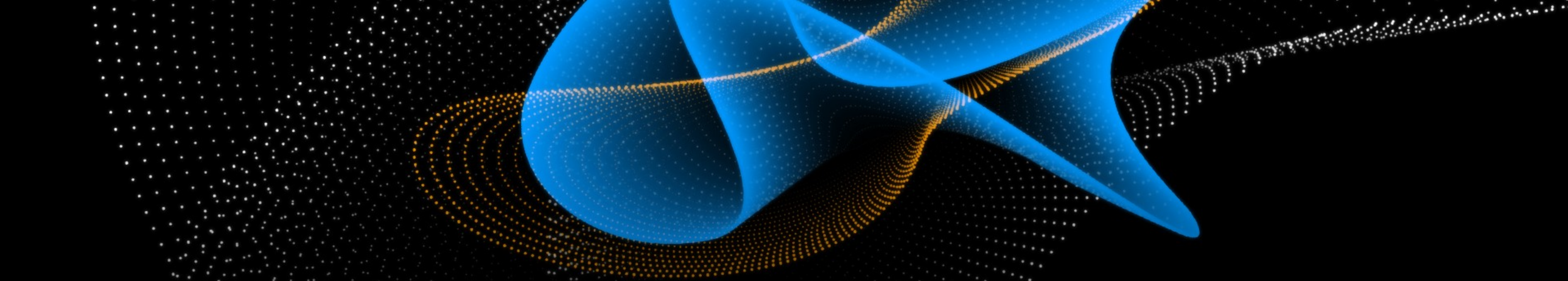


Amazon AI for every developer

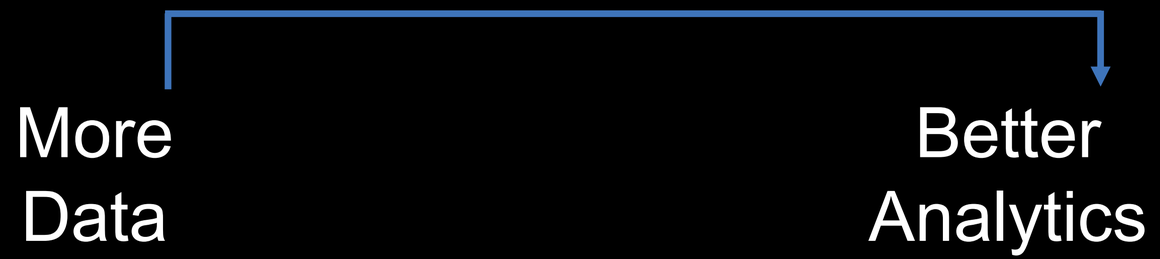
Julien Simon

AI Evangelist, EMEA

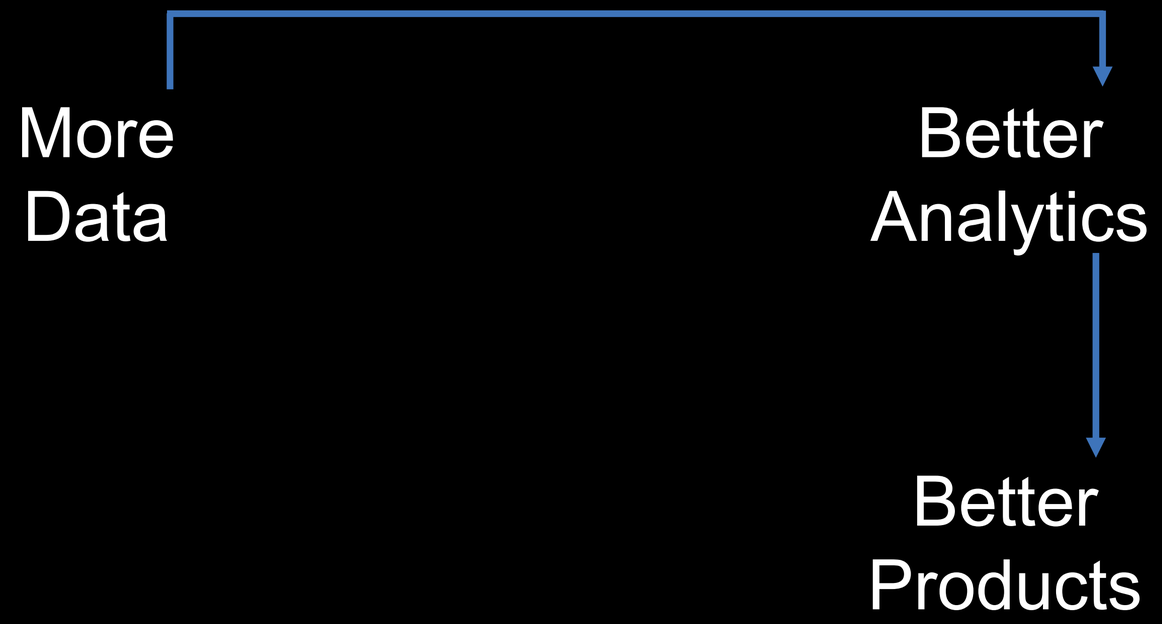
@julsimon

aws

A Flywheel For Data

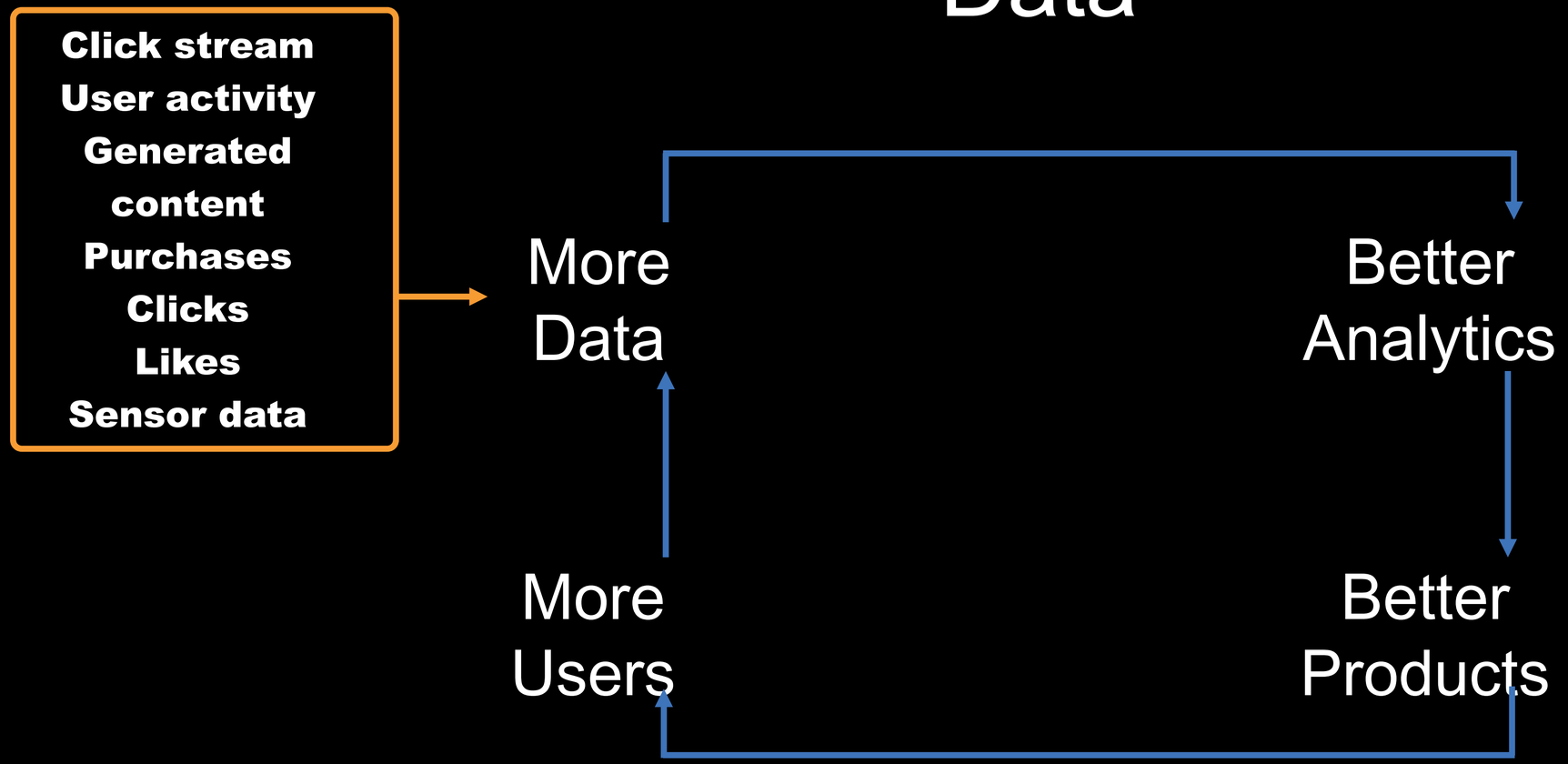


A Flywheel For Data

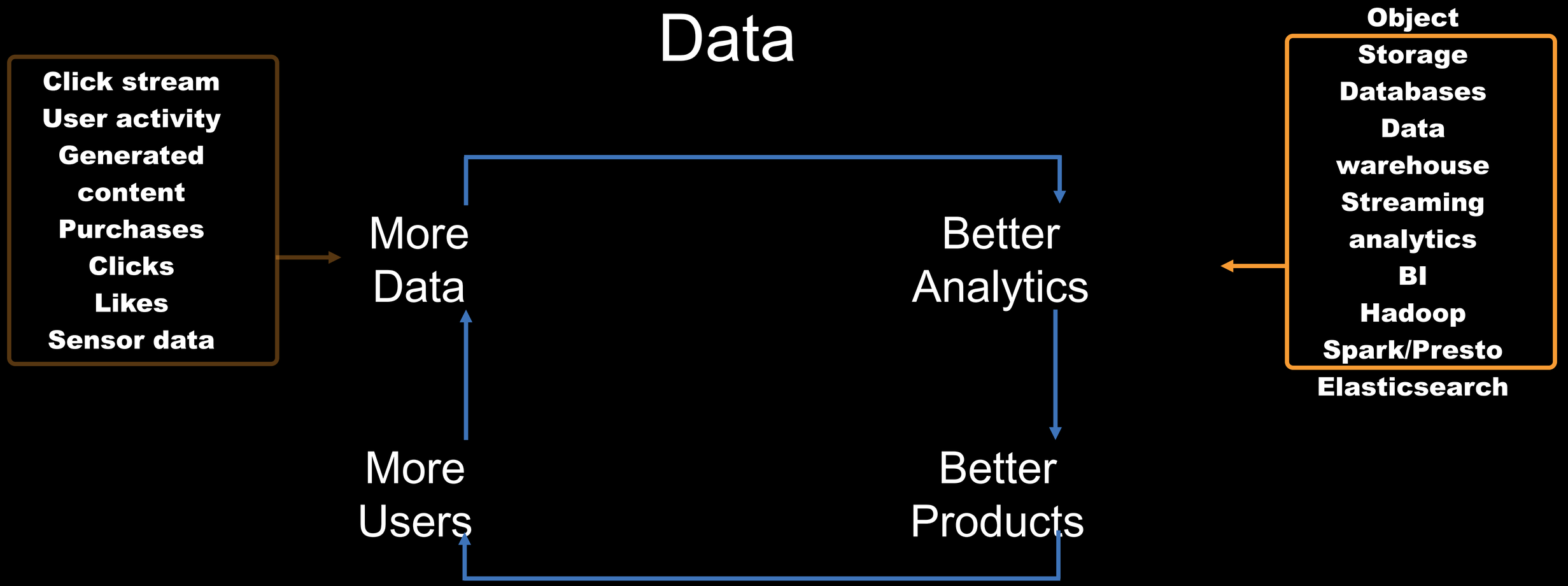


A Flywheel For Data

A Flywheel For Data



A Flywheel For Data



A Flywheel For Data

A Flywheel For Data

- Artificial Intelligence: design software applications which exhibit human-like behavior, e.g. speech, natural language processing, reasoning or intuition
- Machine Learning: teach machines to learn without being explicitly programmed
- Deep Learning: using neural networks, teach machines to learn from complex data where features cannot be explicitly expressed

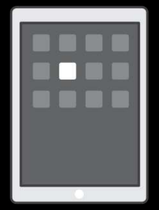
Amazon.com,1995

Artificial Intelligence At Amazon

Thousands Of Employees Across The Company Focused on AI

Discovery & Search

Fulfilment & Logistics



Enhance Existing Products

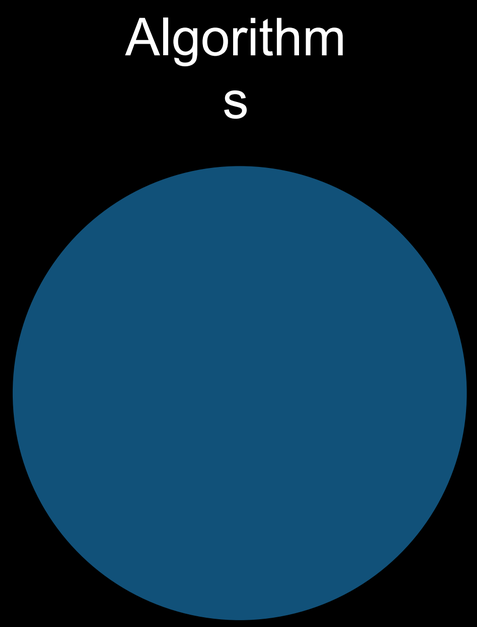
Define New Categories Of Products

Bring Machine Learning To All

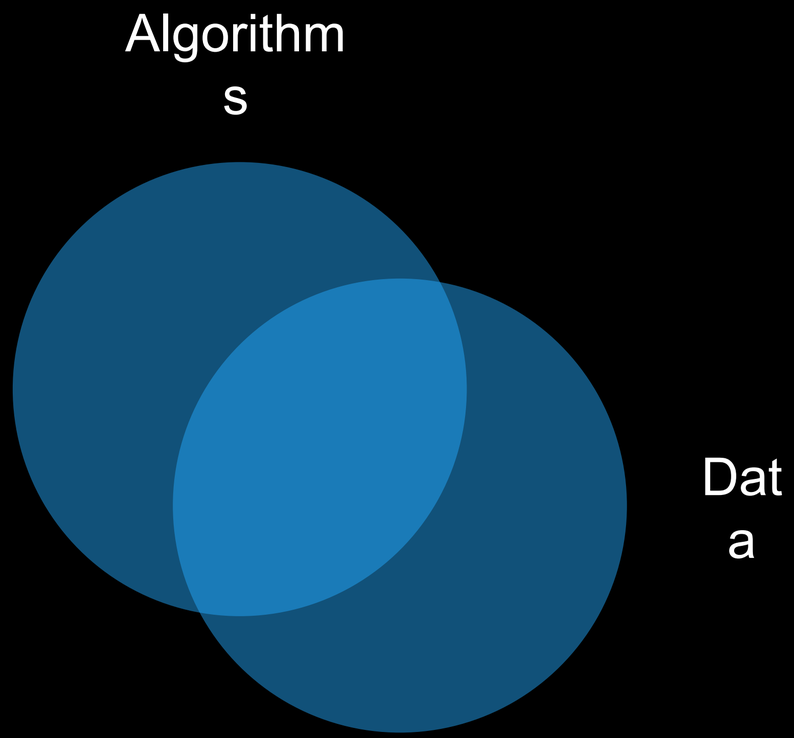
Amazon AI

Intelligent Services Powered By Deep Learning

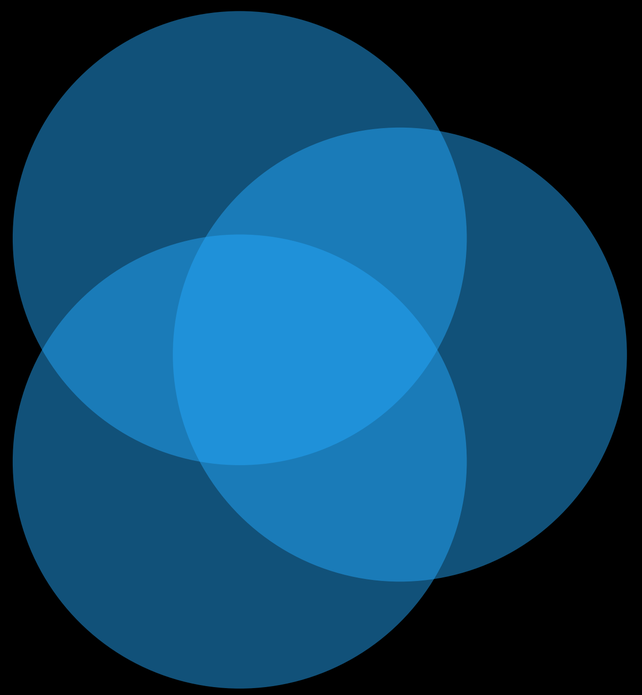
The Advent Of Deep Learning



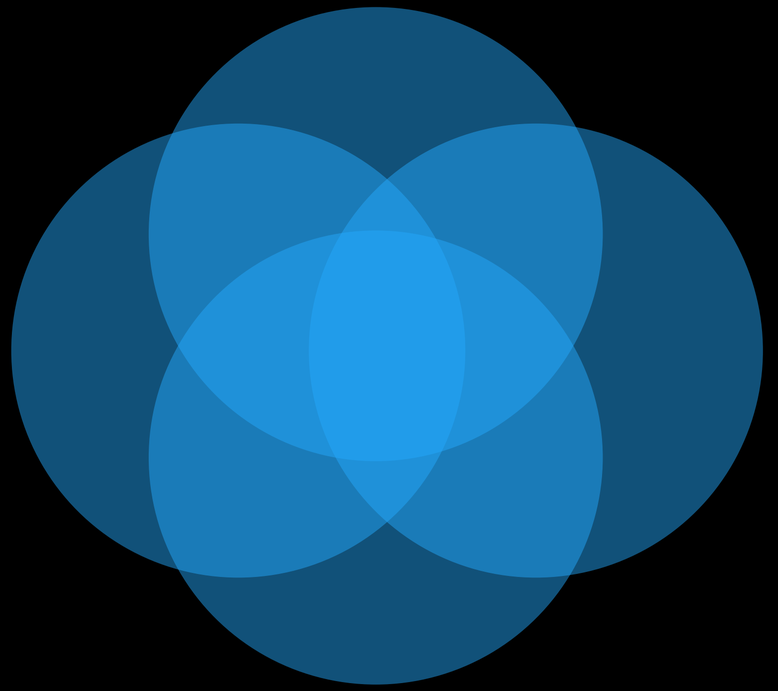
The Advent Of Deep Learning



The Advent Of Deep Learning



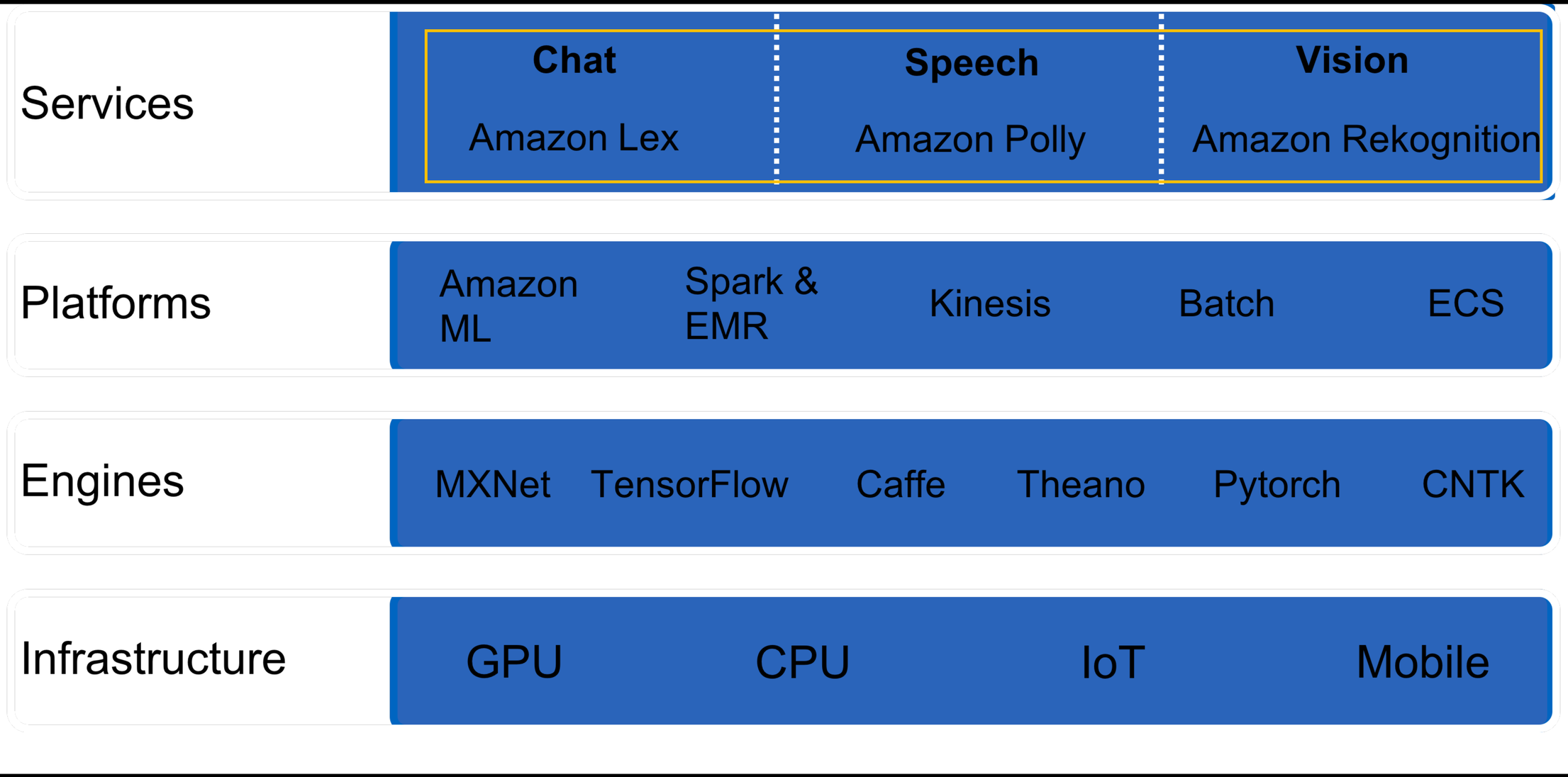
The Advent Of Deep Learning



Can We Help Customers
Put Intelligence At The Heart Of
Every Application & Business?

Selected customers running AI on AWS

Amazon AI for every developer



Amazon AI: Three New Deep Learning Services

Pol
ly

Life-like
Speech

Amazon AI: Three New Deep Learning Services

Polly

Life-like Speech

Rekognition

Image Analysis

Amazon AI: Three New Deep Learning Services

Poly

Life-like Speech

Rekognition

Image Analysis

Lex

Conversational Engine

Amazon AI: Three New Deep Learning Services

Polly

Life-like Speech

Rekognition

Image Analysis

Lex

Conversational Engine

Polly: Life-like Speech Service

Converts text
to life-like speech

Fully
managed

50
voices

24
languages

Low
latency,
real time

Polly: A Focus On Voice Quality & Pronunciation

1. Automatic, Accurate Text Processing

“Today in Seattle, WA, it’s 11°F”

‘"We live for the music" live from the Madison Square Garden.’

Polly: A Focus On Voice Quality & Pronunciation

1. Automatic, Accurate Text Processing

2. Intelligible and Easy to Understand

Polly: A Focus On Voice Quality & Pronunciation

1. Automatic, Accurate Text Processing
2. Intelligible and Easy to Understand
3. **Add Semantic Meaning to Text**

“Richard’s number is 2122341237“

“Richard’s number is 2122341237“

Telephone Number

Polly: A Focus On Voice Quality & Pronunciation

1. Automatic, Accurate Text Processing
2. Intelligible and Easy to Understand
3. Add Semantic Meaning to Text
4. **Customized Pronunciation**

“My daughter’s name is Kaja.”

“My daughter’s name is Kaja.”

Polly: Life-like Speech Service

High quality, through best-in-class deep learning

Deep functionality

Easy to use & thoughtfully integrated

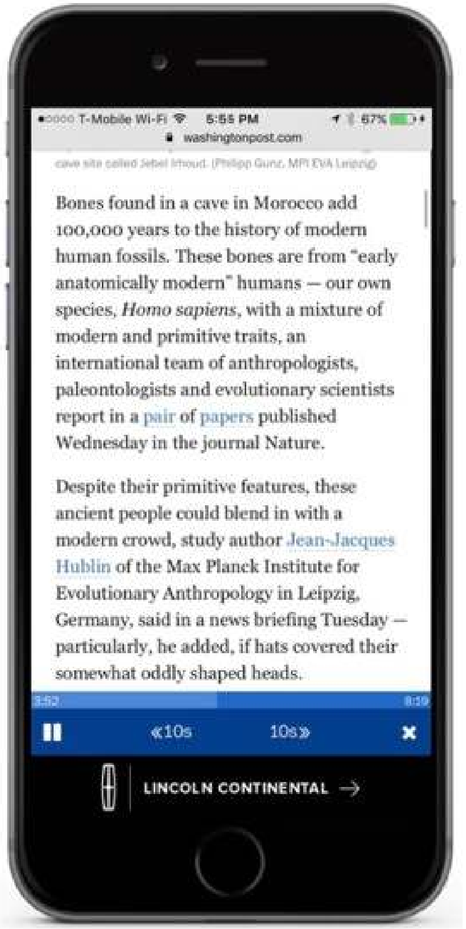
Built for production

Low cost

The Washington Post

The Washington Post to start experimenting with audio articles using Amazon Polly

By WashPostPR June 9



https://www.washingtonpost.com/pr/wp/2017/06/09/the-washington-post-to-start-experimenting-with-audio-articles-using-amazon-polly /

Amazon AI: Three New Deep Learning Services

Polly

Life-like Speech

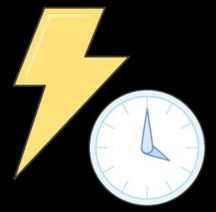
Rekognition

Image Analysis

Lex

Conversational Engine

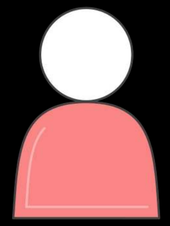
Rekognition: Search & Understand Visual Content



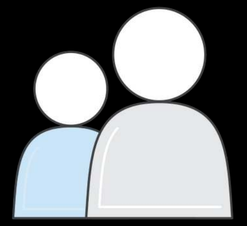
Real-time & batch image analysis

Object & Scene Detection

Facial Detection



Facial Analysis

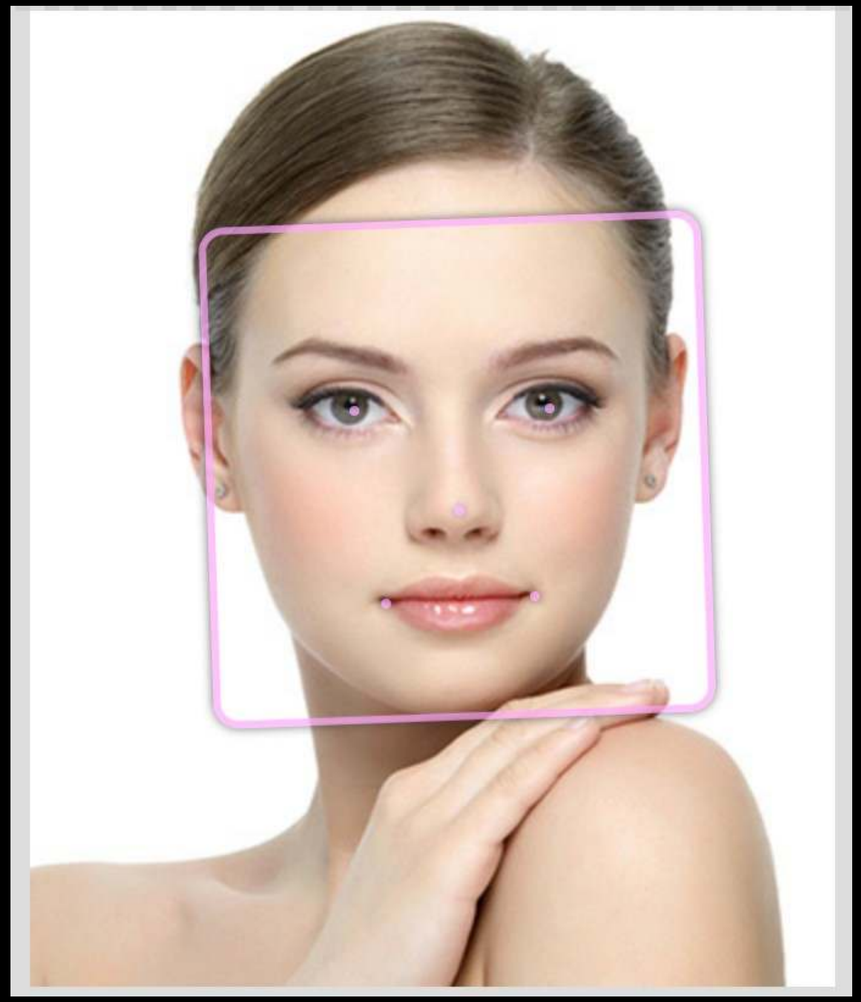


Face Search

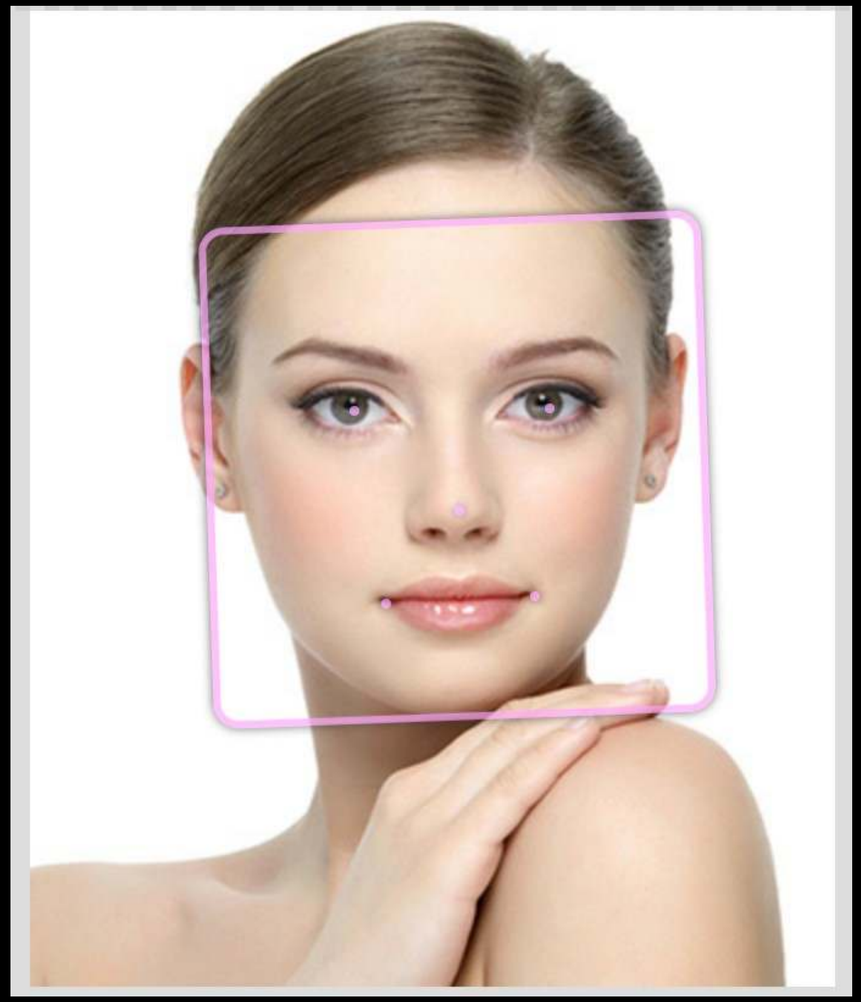
Rekognition: Object & Scene Detection

Category	Confidence
Bay	99.18%
Beach	99.18%
Coast	99.18%
Outdoors	99.18%
Sea	99.18%
Water	99.18%
Palm_tree	99.21%
Plant	99.21%
Tree	99.21%
Summer	58.3%
Landscape	51.84%
Nature	51.84%
Hotel	51.24%

Rekognition: Facial Detection

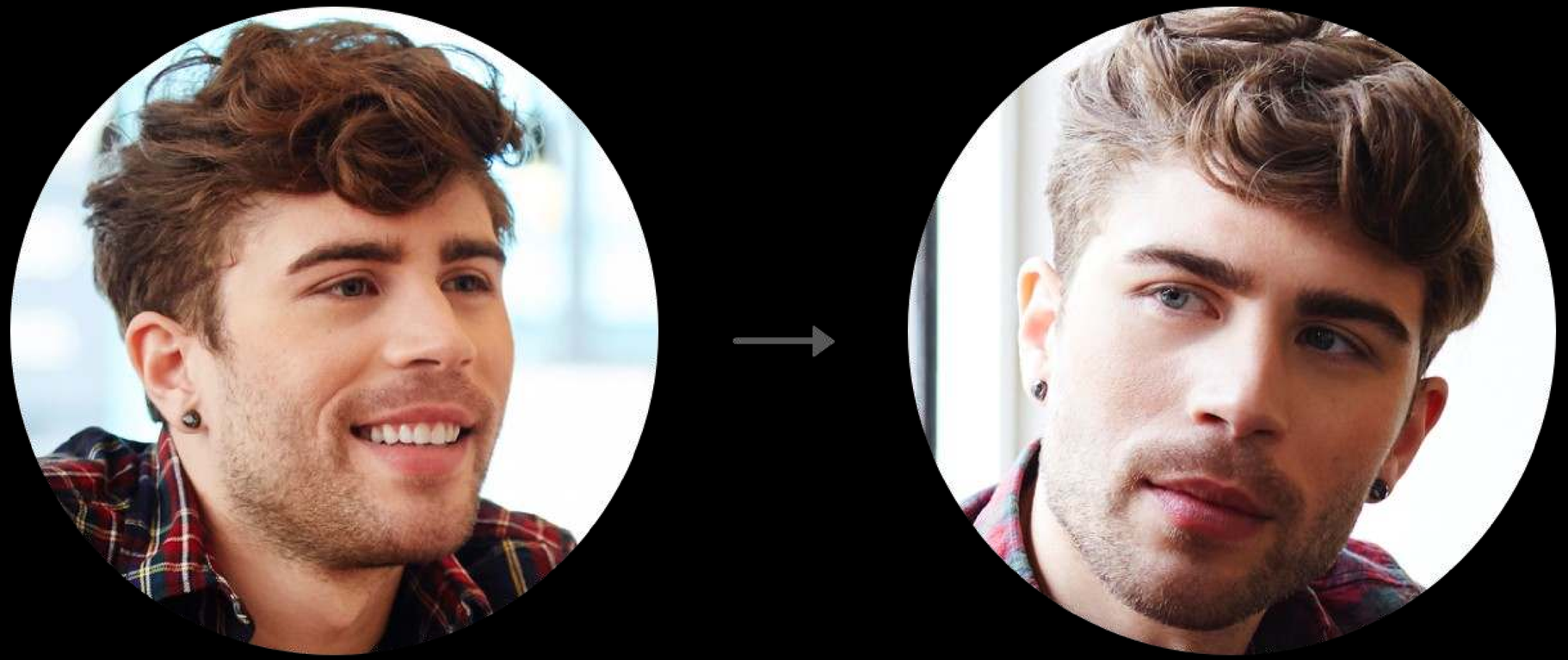


Rekognition: Facial Analysis



Emotion: calm: 73%
Sunglasses: false (value: 0)
Gender: female (value: 0)
Mouth open wide: 0% (value: 0)
Eye closed: open (value: 0)
Glasses: no glass (value: 0)
Mustache: false (value: 0)
Beard: no (value: 0)

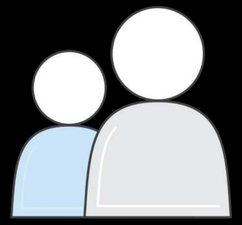
Rekognition: Compare Faces



Similarity: **97.0%**

Rekognition: Facial Search

Facial verification
(compare two faces)



Face Search
(compare many faces)

Visual Similarity Search
(find similar faces)

Rekognition: Search & Understand Visual Content

High quality, through best-in-class deep learning

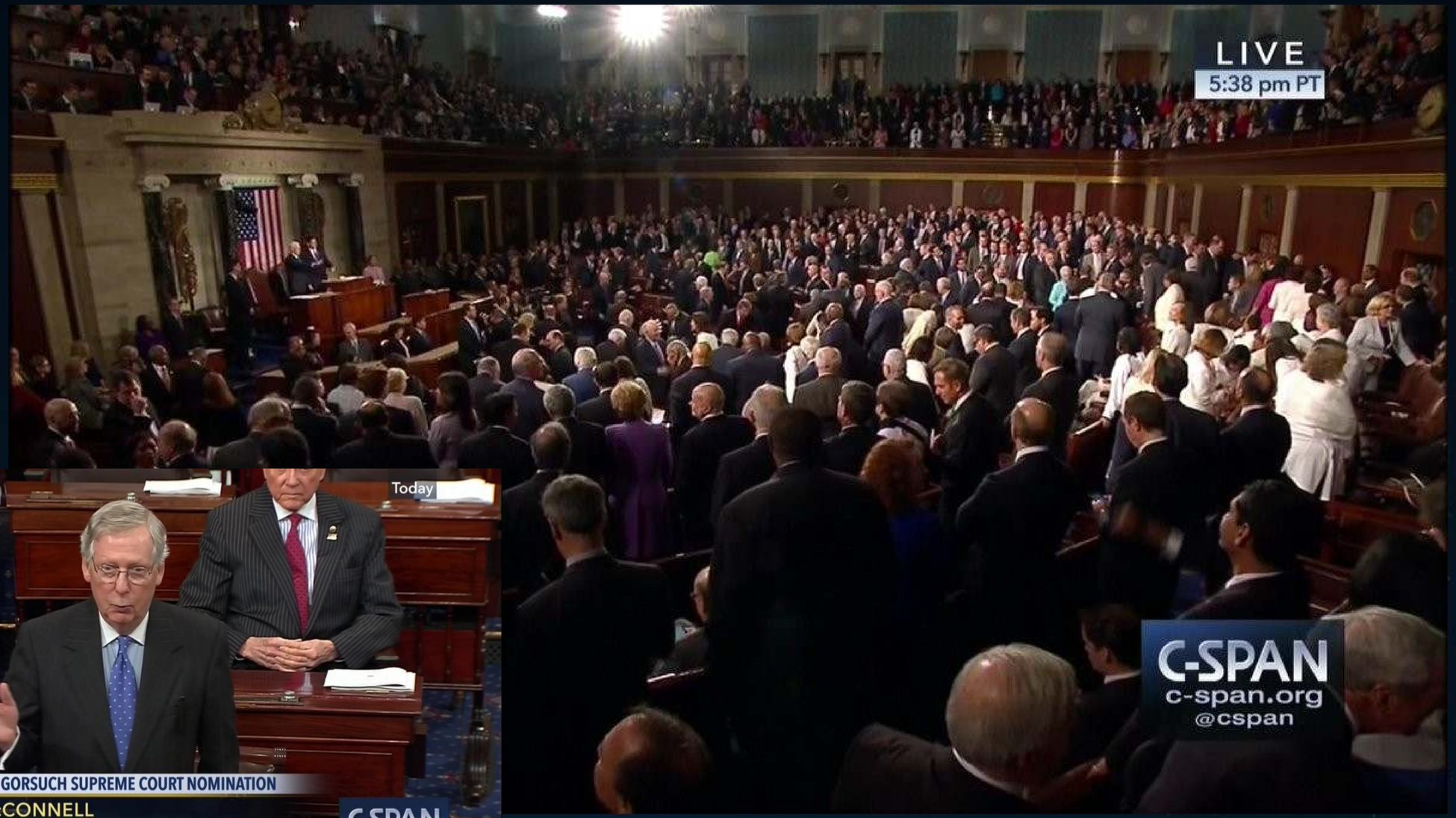
Deep functionality

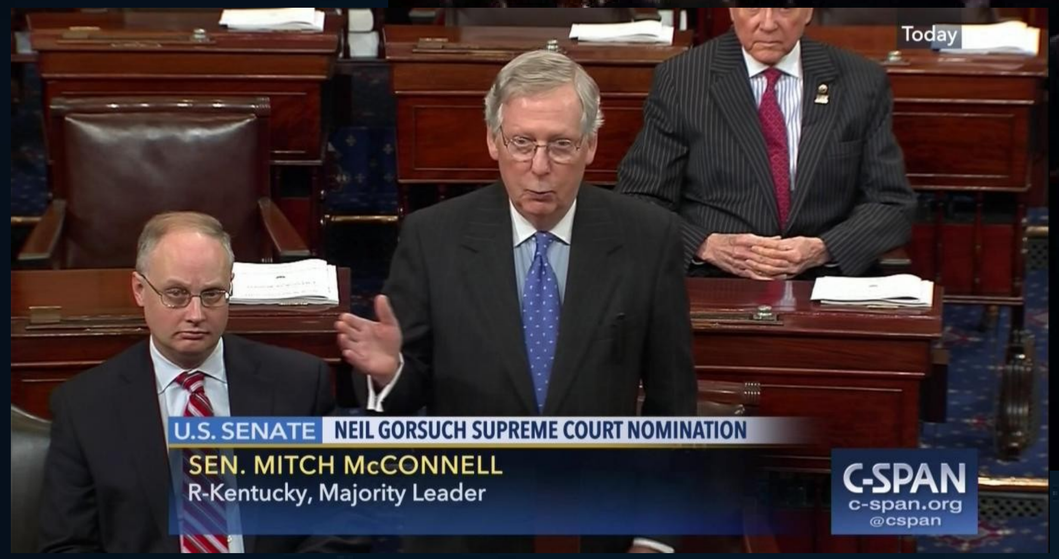
Easy to use & thoughtfully integrated

Built for production

Low cost

C-SPAN



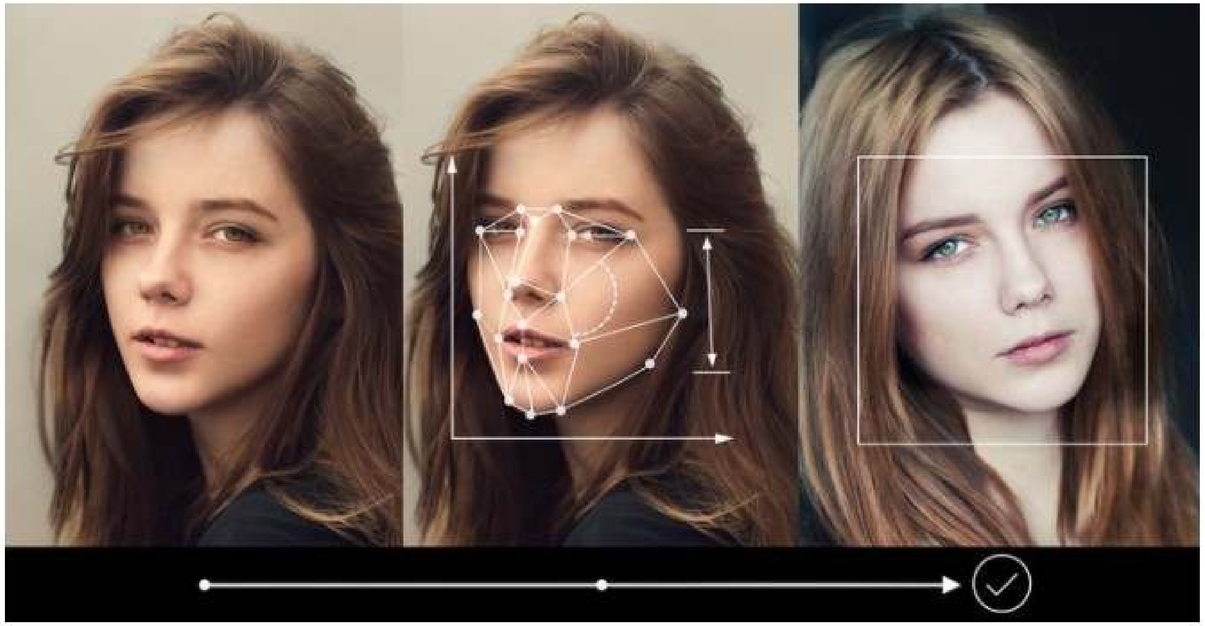


https://aws.amazon.com/solutions/case-studies/cspan/

October 19, 2017

Amazon Rekognition Helps Marinus Analytics Fight Human Trafficking

Marinus Analytics provides law enforcement with tools, founded in artificial intelligence, to turn big data into actionable intelligence. The Marinus flagship software, Traffic Jam, is a suite of tools for use by law enforcement agencies on sex trafficking investigations.



http://www.marinusanalytics.com/articles/2017/10/17/amazon-rekognition-helps-marinus-analytics-fight-human-trafficking

Amazon AI: Three New Deep Learning Services

Polly

Life-like Speech

Rekognition

Image Analysis

Lex

Conversational Engine

Lex: Build Natural, Conversational Interactions In Voice & Text

Voice & Text
“Chatbots”

Power
s
Alexa

Voice
interactions
on mobile, web
& devices

Text interaction
with Slack &
Messenger
(with more
coming)

Enterprise
Connector
s

Salesforce
Microsoft
Dynamics
Marketo
Zendesk
Quickbooks
Hubspot

Flight Booking
Origin
Destination
Departure Date

“Book a flight to London”

Flight Booking	
Origin	
Destination	
Departure Date	

“Book a flight to London”

Book Flight London

Automatic Speech Recognition

Flight Booking	
Origin	
Destination	
Departure Date	

"Book a flight to London"

Book

Flight

London

Automatic Speech Recognition

Flight booking

London Heathrow

Natural Language Understanding

Knowledge Graph

Grammar Graph

Utterances

Flight Booking	
Origin	
Destination	
Departure Date	

"Book a flight to London"

Book

Flight

London

Automatic Speech Recognition

Flight booking

London Heathrow

Natural Language Understanding

Knowledge Graph

Grammar Graph

Utterances

Flight Booking	
Origin	
Destination	London Heathrow
Departure Date	

"Book a flight to London"

Location

Book

Flight

London

Automatic Speech Recognition

Location

Flight booking

London Heathrow

Knowledge Graph

Natural Language Understanding

Grammar Graph

Utterances

Flight Booking	
Origin	Seattle
Destination	London Heathrow
Departure Date	

"Book a flight to London"

Location

Book

Flight

London

Automatic Speech Recognition

Location

Flight booking

London Heathrow

Knowledge Graph

Natural Language Understanding

Grammar Graph

Utterances

Flight Booking	
Origin	Seattle
Destination	London Heathrow
Departure Date	

"When would you like to fly?"

Prompt

"Book a flight to London"

Location

Book

Flight

London

Automatic Speech Recognition

Location

Flight booking

London Heathrow

Knowledge Graph

Natural Language Understanding

Grammar Graph

Utterances

Flight Booking	
Origin	Seattle
Destination	London Heathrow
Departure Date	

"When would you like to fly?"

Prompt

Polly

"When would you like to fly?"

“Next Friday”

“When would you like to fly?”

Flight Booking	
Origin	Seattle
Destination	London Heathrow
Departure Date	

“Next Friday”

Next Friday

Automatic
Speech Recognition

Flight Booking	
Origin	Seattle
Destination	London Heathrow
Departure Date	

"Next Friday"

Next

Friday

Automatic
Speech Recognition

Flight booking

11/18/2016

Natural Language
Understanding

Knowledge
Graph

Grammar
Graph

Utterances

Flight Booking	
Origin	Seattle
Destination	London Heathrow
Departure Date	11/18/2016

"Next Friday"

Next | Friday

Automatic
Speech Recognition

Flight booking

11/18/2016

Natural Language
Understanding

Knowledge
Graph

Grammar
Graph

Utterances

Flight Booking	
Origin	Seattle
Destination	London Heathrow
Departure Date	11/18/2016

λ

"Next Friday"

Next

Friday

Automatic
Speech Recognition

Flight booking

11/18/2016

Knowledge
Graph

Natural Language
Understanding

Grammar
Graph

Utterances

Flight Booking	
Origin	Seattle
Destination	London Heathrow
Departure Date	11/18/2016

λ

"Your flight is booked for next Friday"

Confirmation

"Next Friday"

Next

Friday

Automatic
Speech Recognition

Flight booking

11/18/2016

Knowledge
Graph

Natural Language
Understanding

Grammar
Graph

Utterances

Flight Booking	
Origin	Seattle
Destination	London Heathrow
Departure Date	11/18/2016

λ

"Your flight is booked for next Friday"

Confirmation

Polly

"Your flight is booked for
next Friday"

"Next Friday"

Next

Friday

Automatic
Speech Recognition

Flight booking

11/18/2016

Natural Language
Understanding

Knowledge
Graph

Grammar
Graph

Utterances

Flight Booking	
Origin	Seattle
Destination	London Heathrow
Departure Date	11/18/2016

λ

Hotel Booking

Lex: Build Natural, Conversational Interactions In Voice & Text

High quality, through best-in-class deep learning

Deep functionality

Easy to use & thoughtfully integrated

Built for production

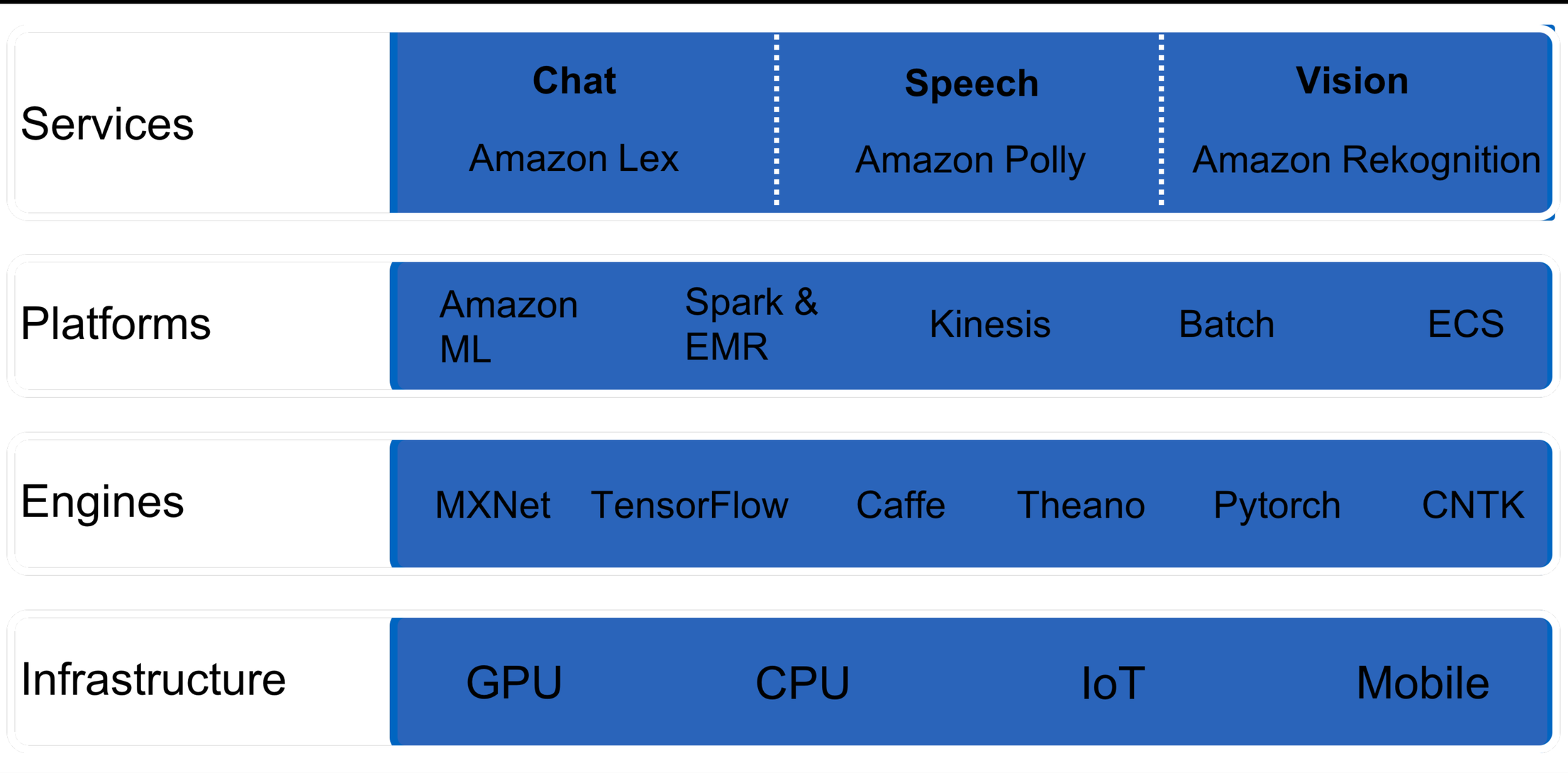
Low cost

Liberty Mutual.
INSURANCE

https://www.libertymutual.com/liberty-mutual-mobile/amazon-alexa

https://techcrunch.com/2017/09/27/bmw-to-bring-alexa-to-its-cars-starting-in-2018/

Amazon AI for every developer



Jeff Bezos' letter to Amazon shareholders

"We are solving problems with machine learning and artificial intelligence that were in the realm of science fiction for the last several decades. Natural language understanding, machine vision problems, it really is an amazing renaissance."

https://www.geekwire.com/2017/jeff-bezos-explains-amazons-artificial-intelligence-machine-learning-strategy/

APR 18, 2017 @ 11:26 AM

The Great AI Recruitment War: Amazon Is On Top, And Apple Is Almost Nowhere To Be Seen

https://www.forbes.com/sites/aarontilley/2017/04/18/the-great-ai-recruitment-war-amazon-is-on-top-and-apple-is-almost-nowhere-to-be-seen/

Thank you!

Julien Simon

AI Evangelist, EMEA

@julsimon
http://medium.com/@julsimon