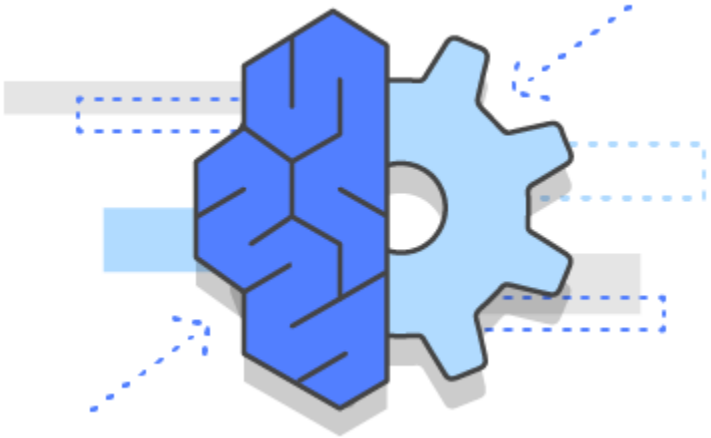
amazon web services | Executive Briefing Center

AWS AI Overview



© 2015, Amazon Web Services, Inc. or its Affiliates. All rights reserved.

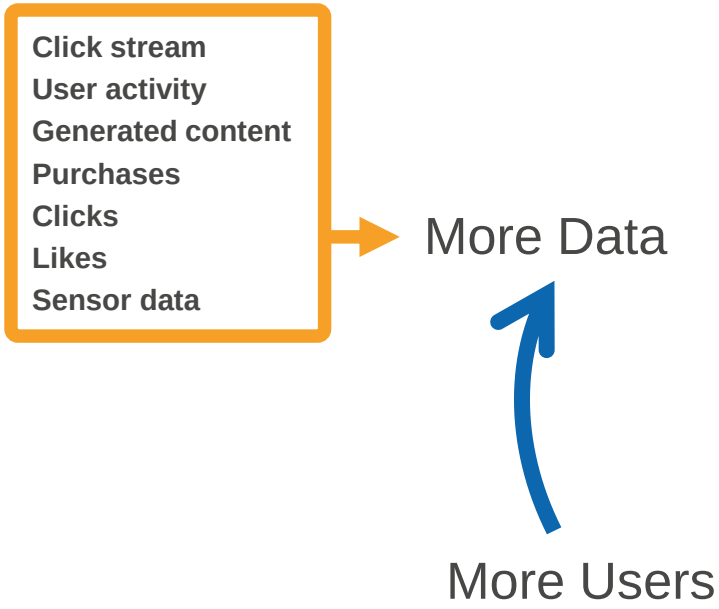
Topics

1. AI and Big Data Analytics
2. Amazon AI Offerings
3. AI Engines
4. AI Platforms
5. AI Services
6. Questions

amazon web services | Executive Briefing Center

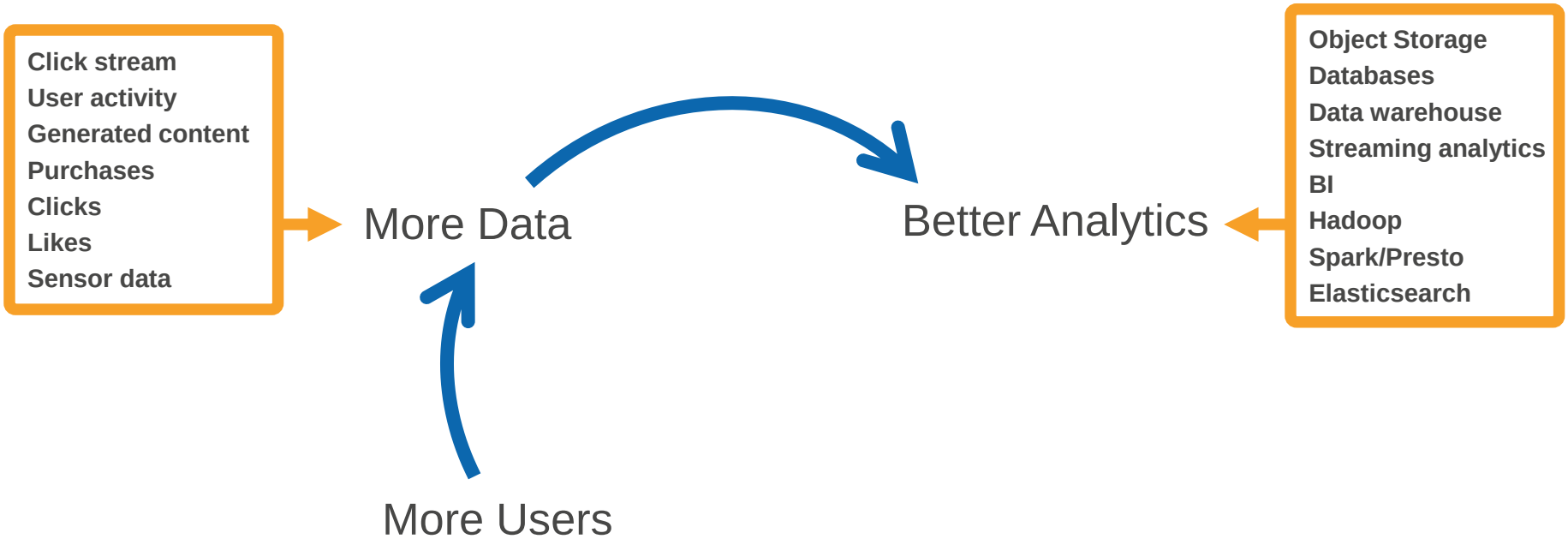
AI and Big Data Analytics

A Flywheel For Data



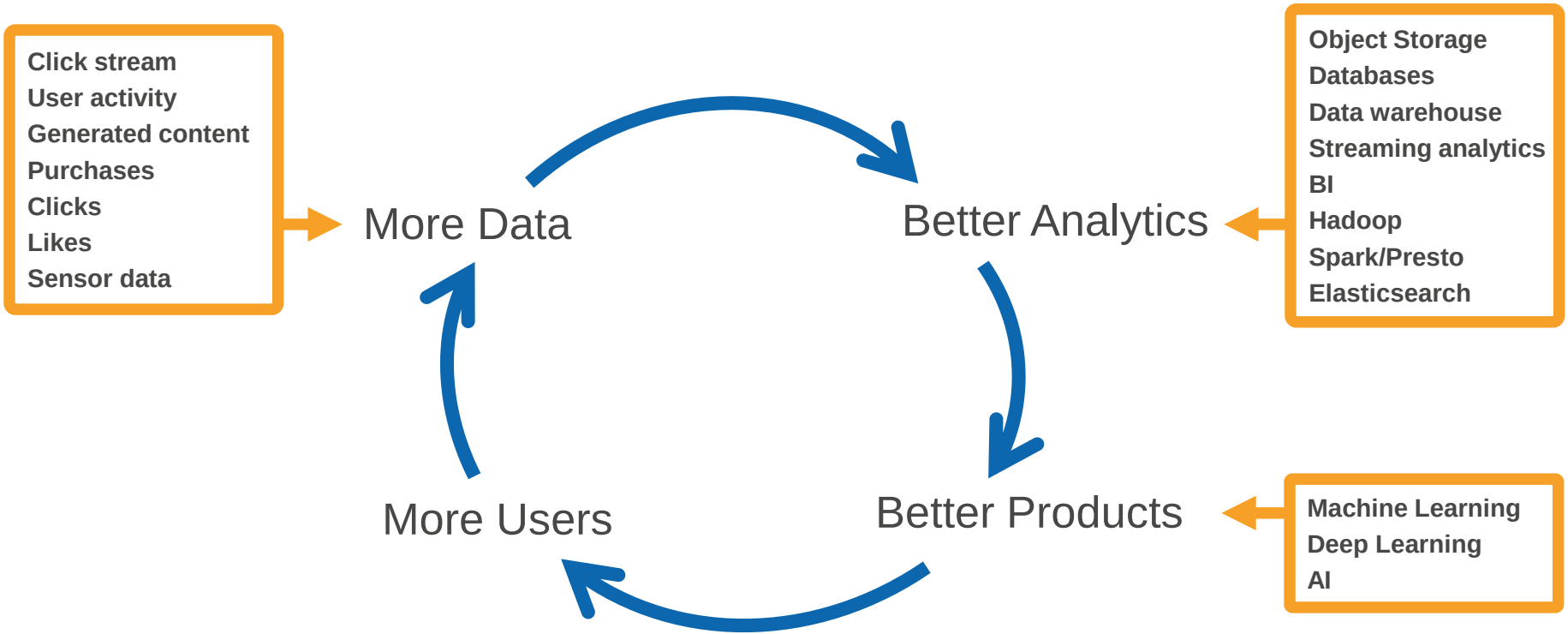
amazon webservices | Executive Briefing Center

A Flywheel For Data



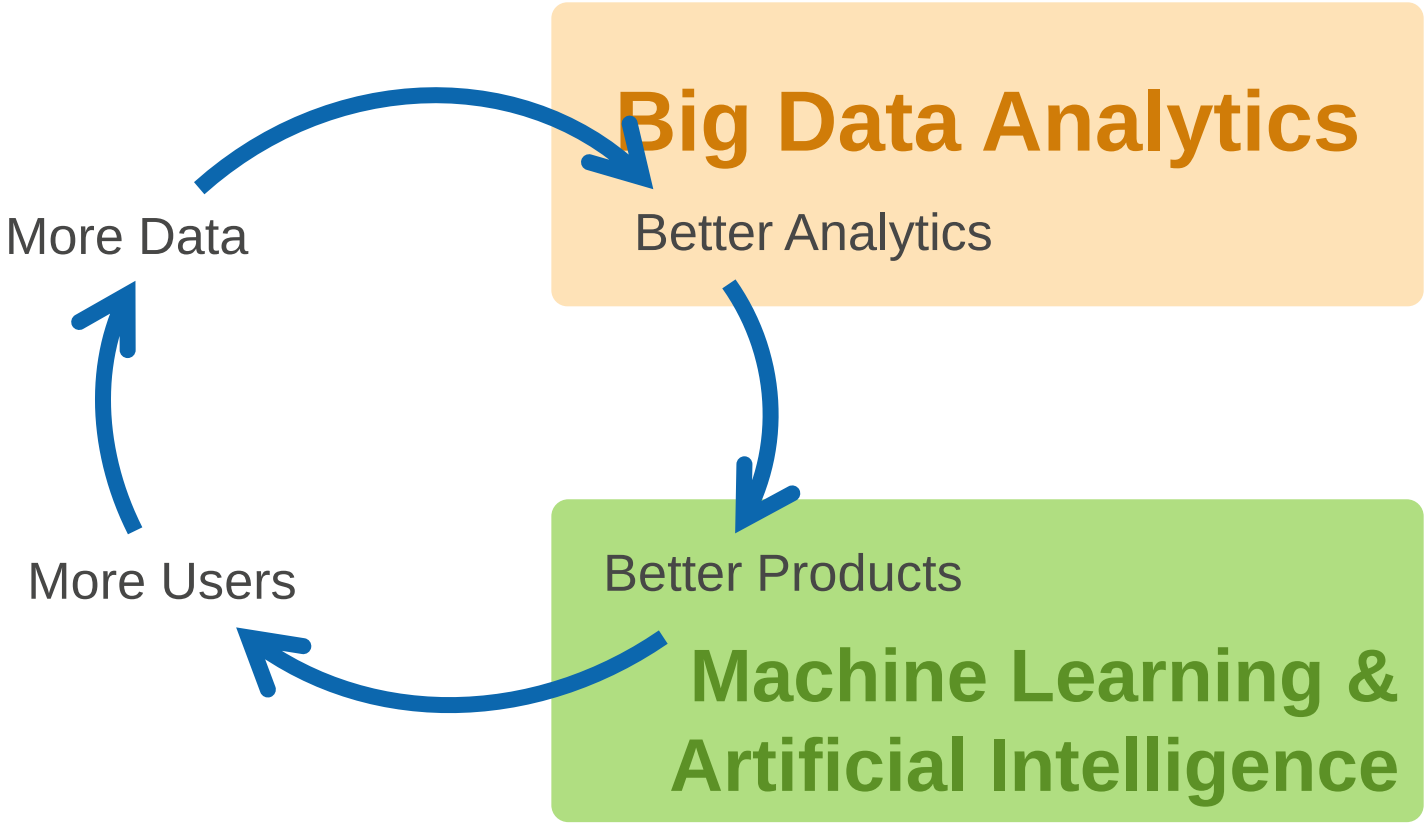
amazon webservices | Executive Briefing Center

A Flywheel For Data



amazon webservices | Executive Briefing Center

A Flywheel For Data

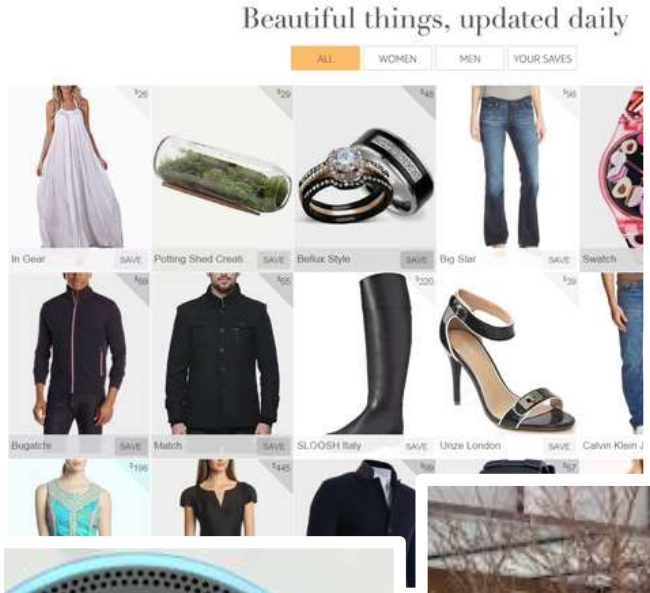


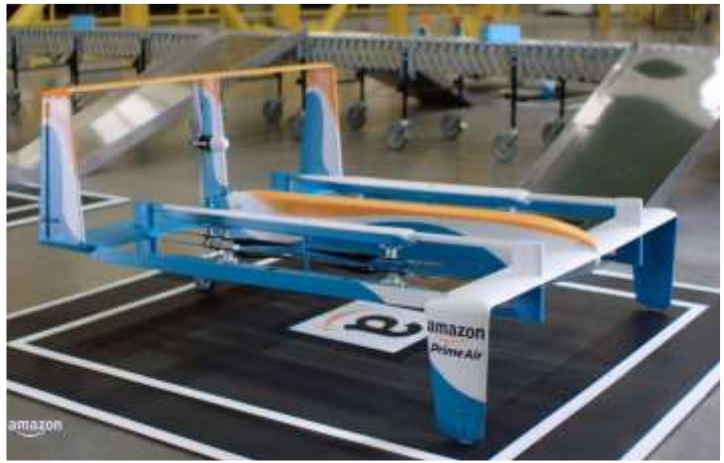
amazon webservices | Executive Briefing Center

amazon web services | Executive Briefing Center

AI @ Amazon

Artificial Intelligence At Amazon (1995)


Beautiful things, updated daily
ALL
WOMEN
MEN
YOUR SAVES
In Gear
SAVE
Potting Shed Creati
SAVE
Bellux Style
SAVE
Big Star
SAVE
Swatch
Bugatchi
SAVE
Match
SAVE
SLOOSH Italy
SAVE
Unze London
SAVE
Calvin Klein J


amazon
Prime Air
amazon

NATURE VALLEY
NATURE VALLEY

amazon go
NO LINES. NO CHECKOUT.
amazon go

amazon
KIVA

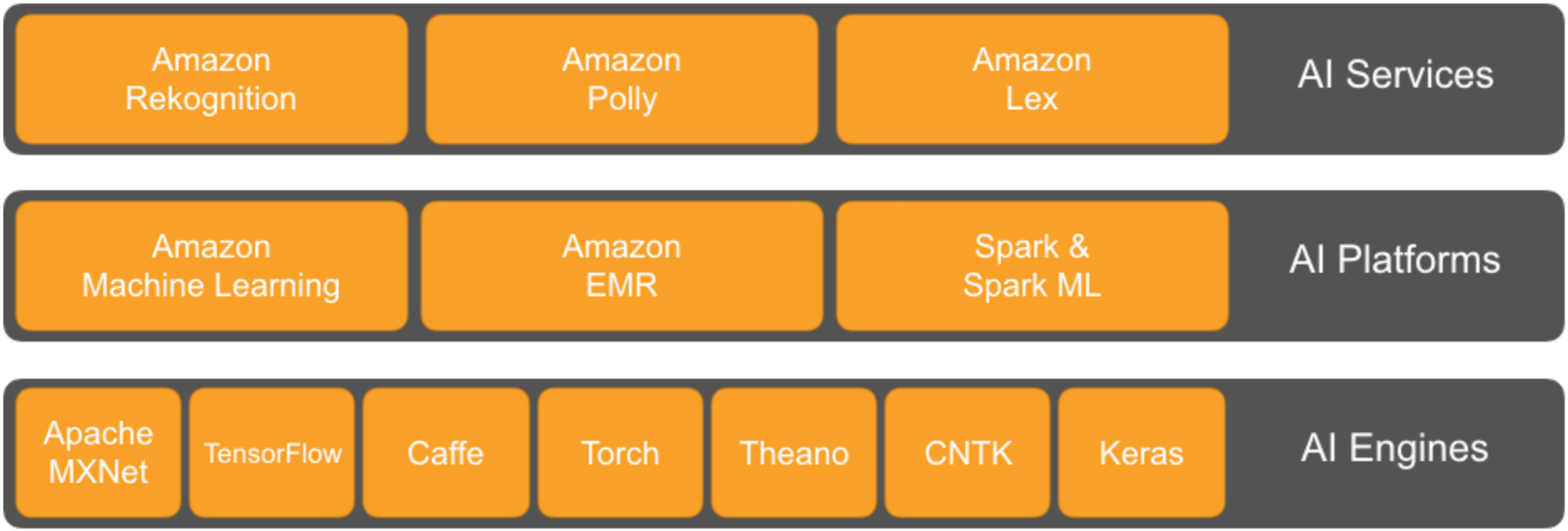
INTRODUCING
amazon go

Amazon AI

Intelligent Services Powered By Deep Learning

amazon webservices | Executive Briefing Center

AWS AI Suite



amazon webservices | Executive Briefing Center

Amazon AI: New Deep Learning Services

Polly

Life-like Speech

Rekognition

Image Analysis

Lex

Conversational Engine

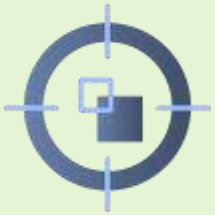
Deep Learning Frameworks

MXNet, TensorFlow, Theano, Caffe, Torch

Amazon AI: New Deep Learning Services

USABILITY & SIMPLICITY

Polly



Rekognition

Lex

AI Enabled Managed API Services

CONTROL

Deep Learning Frameworks

MXNet, TensorFlow, Theano, Caffe, Torch

DIY Deep Learning for Custom Models

AWS Deep Learning AMI

Up to~40k CUDA cores

MXNet

TensorFlow

Theano

Caffe

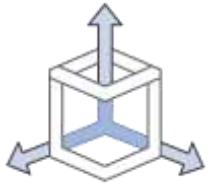
Torch

Pre-configured CUDA drivers

Anaconda, Python3

+ CloudFormation template

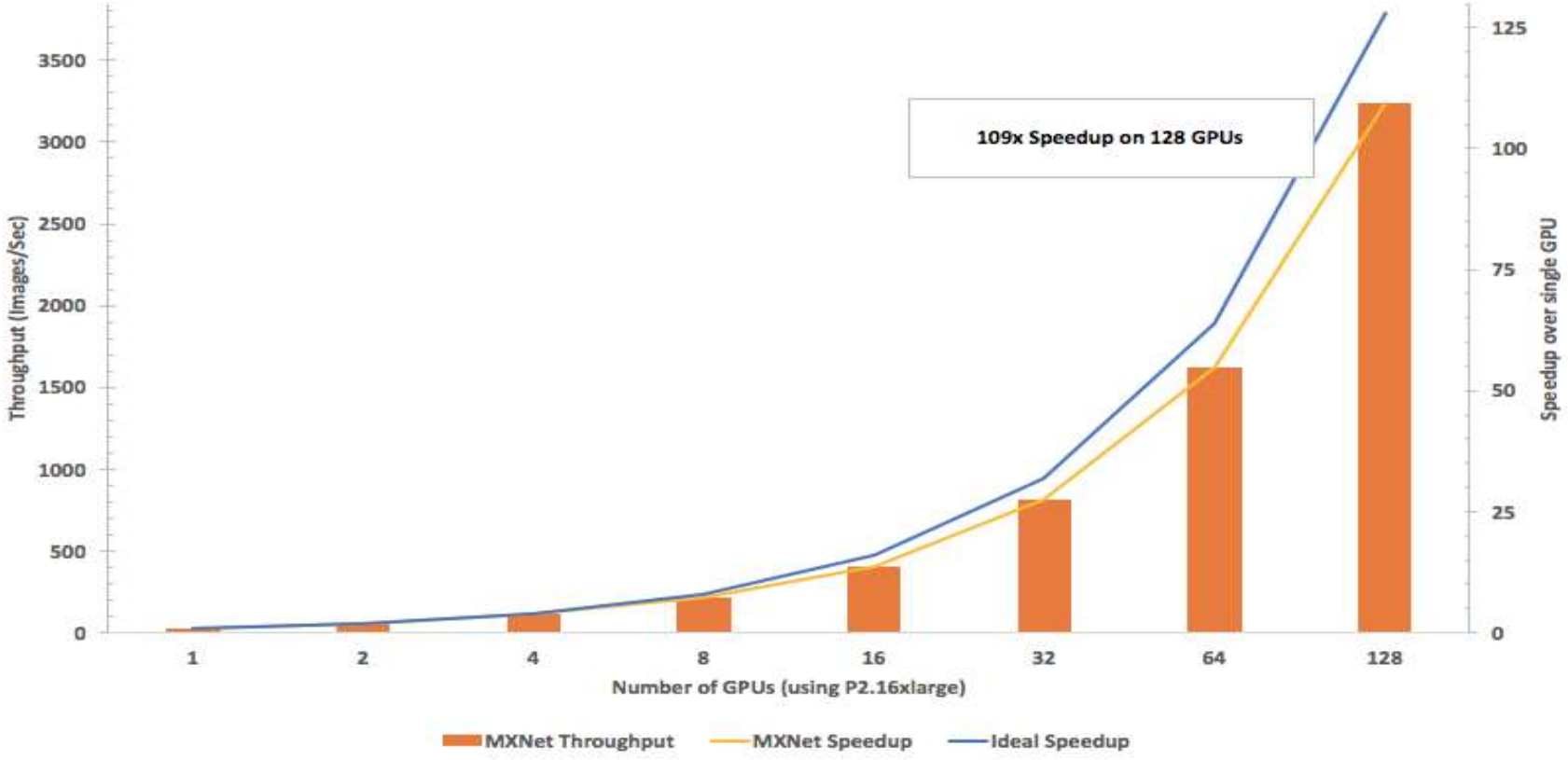
+ Container Image



One-Click GPU Deep Learning

amazon webservices | Executive Briefing Center

MXNet: Scalable Deep Learning Framework



amazon webservices | Executive Briefing Center

Demo

Amazon AI

AI Services

Polly

Life-like Speech

Rekognition

Image Analysis

Lex

Conversational Engine

amazon webservices | Executive Briefing Center

Amazon Polly

Life-like Speech

amazon web services | Executive Briefing Center

Polly: Life-like Speech Service

Converts text
to life-like speech

Fully managed

47 voices

24 languages

Low latency,
real time

Voice Quality & Pronunciation

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

Articles and Blogs

Training Material

Chatbots (Lex)

Public Announcements

amazon webservices | Executive Briefing Center

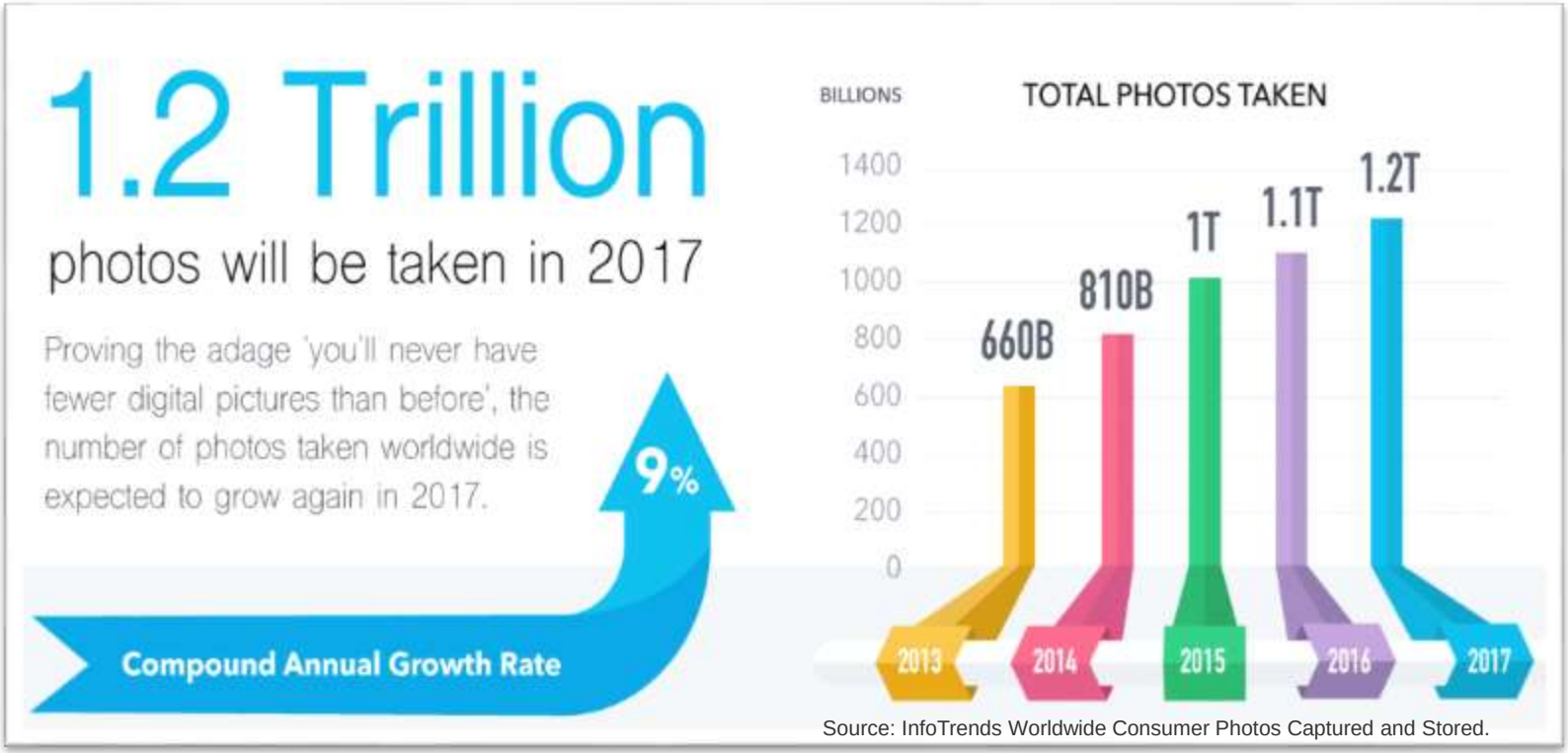
Demo

Amazon Rekognition

Image Analysis

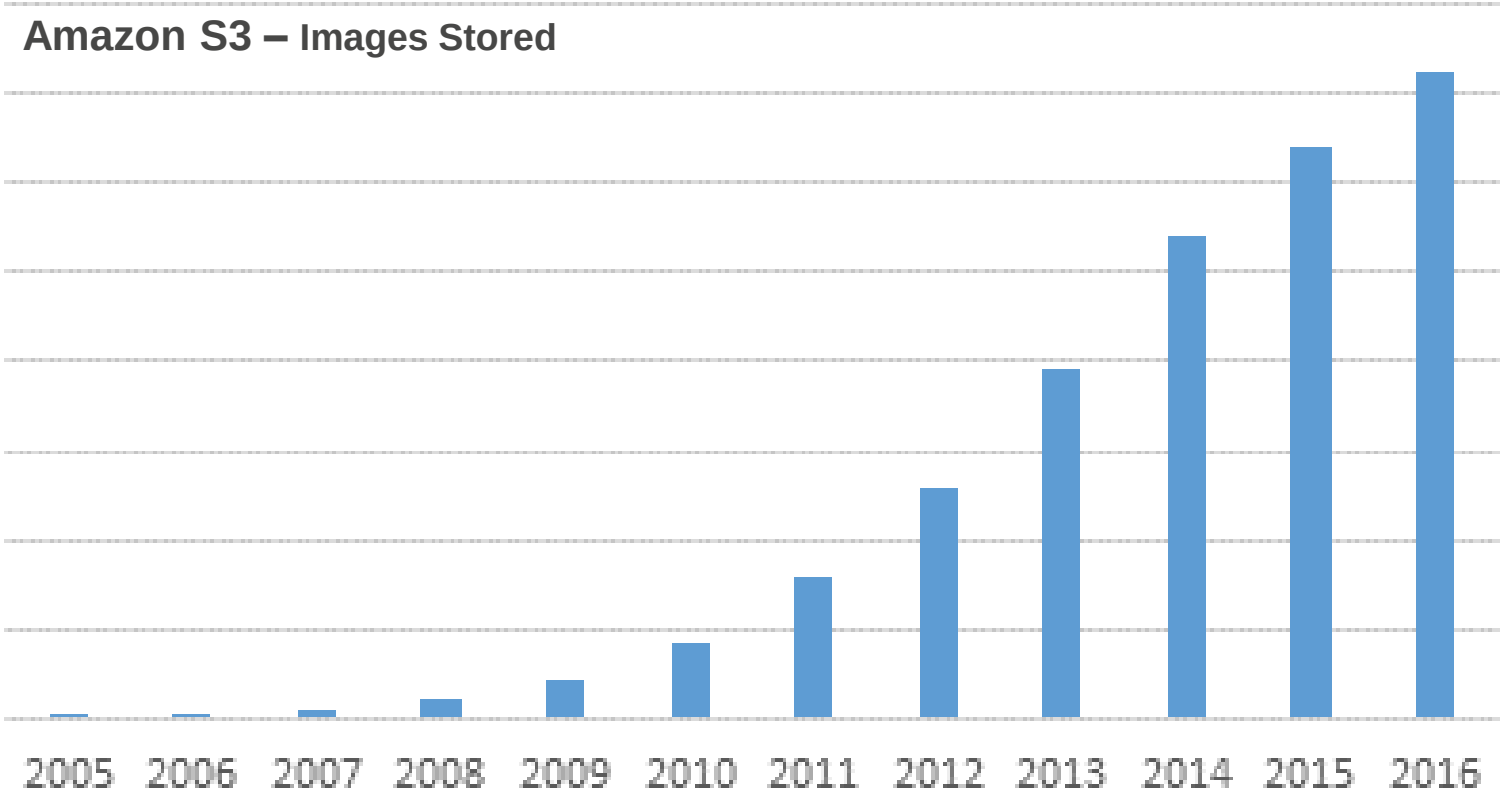
amazon webservices | Executive Briefing Center

Images – explosive growth trends



Source: InfoTrends Worldwide Consumer Photos Captured and Stored.

Images – explosive growth trends

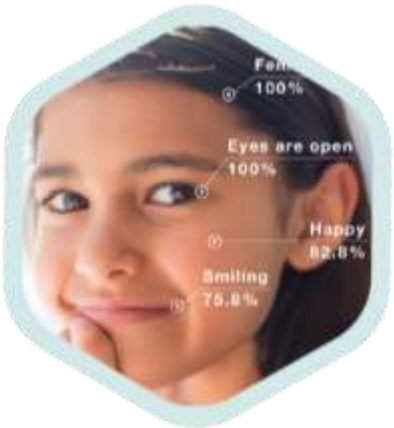


amazon webservices | Executive Briefing Center

Amazon Rekognition

Deep learning-based image recognition service
Search, verify, and organize millions of images

Object and Scene Detection



Facial Analysis

Face Comparison

Facial Recognition

Integrated with S3, Lambda, Polly, Lex

Object and Scene Detection

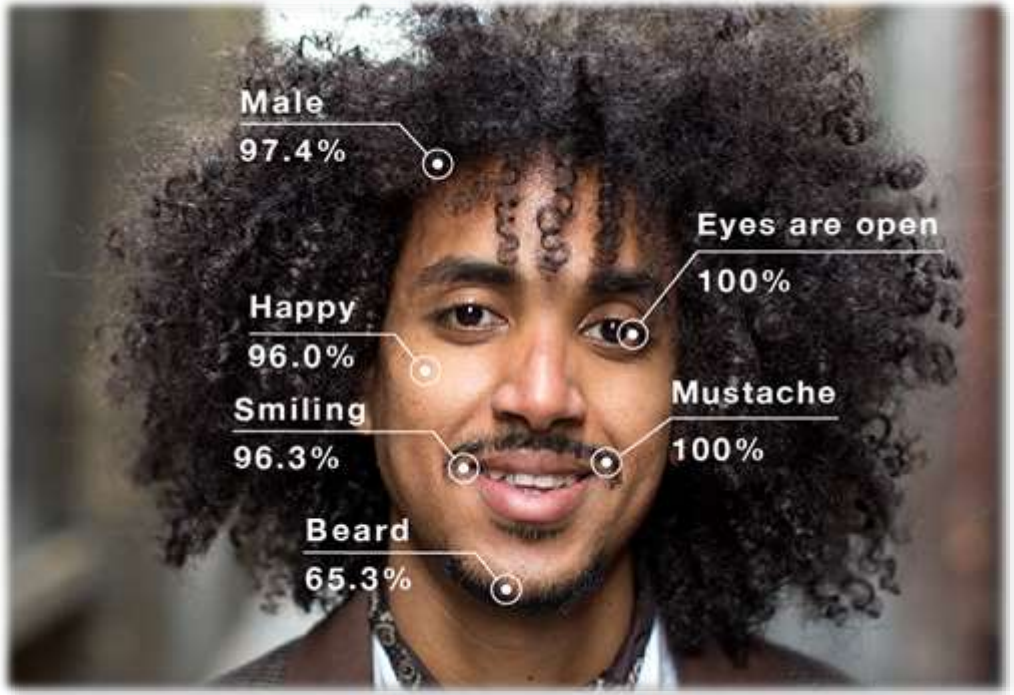
Generate labels for thousands of objects, scenes, and concepts, each with a confidence score

- Search, filter, and curate image libraries
- Smart searches for user generated content
- Photo, travel, real estate, vacation rental applications

Facial Analysis

Locate faces within images and analyze face attributes to detect emotion, pose, facial landmarks, and features

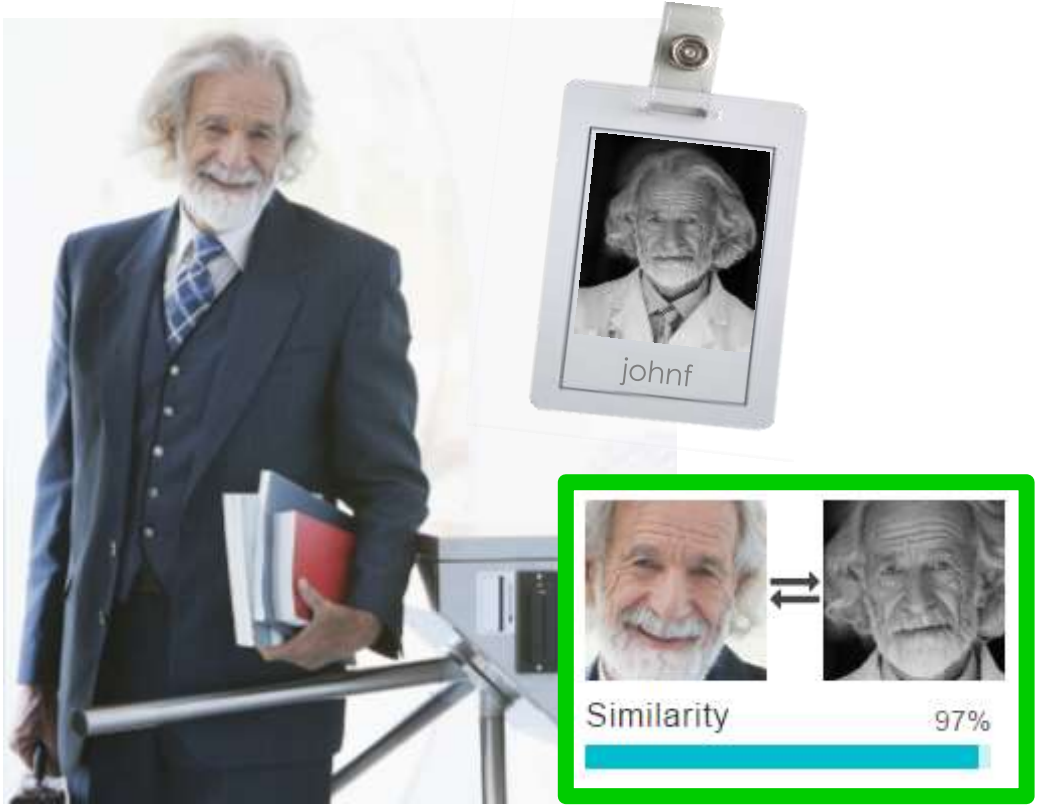
- Avoid faces when cropping images and overlaying ads
- Capture user demographics and sentiment
- Recommend the best photos
- Improve online dating match recommendations
- Dynamic, personalized ads



Face Comparison

Measure the likelihood that faces in two images are of the same person

- Add face verification to applications and devices
- Extend physical security controls
- Provide guest access to VIP-only facilities
- Verify users for online exams and polls



Facial Recognition

Identify people in images by finding the closest match for an input face image against a collection of stored face vectors

- Add friend tagging to social and messaging apps
- Assist public safety officers find missing persons
- Identify employees as they access sensitive locations
- Identify celebrities in historical image archives

Demo

Amazon Lex

Conversational
Engine

amazon webservices | Executive Briefing Center

Advent of Conversational Interactions

1st Gen:
Punch Cards & Memory Registers

2nd Gen:
Pointers & Sliders

3nd Gen:
Conversational Interfaces

Developer Challenges

Security

Speech Recognition

Authentication

Language Understanding

Messaging platforms

Disparate Systems

Availability

Business Logic

Scale

Testing

Mobile

Conversational interfaces need to combine a large number of sophisticated algorithms and technologies

amazon webservices | Executive Briefing Center

Amazon Lex - Features

Text and Speech language understanding: Powered by the same technology as Alexa

Deployment to chat services

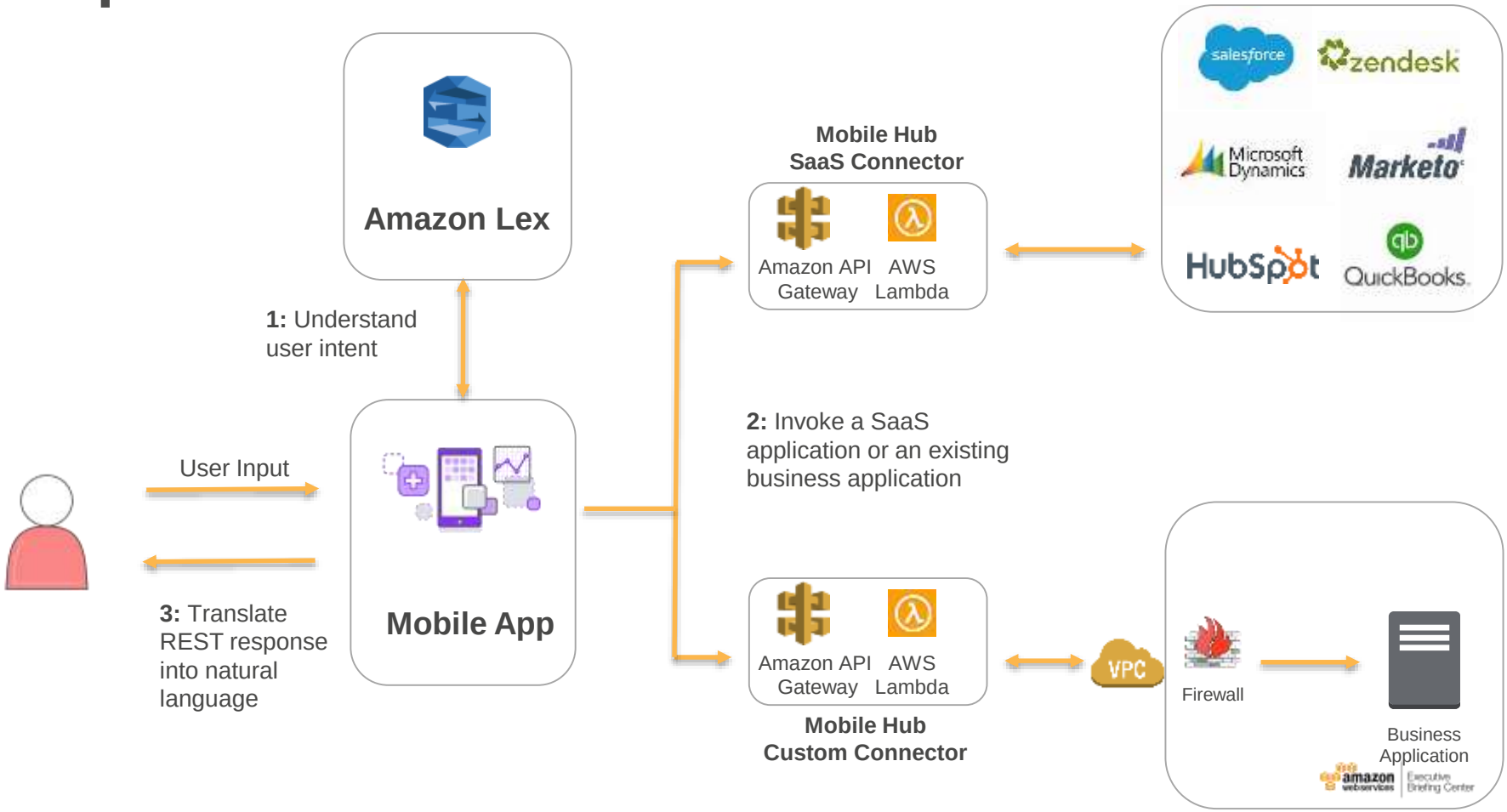
Designed for Builders: Efficient and intuitive tools to build conversations; scales automatically

Versioning and alias support

Enterprise SaaS Connectors: Connect to enterprise systems

amazon webservices | Executive Briefing Center

Enterprise Connectors with Mobile Hub

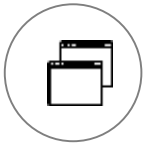


Amazon Lex – Use Cases

Informational Bots

Chatbots for everyday consumer requests

- News updates
- Weather information
- Game scores ….



Application Bots

Build powerful interfaces to mobile applications

- Book tickets
- Order food
- Manage bank accounts ….

Enterprise Productivity Bots

Streamline enterprise work activities and improve efficiencies

- Check sales numbers
- Marketing performance
- Inventory status ….

Internet of Things (IoT) Bots

Enable conversational interfaces for device interactions

- Wearables
- Appliances
- Auto ….

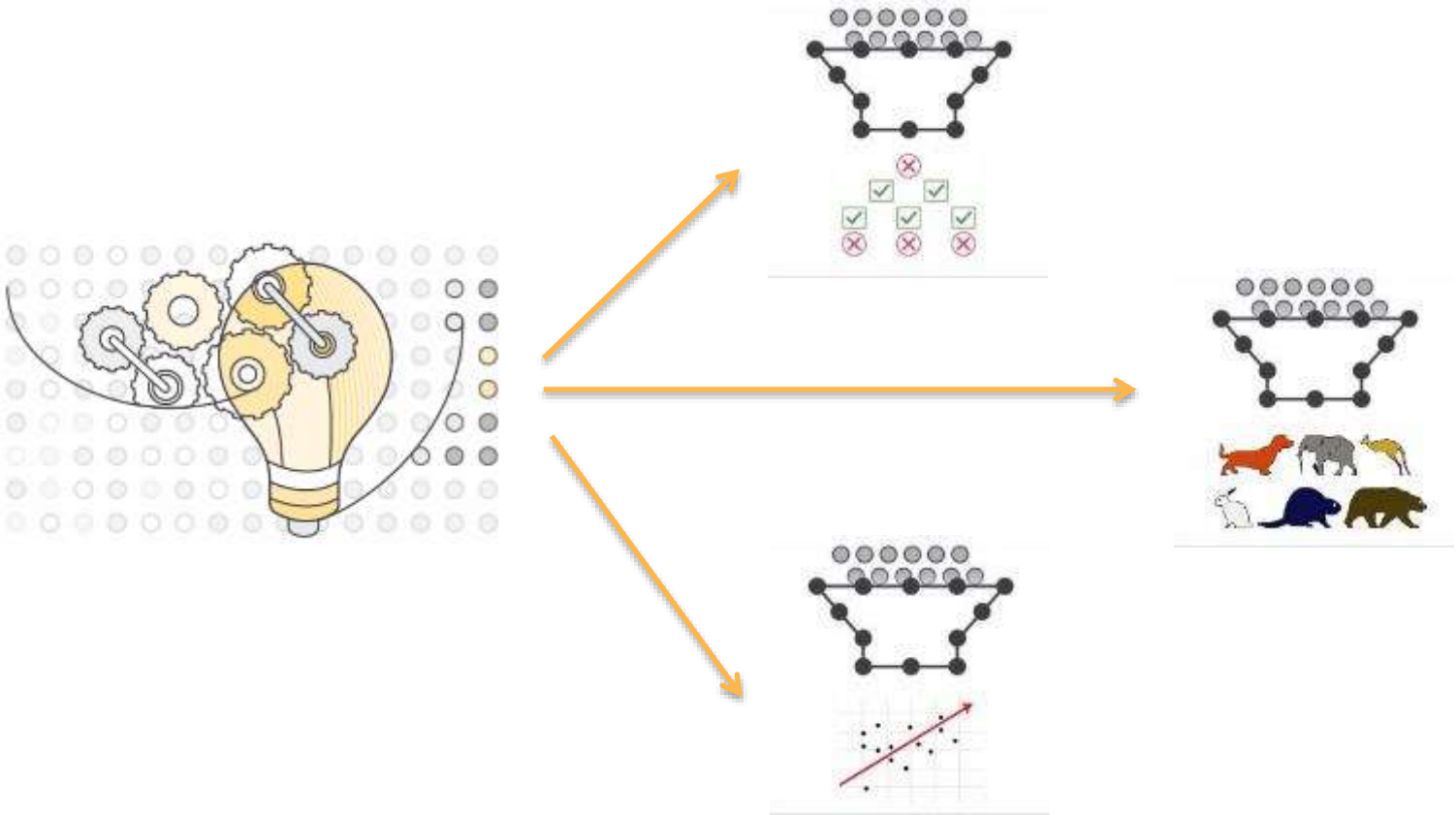
Alexa VS Lex

- **Alexa** is coming with the **eco-system** (devices, install base, 1st party and 3rd party skills)
- **Lex** is for single tenant **chatbot** to integrate with own users

Demo

Amazon Machine Learning

Amazon Machine Learning service



Telco churn dataset

- US telco customers, their cell phone plans and usage
- 21 attributes, 3333 rows:
  - Customer: `State`, `Area_Code`, `Phone`
  - Plan: `Intl_Plan`, `VMail_Plan`
  - Behavior: `VMail_Messages`, `Day_Mins`, `Day_Calls`, `Day_Charge`, `Eve_Mins`, `Eve_Calls`, `Eve_Charge`, `Night_Mins`, `Night_Calls`, `Night_Charge`, `Intl_Mins`, `Intl_Calls`, `Intl_Charge`
  - Other: `Account_Length`, CustServ_Calls, `Churn`

amazon webservices | Executive Briefing Center

Telco churn dataset

- US telco customers, their cell phone plans and usage
- 21 attributes, 3333 rows:
  - Customer: `State`, `Area_Code`, `Phone`
  - Plan: `Intl_Plan`, `VMail_Plan`
  - Behavior: `VMail_Messages`, `Day_Mins`, `Day_Calls`, `Day_Charge`, `Eve_Mins`, `Eve_Calls`, `Eve_Charge`, `Night_Mins`, `Night_Calls`, `Night_Charge`, `Intl_Mins`, `Intl_Calls`, `Intl_Charge`
  - Other: `Account_Length`, CustServ_Calls, `Churn`

amazon webservices | Executive Briefing Center

Telco churn dataset

```
KS, 128, 415, 382-4657, 0, 1, 25, 265.100000, 110, 45.070000, 197.400000, 99,
16.780000, 244.700000, 91, 11.010000, 10.000000, 3, 2.700000, 1, 0

OH, 107, 415, 371-7191, 0, 1, 26, 161.600000, 123, 27.470000, 195.500000, 103,
16.620000, 254.400000, 103, 11.450000, 13.700000, 3, 3.700000, 1, 0

NJ, 137, 415, 358-1921, 0, 0, 0, 243.400000, 114, 41.380000, 121.200000, 110,
10.300000, 162.600000, 104, 7.320000, 12.200000, 5, 3.290000, 0, 0

OH, 84, 408, 375-9999, 1, 0, 0, 299.400000, 71, 50.900000, 61.900000, 88, 5.260000,
196.900000, 89, 8.860000, 6.600000, 7, 1.780000, 2, 0

OK, 75, 415, 330-6626, 1, 0, 0, 166.700000, 113, 28.340000, 148.300000, 122, 12.610000,
186.900000, 121, 8.410000, 10.100000, 3, 2.730000, 3, 0

AL, 118, 510, 391-8027, 1, 0, 0, 223.400000, 98, 37.980000, 220.600000, 101, 18.750000,
203.900000, 118, 9.180000, 6.300000, 6, 1.700000, 0, 0
```

Demo

Questions