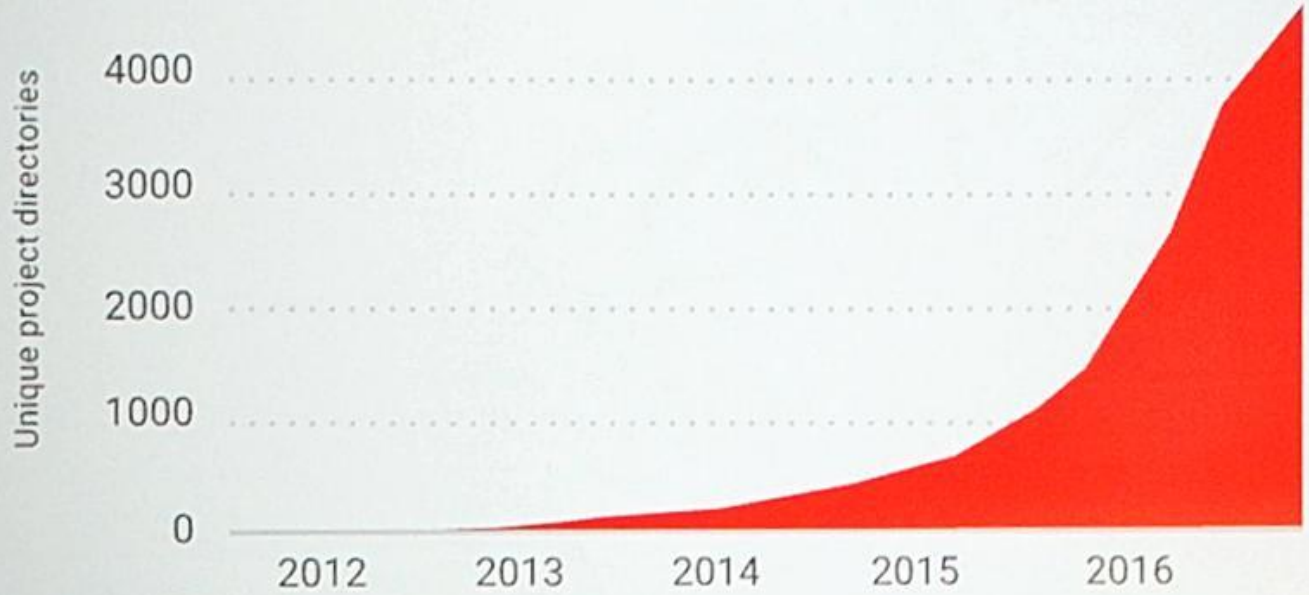


Base: 3,005 global data and analytics decision-makers

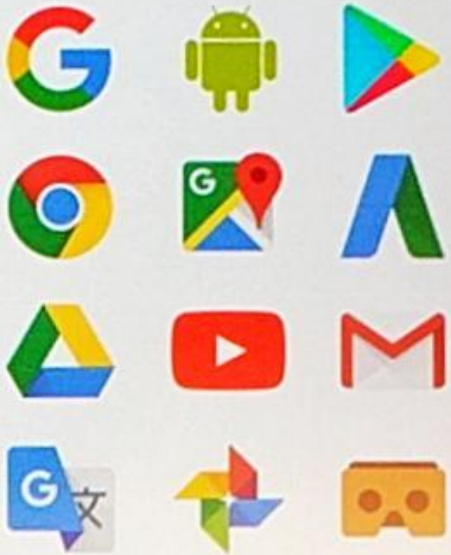

Customer Experience
Personal Relationships
Mass Relationships
Demographic Relationships
Hyper-Personal, Real-Time Relationships
Ford Model T
For you
For all
For segments
For you
1800
1900
1950
2000
2015

Rapidly accelerating use of **deep learning at Google**

Google3 directories containing **Brain Models**



Used across products:



#celebrities


Customers want and increasingly
expect to be treated like celebrities.

Celebrity experiences must:

- Learn individual customer characteristics and behaviors
- Detect customer needs and desires in real-time
- Adapt applications to serve an individual customer in real-time

#IBMML - Quiz

How well do you know this consumer?

- Male
- 35 years old
- Single
- Resides in New York City
- Makes $100,000 per year

What do you predict he would do if the bank accidently transferred $5,000 into his bank account?

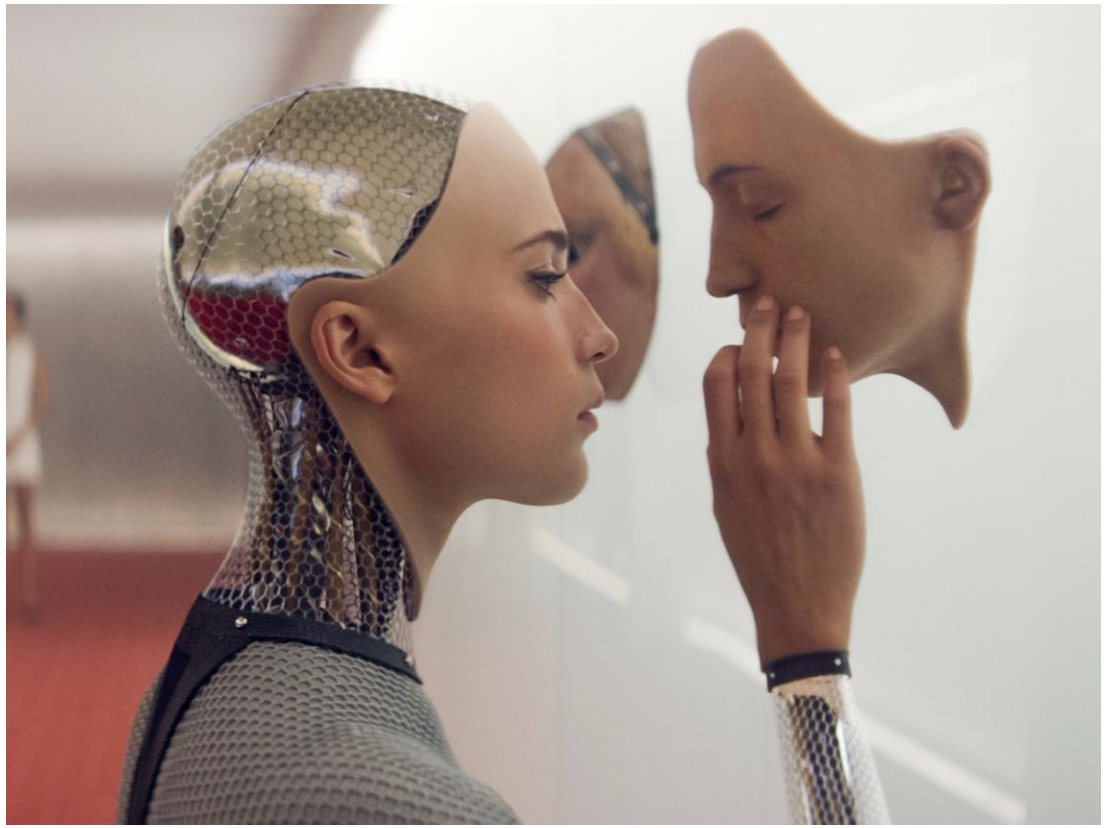
A. Give the money back

B. Take the money and run

#AI

Artificial Intelligence

Pure AI

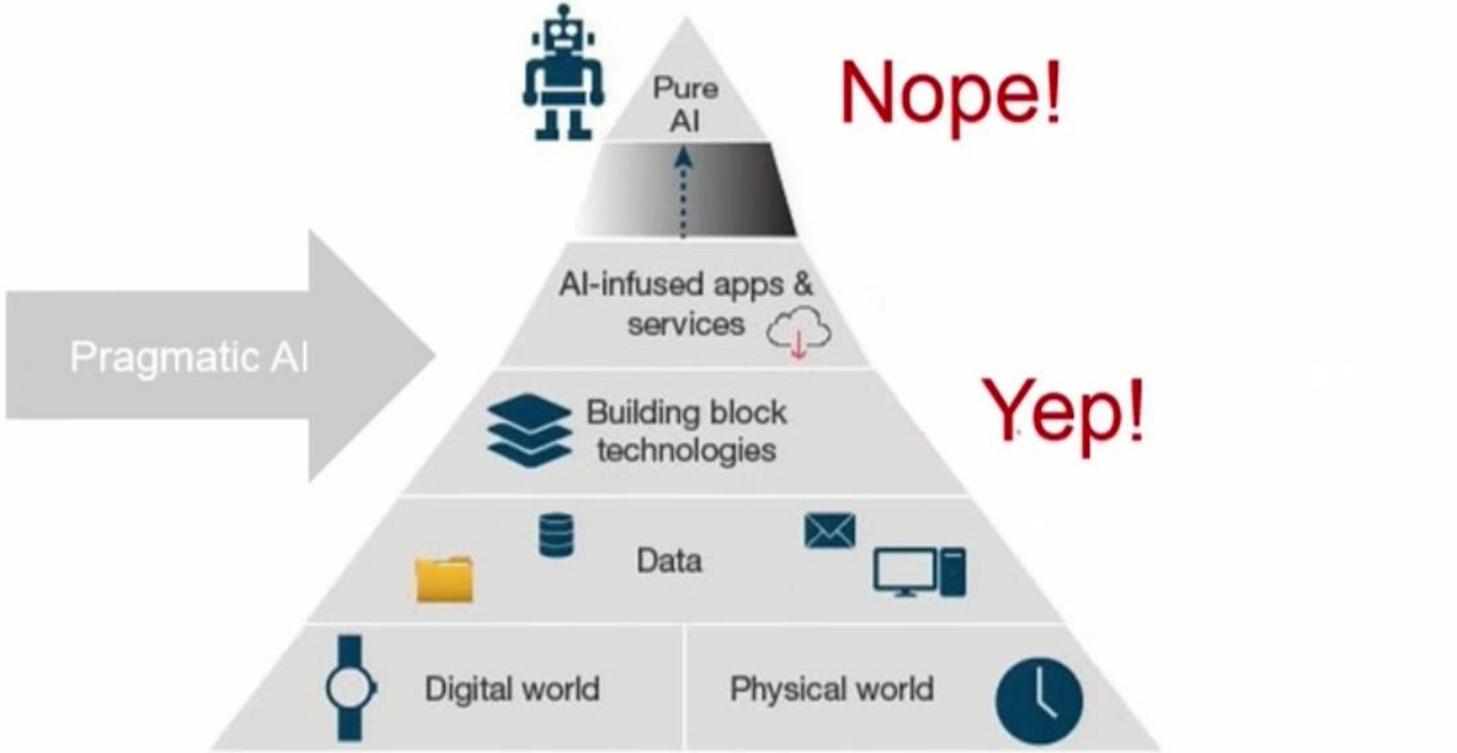


Practical AI (aka Cognitive)

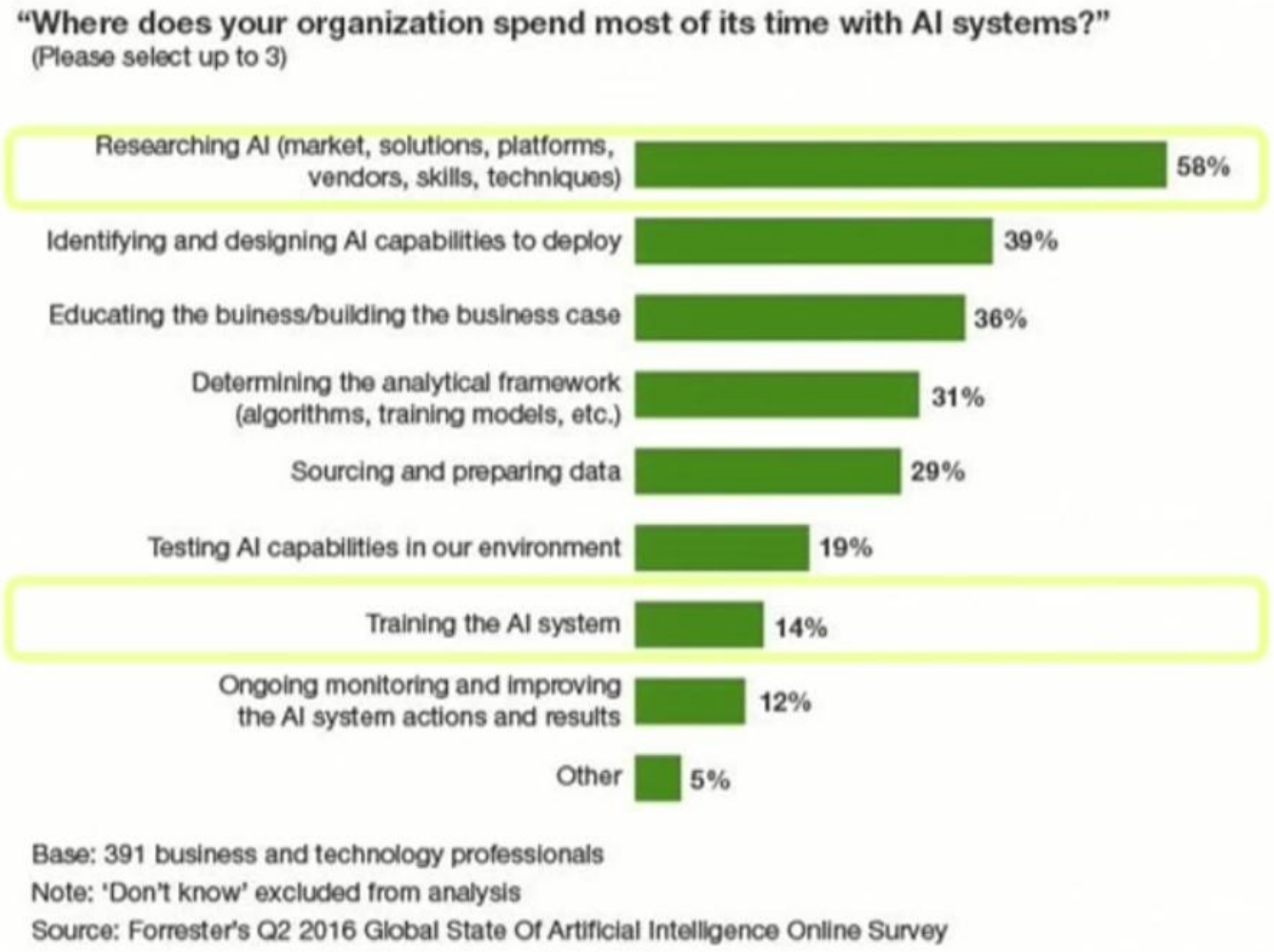
”AI that will augment people and business to make more **concrete** decisions **by reducing** the overall unpredictability.”

Pragmatic AI

Enterprises can use AI building blocks today to add a modicum of intelligence to apps



Artificial intelligence (AI) interest is high; adoption is nascent

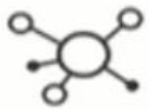


Opportunity


Cognitive computing is pragmatic AI.

Use one or more of these cognitive building blocks to build a modicum of intelligence in your apps.

Good Enough
Pragmatic 1



Deep learning

Image analysis

Knowledge engineering

Natural language generation

Pretty Good
Pragmatic 2

Machine learning

Speech recognition

Natural language processing

Creepy Good
Pragmatic 3

Sensory perception

Robotics

Pure

None yet

?

#ML

Modelling the World

MACHINE LEARNING

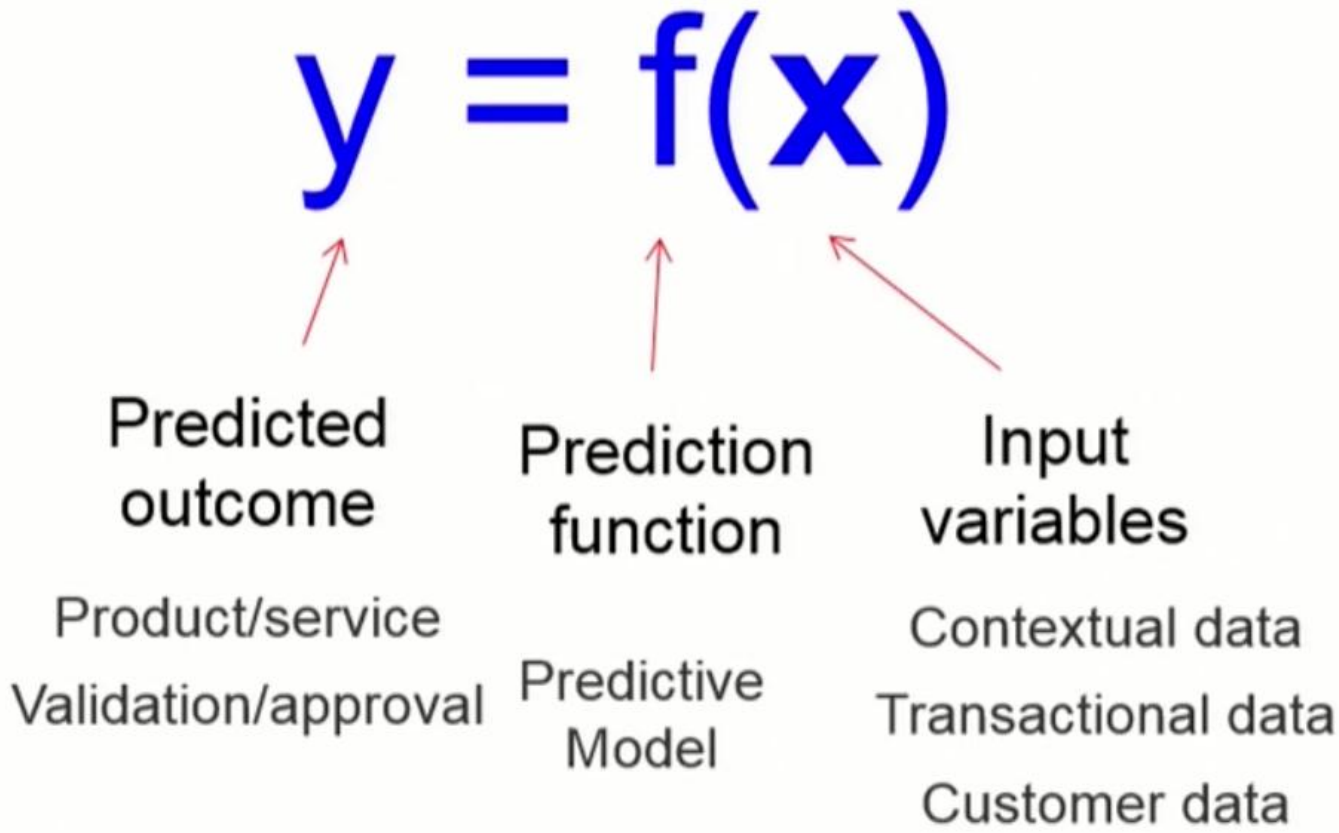
Algorithms that analyze data to find models – models that can predict outcomes or understand context with significant accuracy and improve as more data is available.


Is this customer thinking about moving to a rival firm right now?

Models can be very powerful and profitable, but understand that:

- Models are about probabilities, NOT absolutes
  - E.g. 78% chance you will like *Westworld*
- Accurate models may NOT exist for every question
  - E.g. Elections, economic indicators, fashion, etc…
- Machine learning models are based on correlation and probably NOT causitive

Machine learning models are probabilistic functions that take input variables, apply a formula and/or rules to predict an outcome.

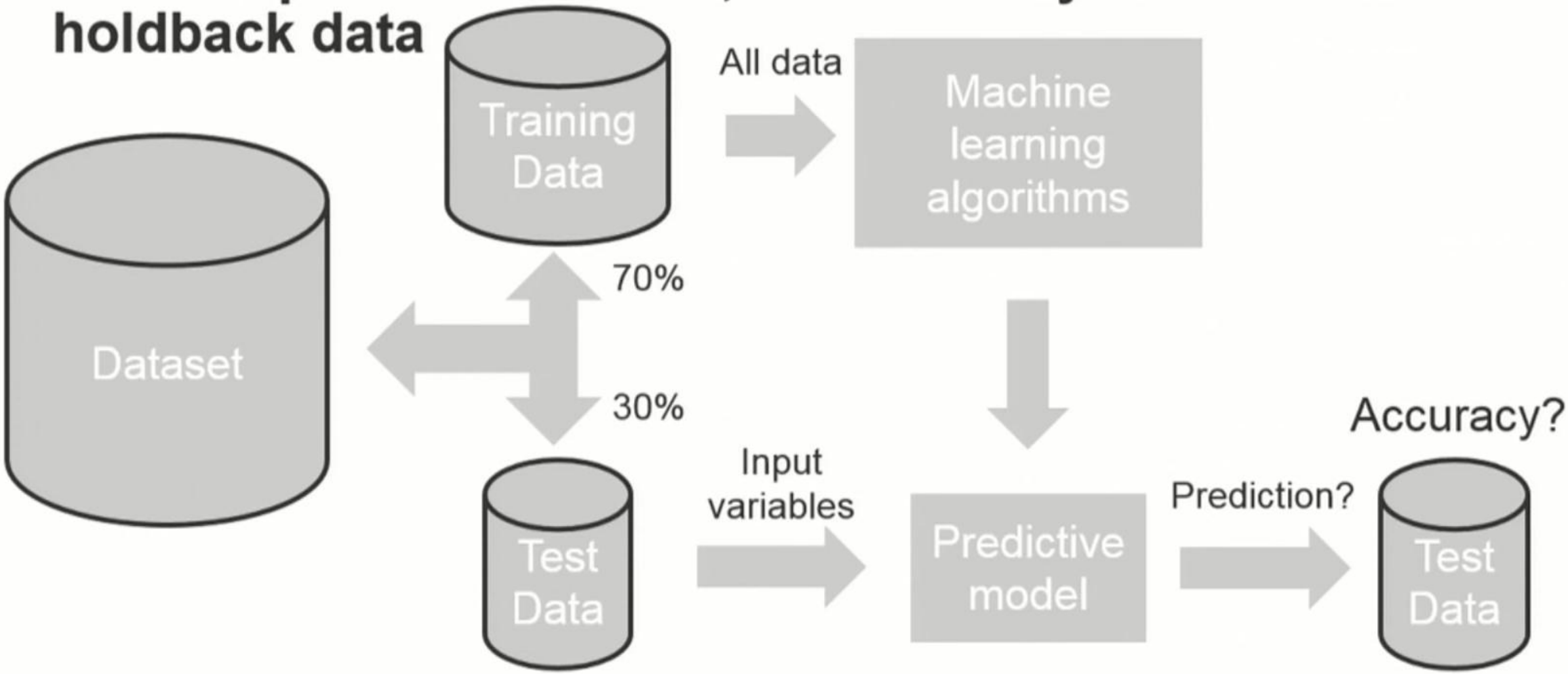


Play Tennis?

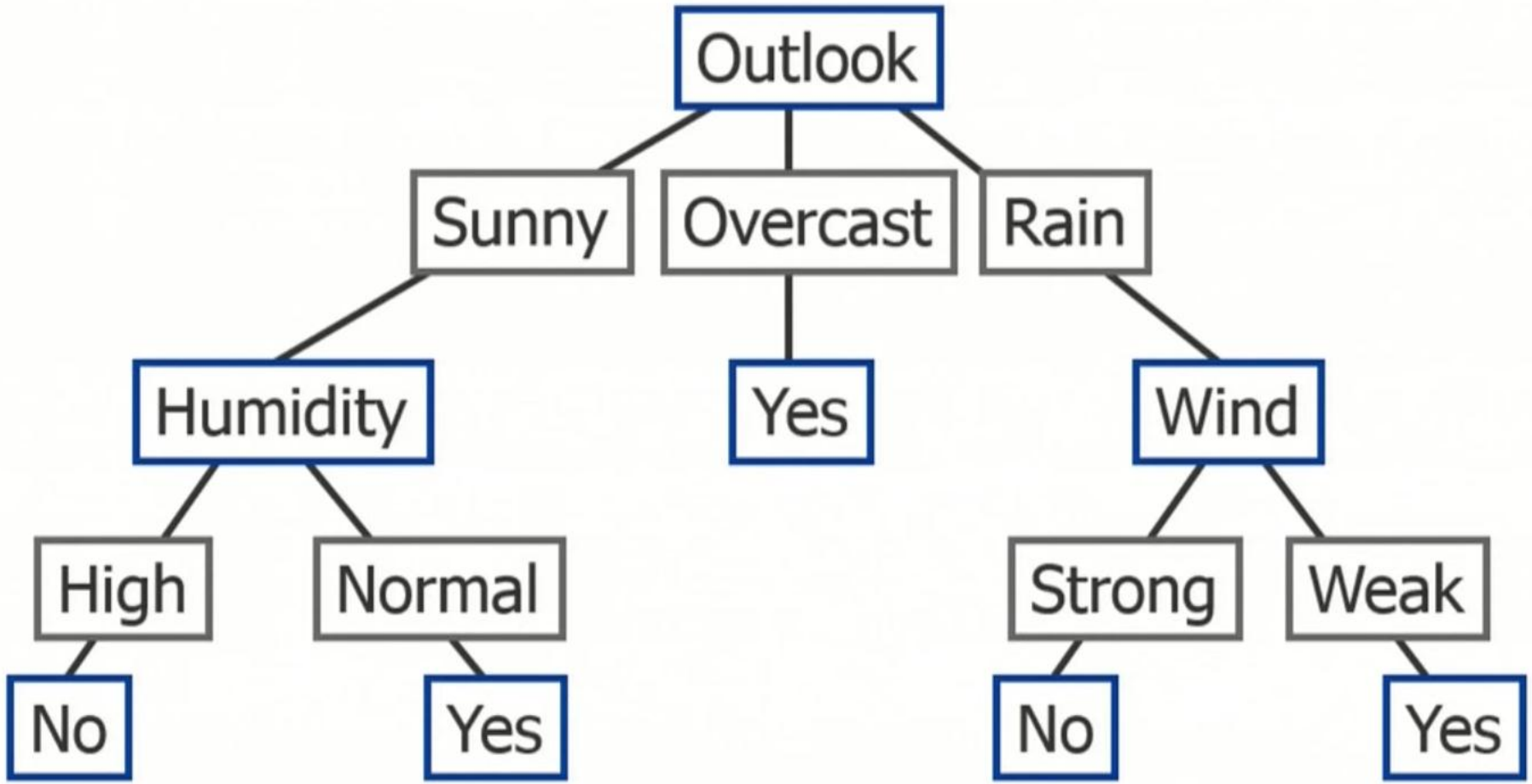
Training data for “Play tennis?”

Day	Outlook	Temp.	Humidity	Wind	Play Tennis
D1	Sunny	Hot	High	Weak	No
D2	Sunny	Hot	High	Strong	No
D3	Overcast	Hot	High	Weak	Yes
D4	Rain	Mild	High	Weak	Yes
D5	Rain	Cool	Normal	Weak	Yes
D6	Rain	Cool	Normal	Strong	No
D7	Overcast	Cool	Normal	Weak	Yes
D8	Sunny	Mild	High	Weak	No
D9	Sunny	Cold	Normal	Weak	Yes
D10	Rain	Mild	Normal	Strong	Yes
D11	Sunny	Mild	Normal	Strong	Yes
D12	Overcast	Mild	High	Strong	Yes
D13	Overcast	Hot	Normal	Weak	Yes
D14	Rain	Mild	High	Strong	No

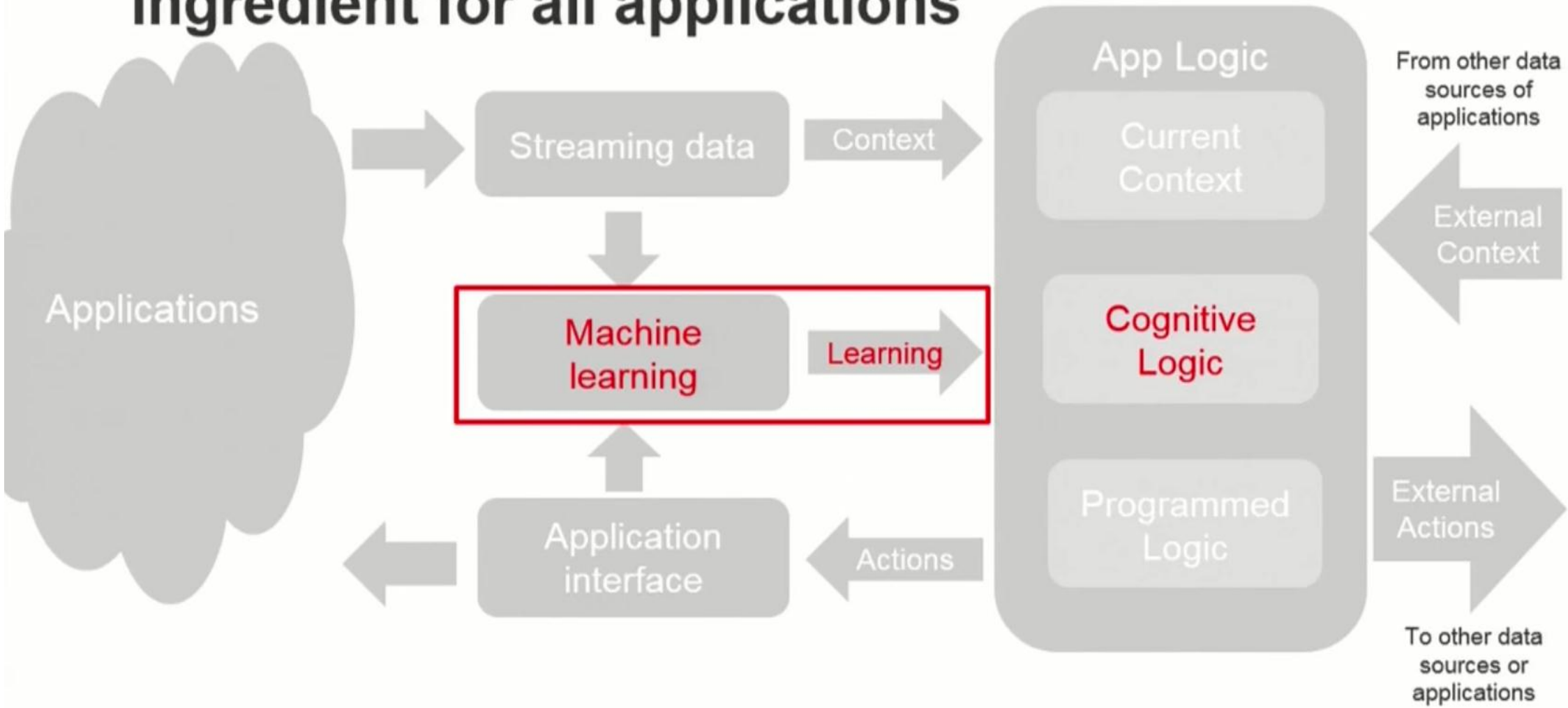
Machine learning algorithms use training data to create a predictive model; it's accuracy is tested on holdback data



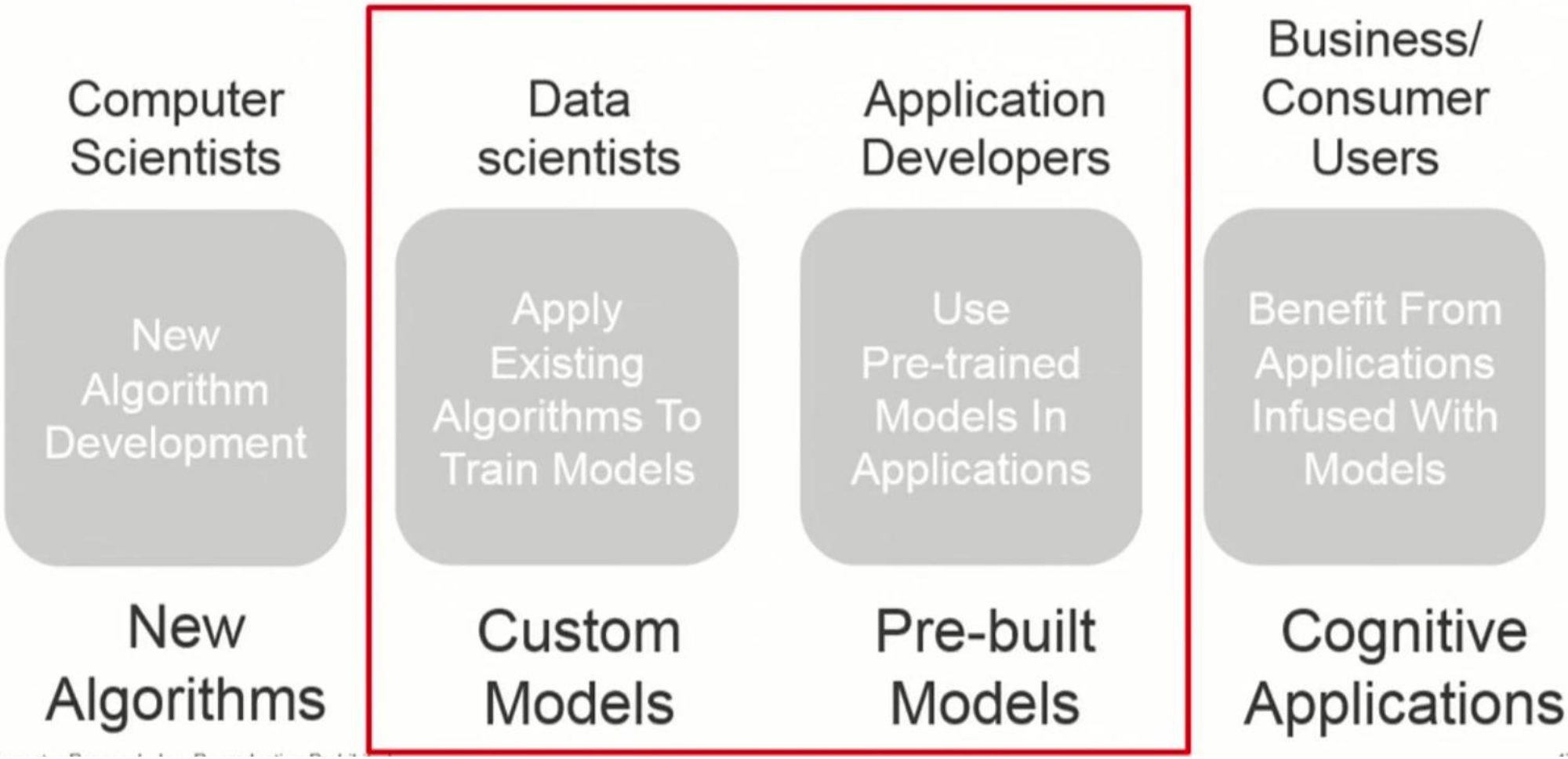
Learned decision logic for “Play tennis?” is created automatically by machine learning



Machine learning should be an essential ingredient for all applications



Data scientists and/or developers can infuse cognitive models into applications.



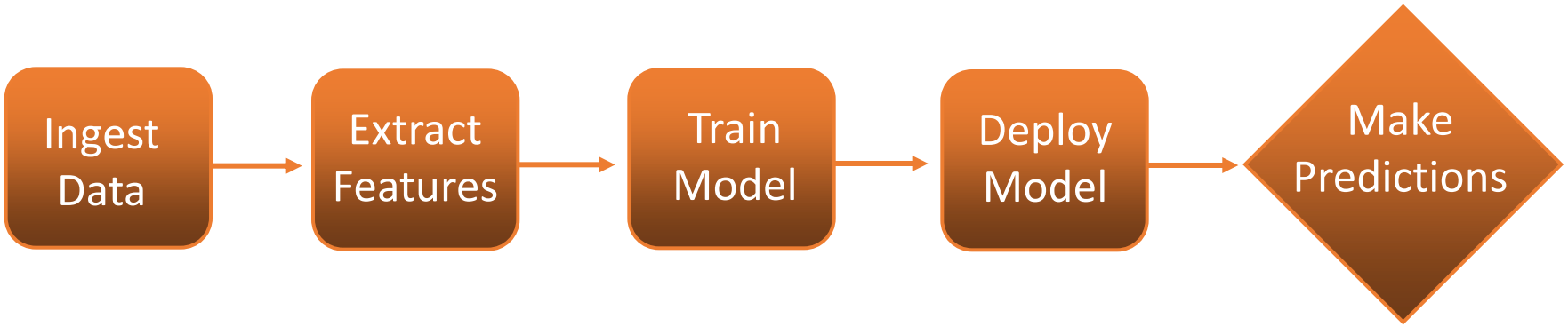
Cognitive Models

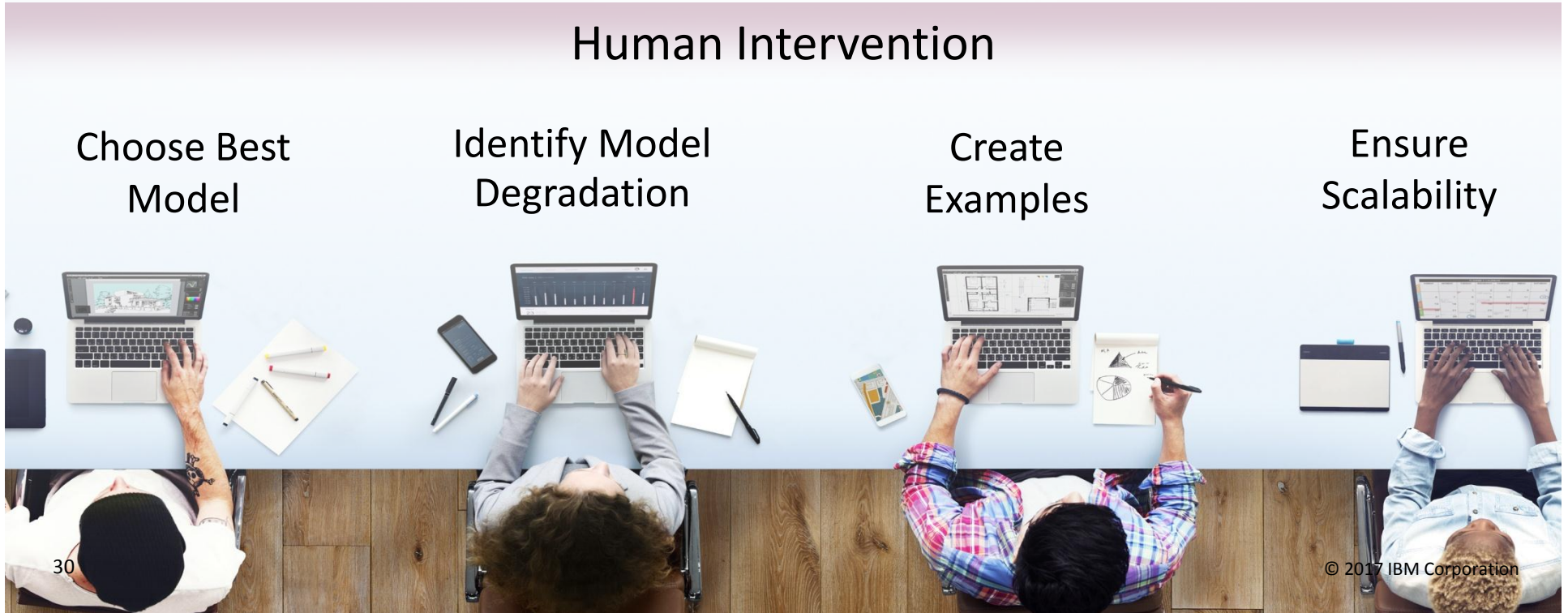
10 characteristics + 10 behaviors + 10 needs =
30 cognitive models per customer

1 million customers x 30 models =
30 million cognitive models

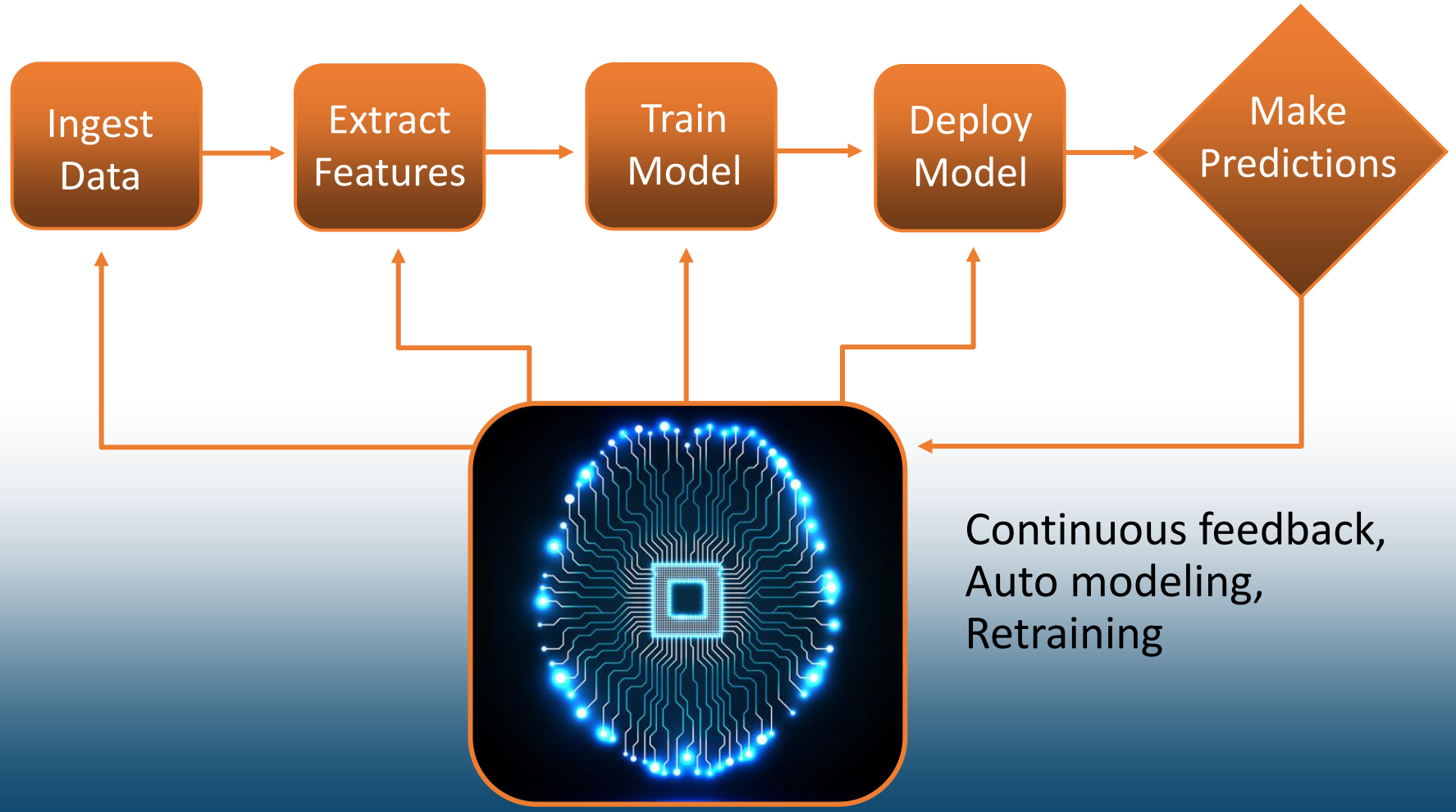
The (incomplete) machine learning process

Takes significant development, deployment and management efforts





The (complete) machine learning process



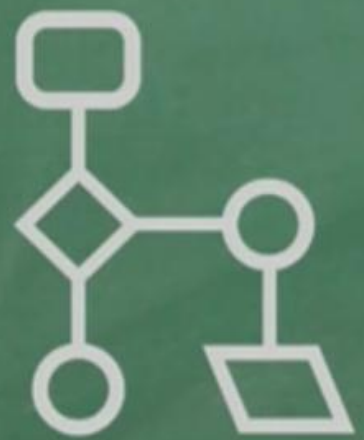
#DataGravity


All data originates in real-time…

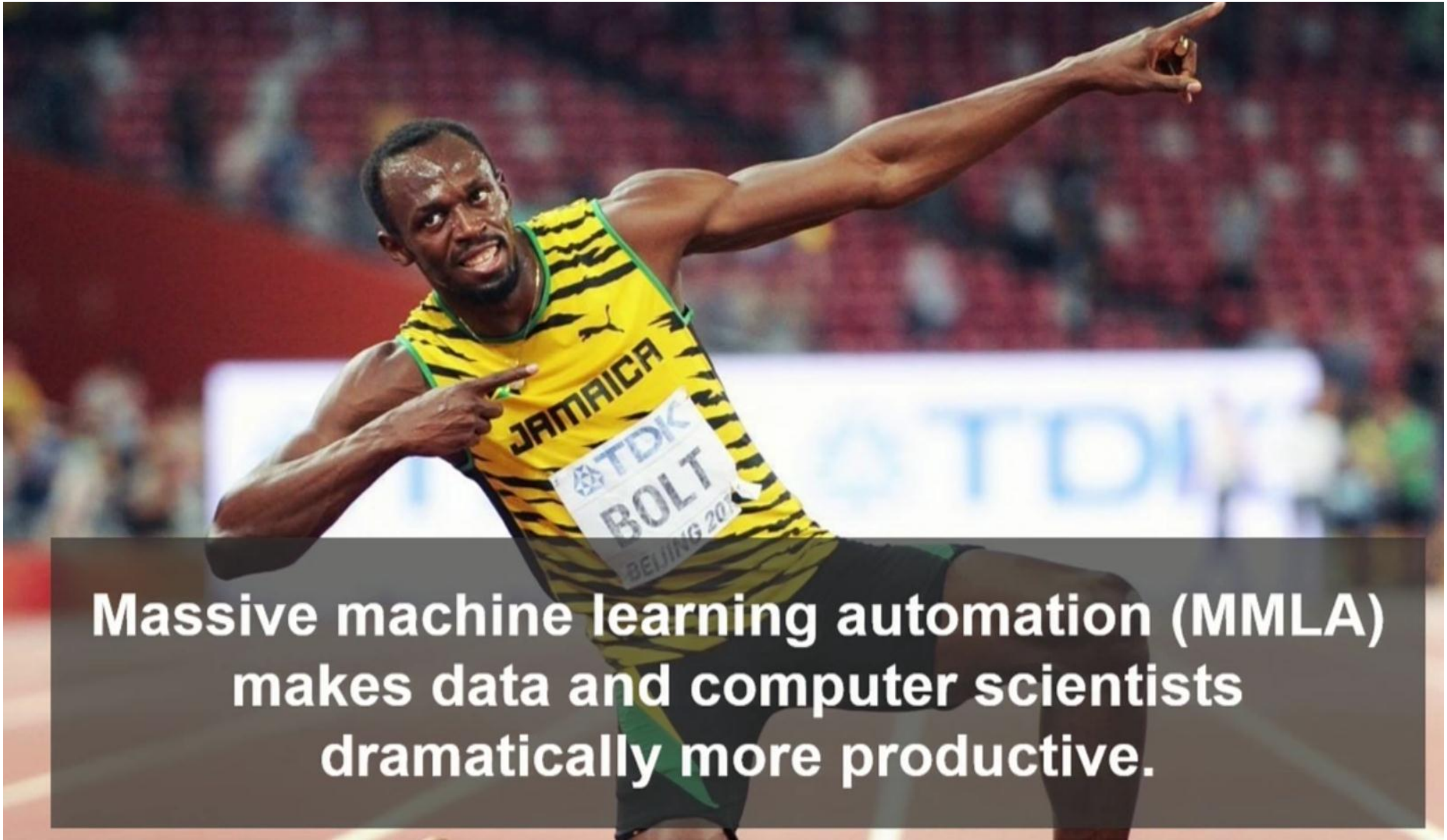

…but, traditional analytics to gain insights and build models is usually done much, much later.


Insights are perishable.

Millions of AI models…

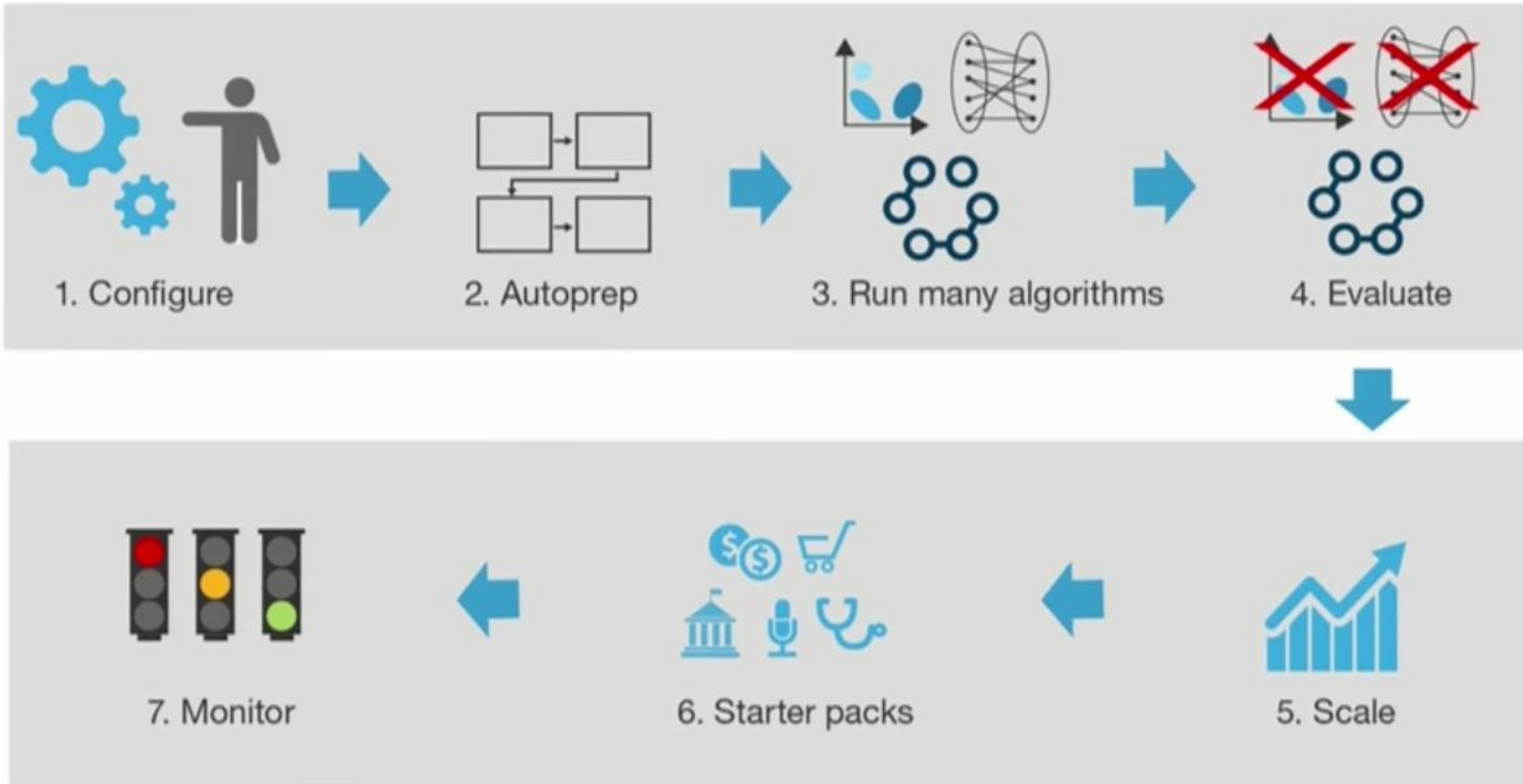


…updated continuously!



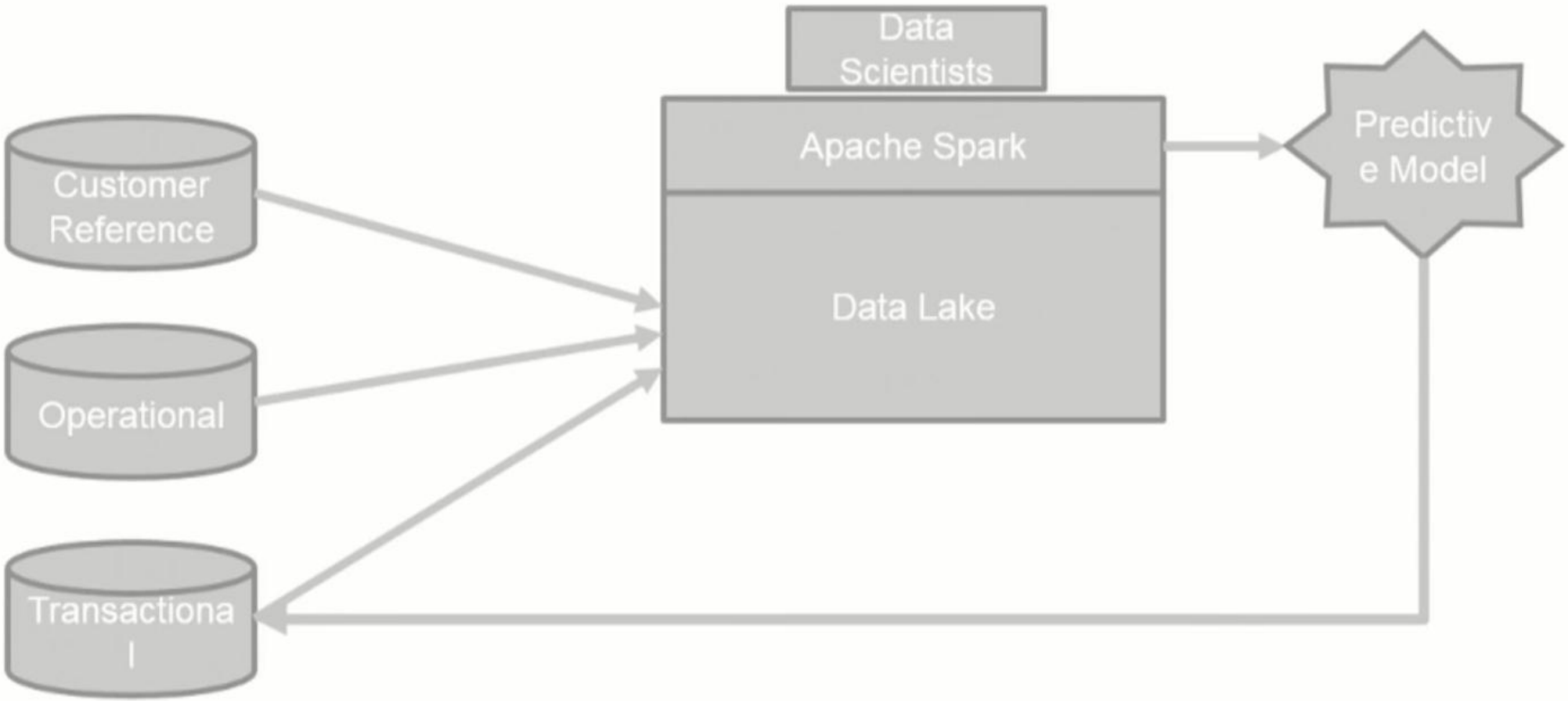
Massive machine learning automation (MMLA) makes data and computer scientists dramatically more productive.

The seven characteristics of massive machine learning automation.



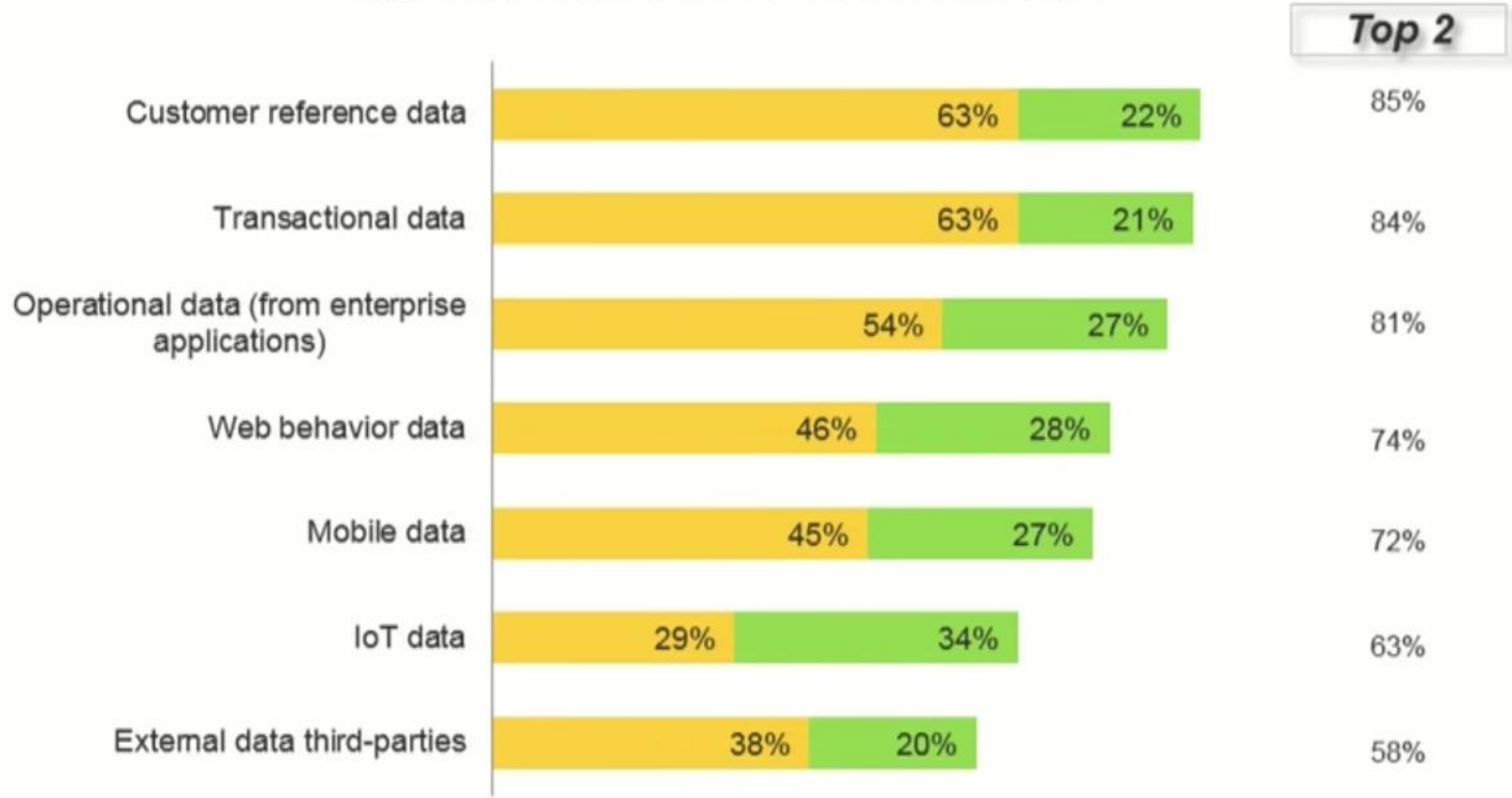

Data lakes are repositories for data from multiple sources.

The data lake approach to analytics can require excessive movement of the data.



Data scientists recognize importance of transactional data in building predictive models

"Thinking specifically about building predictive models, which of the following best describes the importance of the data needed to build accurate models?"



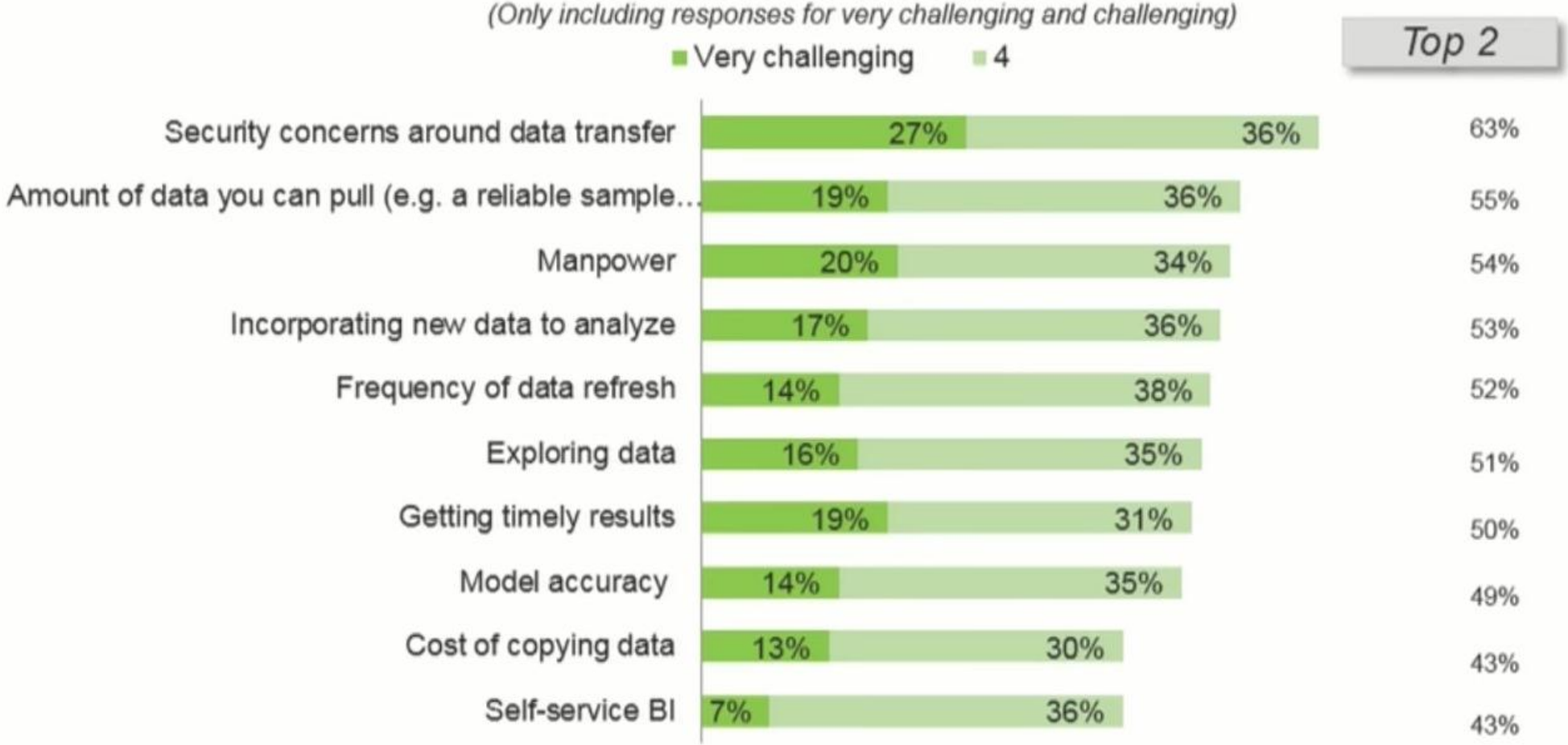
Base: 100 data science and data analytics leaders at enterprises within the US

Source: A commissioned study conducted by Forrester Consulting on behalf of IBM, April 2016

Moving transactional data in analytics models is challenging

"How challenging are each of the following as your organization tries to incorporate operational and transactional data into your analytics models?"

(Only including responses for very challenging and challenging)



Base: 168 IT managers responsible for mainframe strategy at enterprises within the US, UK and Germany

Source: A commissioned study conducted by Forrester Consulting on behalf of IBM, April 2016


Data gravity approach performs analytics where the preponderance of the data originates.

Recommendations

- Measure data gravity for customer reference data, transactions, and operational data.
- Deploy Apache Spark where data gravity is strongest.
- Provide automation for data scientists to build more accurate predictive models, faster.
- Deploy predictive models directly within transactional systems and interaction systems.


Your customers
are ready to be
treated like
celebrities!