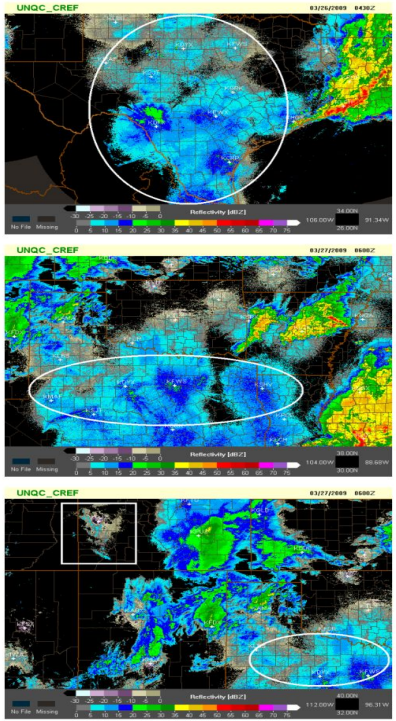
Leveraging AI on the Cloud to transform your business

Florida Business Analytics Forum 2018
at University of South Florida

Google Cloud

My (unusual) path to Google

Neural networks at NOAA



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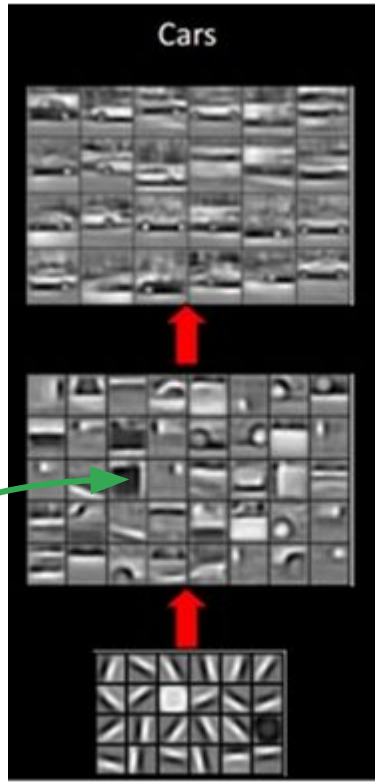
DNNs solved image analysis

My PhD thesis can now be learned by a neural network ...



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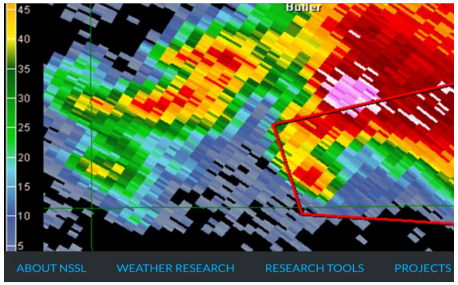
After 4 years managing infra ...

4 years



Home > Research Tools > Warning

RESEARCH TOOLS: WARNING

FACETs

Forecasting a Continuum of Environmental Threats (FACETs) serves as
framework and strategy to help focus and direct efforts related to next-
technology and tools for forecasting environmental hazards. FACETs wi
based probabilistic threats, storm-scale observations and guidance, the
grid tools, useful output, effective response, and verification.

FACETs: A New Warning Paradigm & Framework for Progress (.pptx, 28

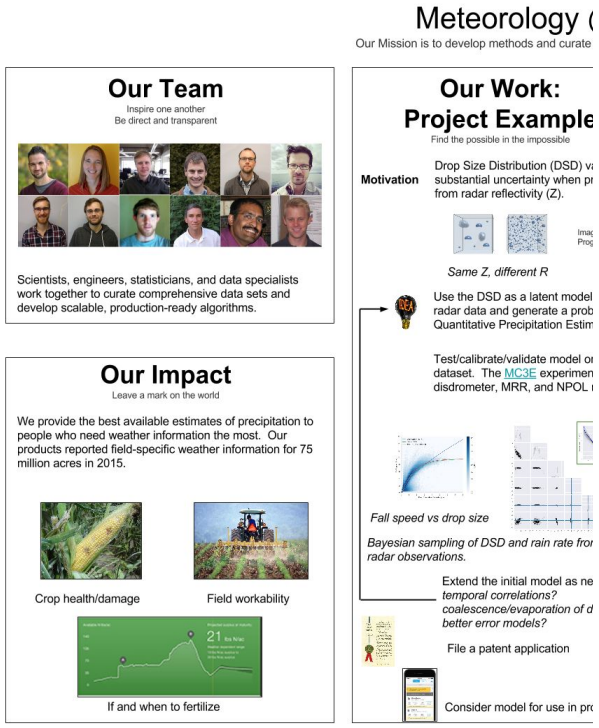
MYRORSS

The **Multi-Year Reanalysis Of Remotely-Sensed Storms (MYRORSS** –
"mirrors") NSSL and the National Climatic Data Center (NCDC) to recor
numerical model output and radar products derived from 15 years of W
the coterminous U.S. (CONUS). The end result of this research will be a
diverse range of applications, including severe weather diagnosis and cl
information.

Google Cloud

I discovered the power of cloud.

Every two weeks!



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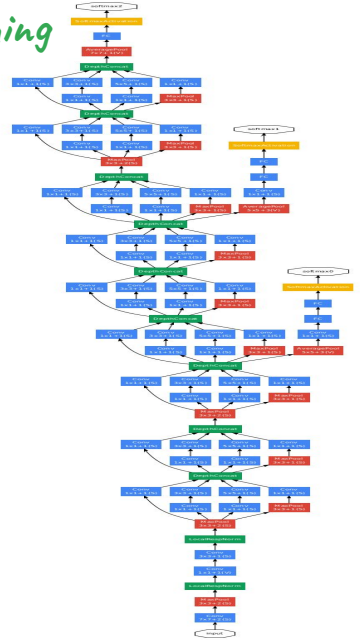
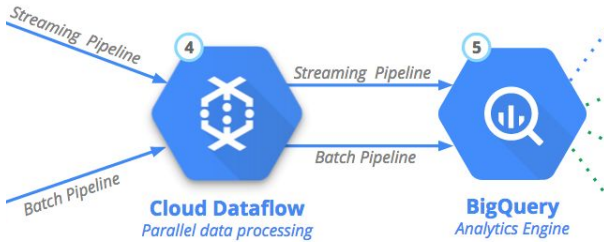


Where do you go if you want to be part of two revolutions?



Cloud Computing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Leveraging AI on the Cloud to transform your business

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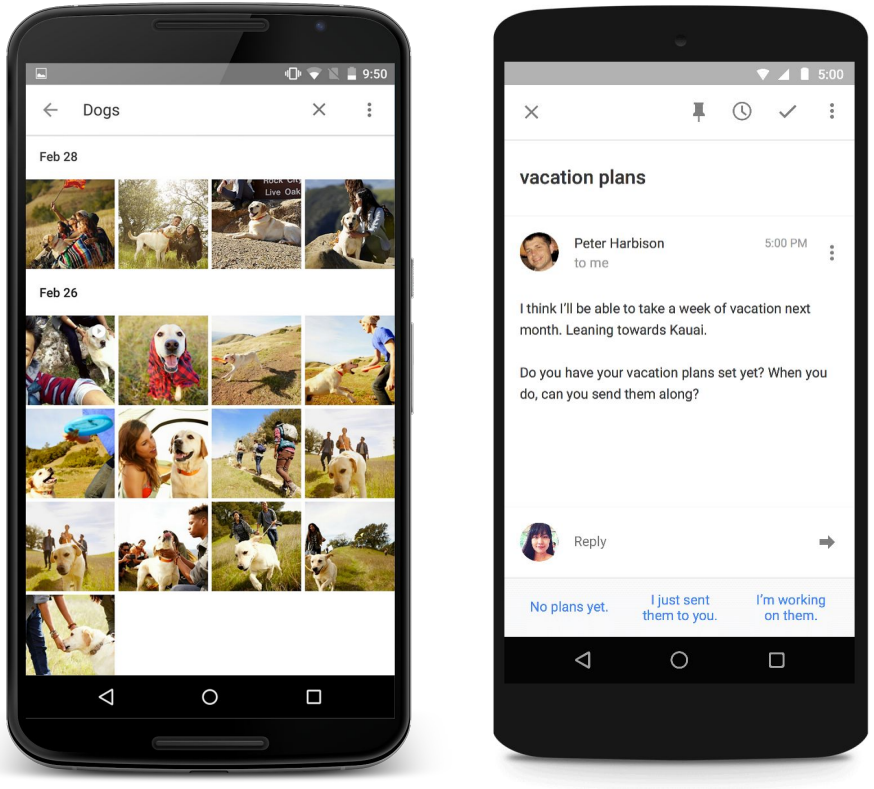
When you hear *machine learning*, you probably think of...



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The most common ML models at Google operate on structured data

Type of network	# of network layers	# of weights	% of deployed models
MLP0	5	20M	61%
MLP1	4	5M	
LSTM0	58	52M	29%
LSTM1	56	34M	
CNN0	16	8M	5%
CNN1	89	100M	

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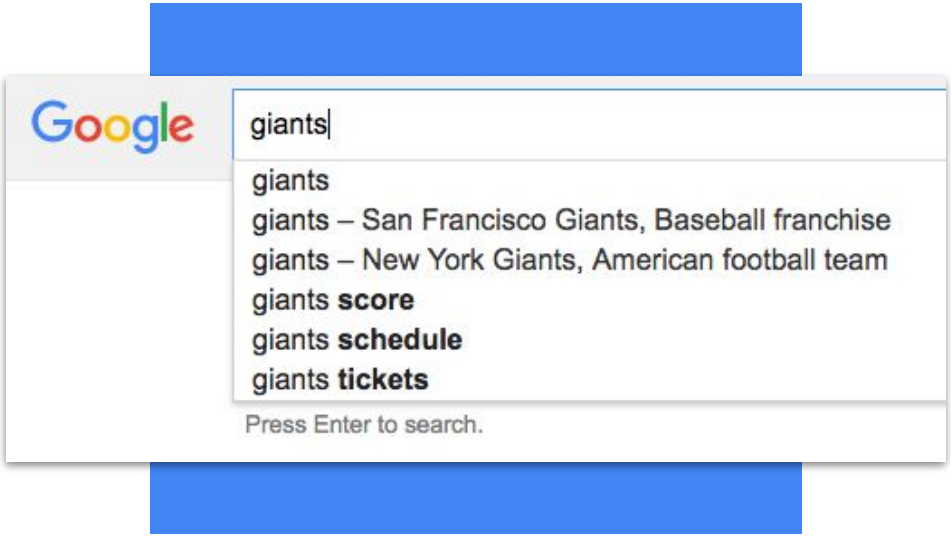
Machine Learning is a way to use standard algorithms to derive predictive insights from data and make repeated decisions

data

algorithm

Predictive insight

decision



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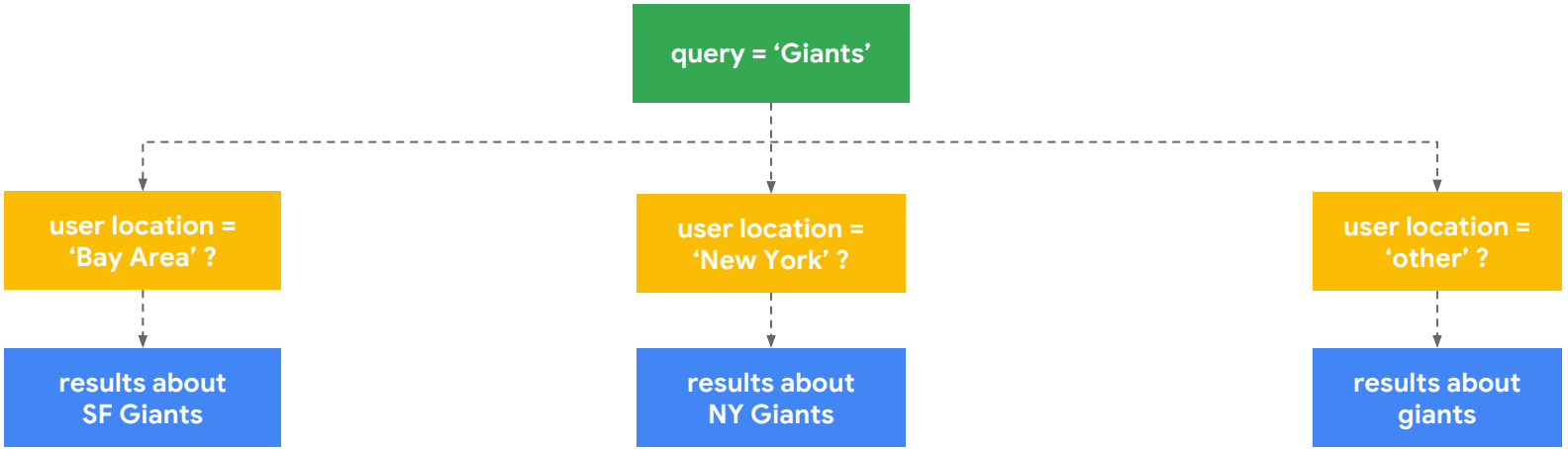
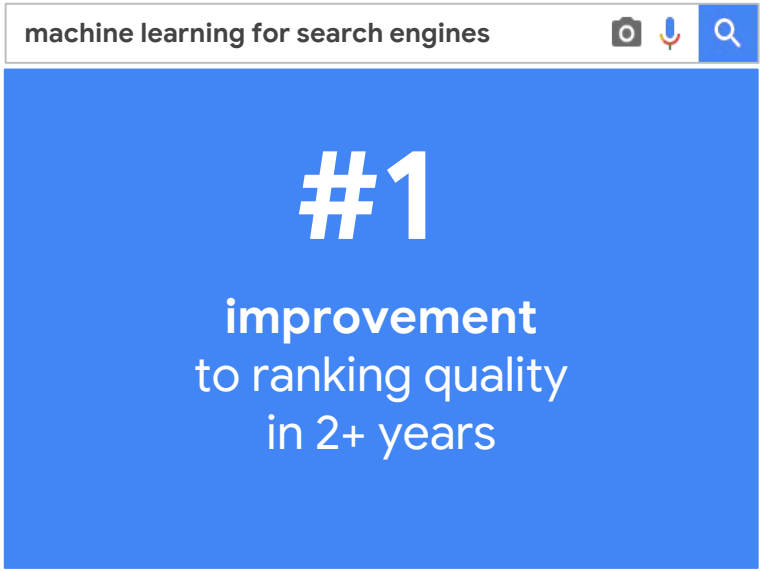
Machine learning scales better than hand-coded rules



Search

RankBrain (a deep neural network for search ranking) improved performance significantly



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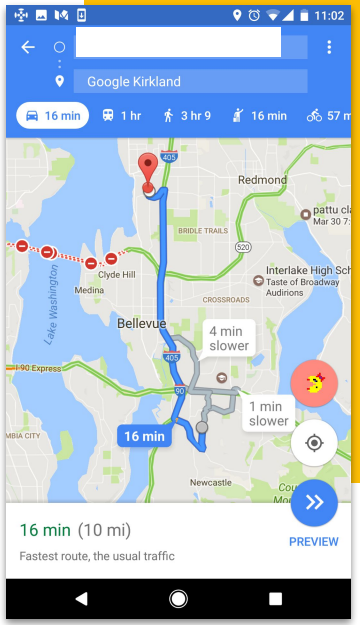
#1

ML can be used to solve many problems for which you are writing rules today

Is this machine learning? What's needed for ML?



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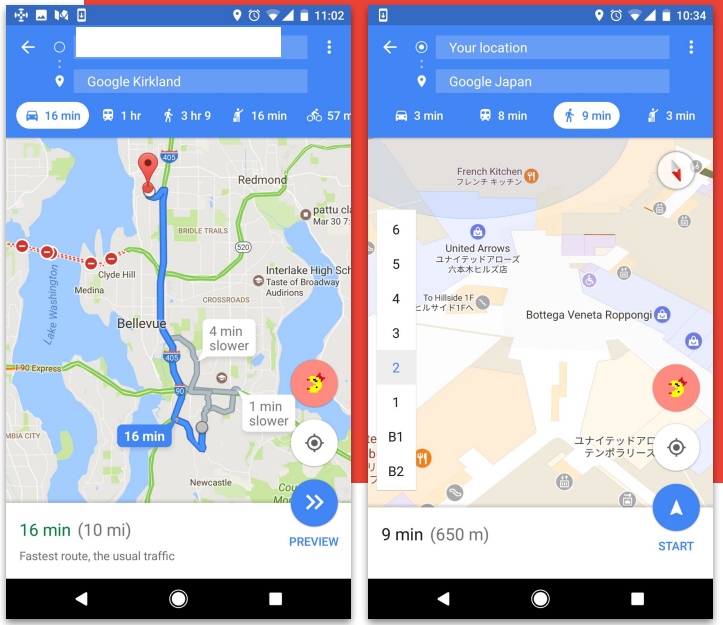

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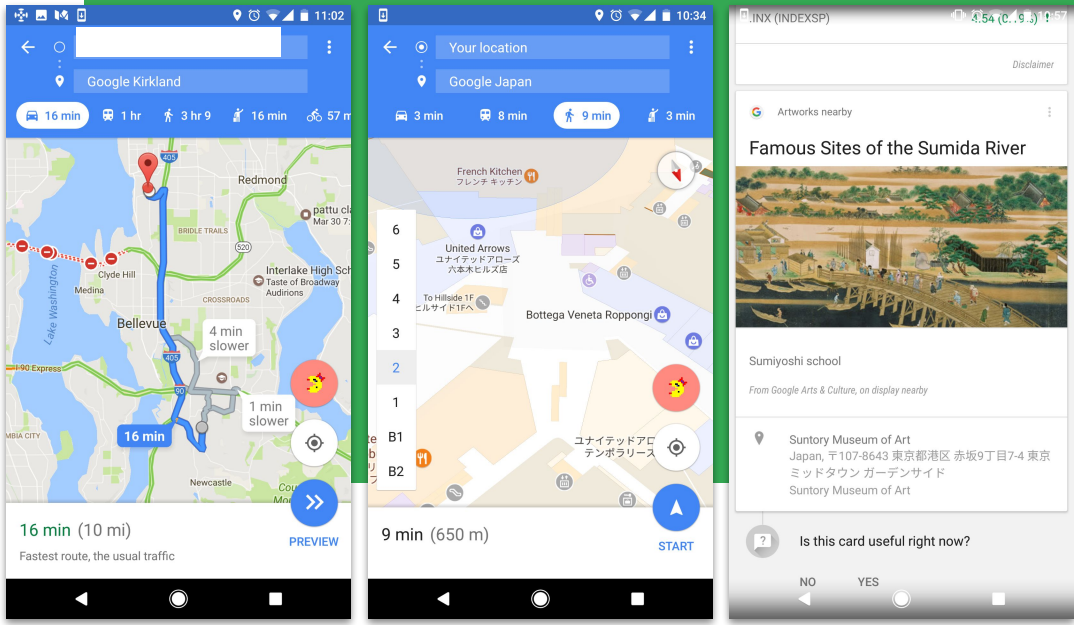

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#2
Machine Learning is how you personalize applications and reach the long tail

“It's not who has the best algorithm who wins, it's who has the most data”

Andrew Ng

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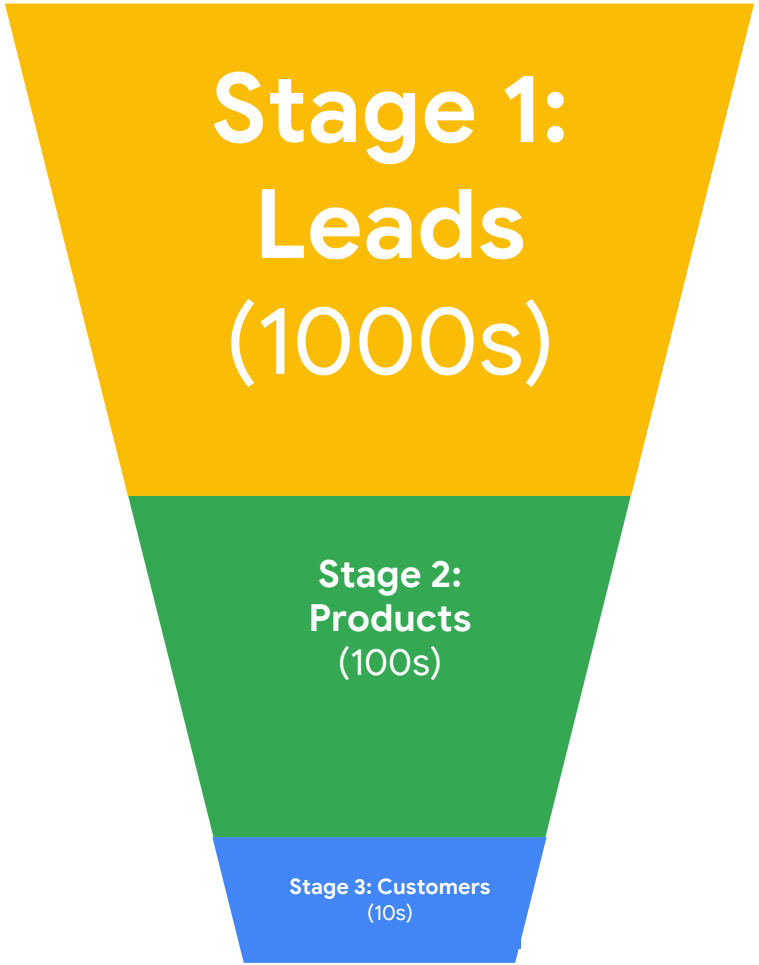
Conventional methods are about **filtering down** the data you happen to have



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Machine Learning is about accounting for more diverse factors

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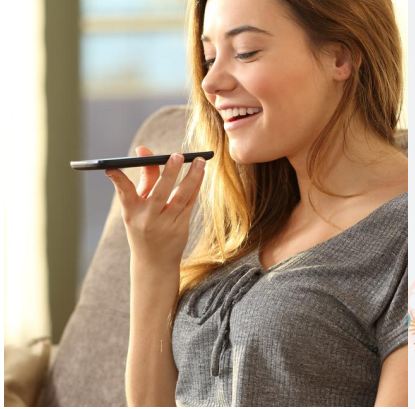

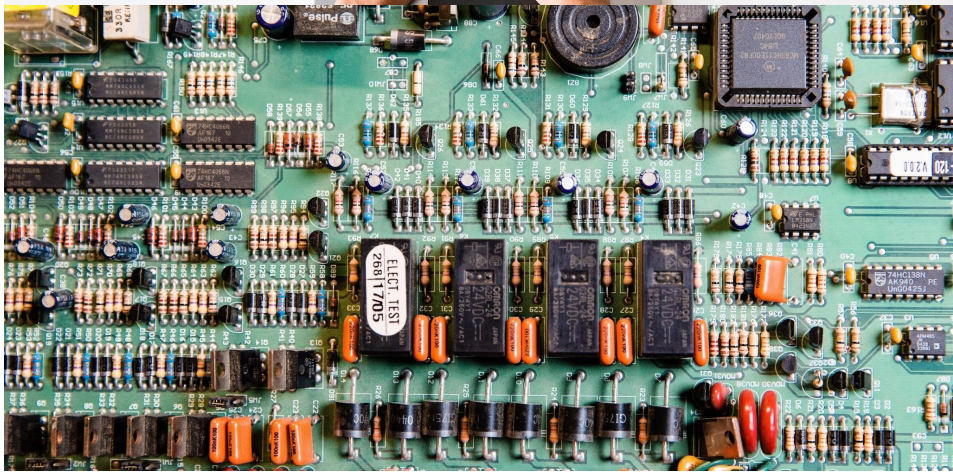

Can now capture data from many sources

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Big data is changing many industries

Games and social media analytics

Advertising campaign optimization

Sensor data analysis

Transportation and logistics

POS-Retail Analytics

Web Logs, Machine Logs, Infrastructure monitoring

Mobile application analytics

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8.4 Billion

The number of connected things in use in 2017, up 31% from 2016*

We're generating more data than ever before

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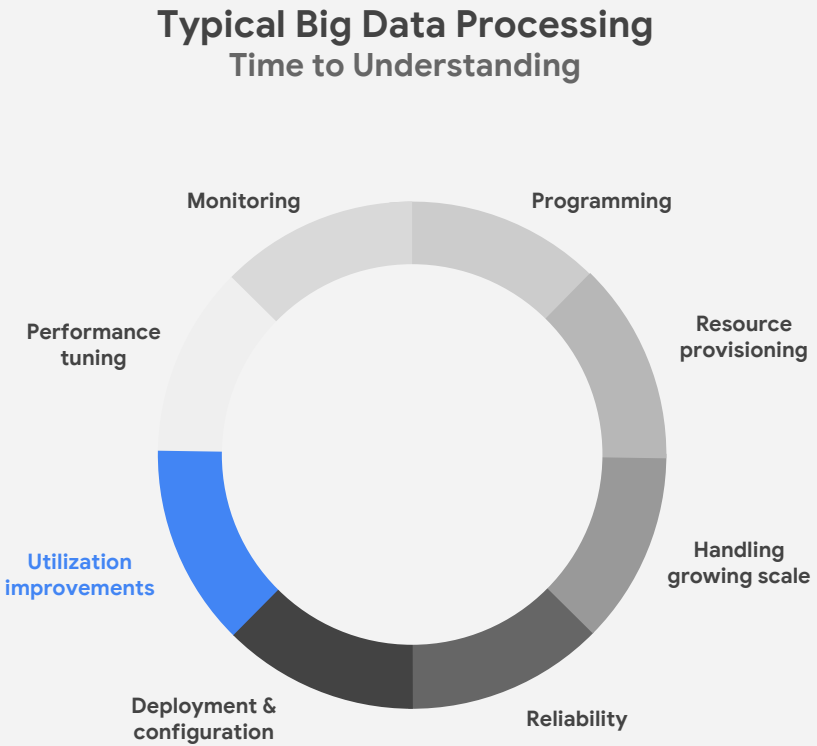
#3
Design systems with the expectation that you will have more data next year

What happens when you collect petabytes and exabytes of data?

Businesses can not derive value from data if they are focused on building infrastructure



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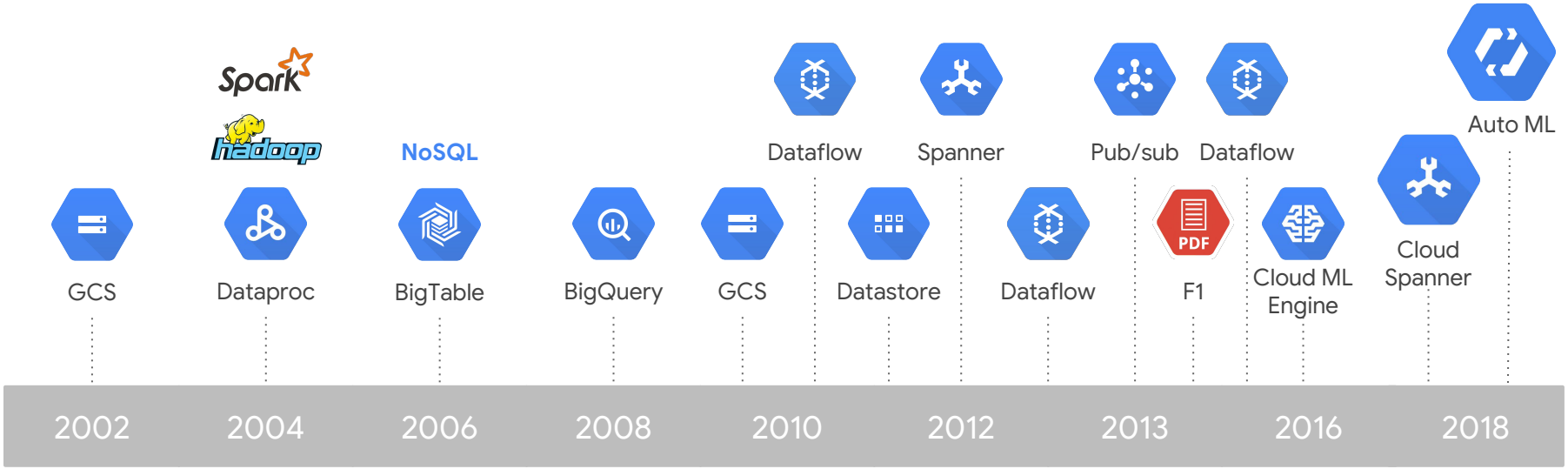
Towards serverless data analysis and processing



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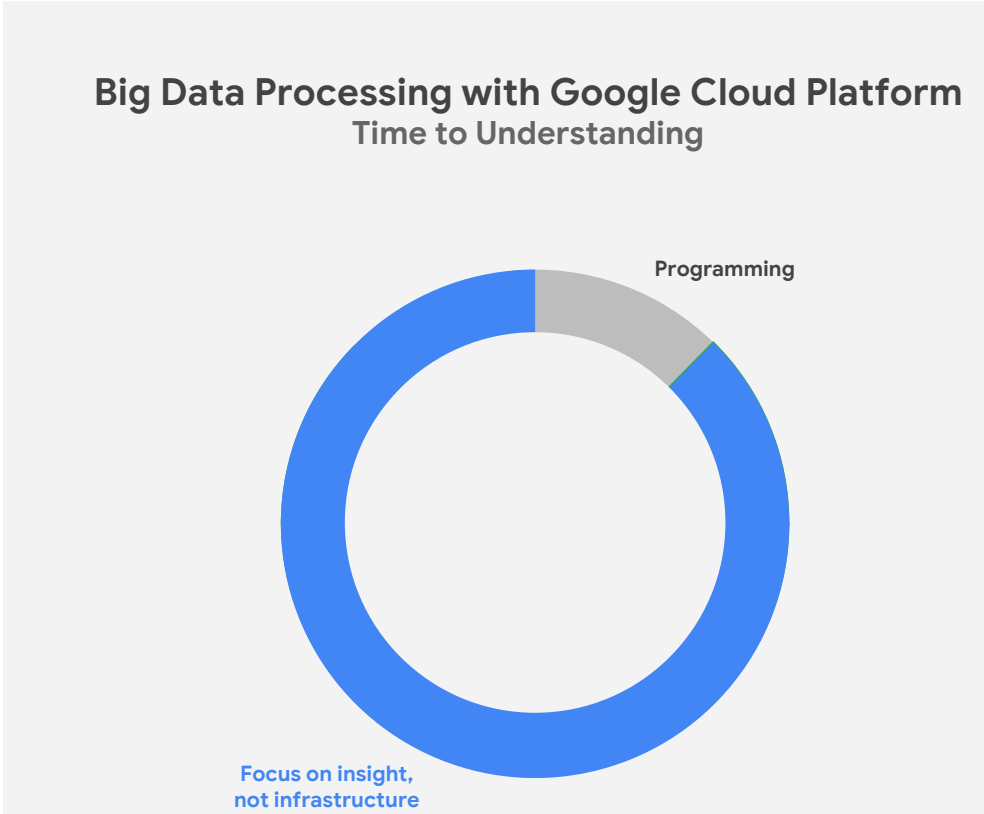
Spend Time on ‘What’ not ‘How’



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#4a
Use a platform that lets you forget about infrastructure

The ML marketplace is moving towards increasing levels of ML abstraction

Custom image model to price cars

Build off NLP API to route customer emails

Use Vision API as-is to find text in memes

Use Dialogflow to create a new shopping experience

#4b
ML is software -- learn to make buy-vs-build decisions

#1
ML can be used to solve many problems for which you are writing rules today

#2
ML is how you personalize applications and reach the long tail

#3
Design systems with the expectation that you will have more data next year

#4
Use a platform that lets you forget about infrastructure and offers great pre-built models

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@lak_gcp

Google Cloud* can help you transform your business with AI

*In Tampa, Tom Howe: thowe@google.com

Thank you.

cloud.google.com