aws

AI 기반의 컨텐츠 서비스 혁신
AWS AI 서비스 기반으로 빠르게 고도화하기

Jonathan Kim

Solutions Architect, M&E Vertical
AWS Korea

Agenda

AWS for Publishing

AI Services on AWS for Publishing

Summary

Publishing industry is going through a transformation

Value shift to digital platforms and rise of subscription revenues

Personalisation

Ubiquitous connectivity

Content consumption "on the go"

Disruption means changes to publishing business and operation models

Business Drivers	How AWS Helps

1 Monetization
구독자 확보 및 유지
새로운 서비스 출시

Customer Data Platform
Digital Engagement Tools
구독자 맞춤형 Personalization

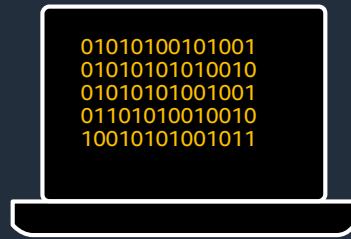**2 Optimization**
편집 워크플로우 최적화
비용 절감

AI/ML
반복적인 작업 자동화

AI Services on AWS

The Opportunity: Get more value from your Data

DATA

ANALYTICS

MACHINE
LEARNING

Becoming a data-driven organization

DATA IS AN
ORGANIZATIONAL ASSET

데이터는 더 이상
특정 부서만의 자산이
아님

DATA IS
DEMOCRATIZED

데이터는 필요로 하는
사람에게 안전하게
제공되어야 함

DATA IS PUT
TO WORK

데이터 기반의 분석과
학습을 통해 의사
결정과 워크플로우를
효율화

Data-Driven "..." 을 하기 위해서는?

1

데이터 보관
인프라의 개선

2

데이터 통합

3

Innovate with
ML

AI? ML? DL?

Artificial intelligence (AI)

Any technique that enables computers to mimic human intelligence using logic, if-then statements, and ML (including deep learning)

Machine learning (ML)

Subset of AI that uses machines to search for patterns in data to build logic models automatically

Deep learning

Subset of ML composed of deeply multi-layered neural networks that perform tasks like speech and image recognition
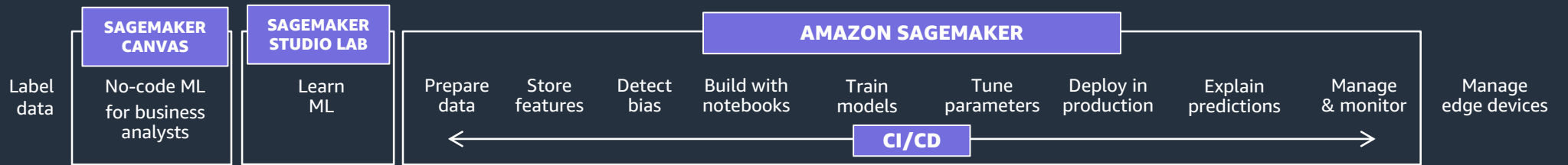
Our mission at AWS

Put machine learning in the
hands of every developer

The AWS AI/ML Stack

AI SERVICES

Business processes
Amazon Personalize
Amazon Forecast
Amazon Fraud Detector
Amazon Lookout for Metrics

Search
Amazon Kendra

Code + DevOps
Amazon CodeGuru
Amazon DevOps Guru

Industrial
Amazon Monitron
Amazon Lookout for Equipment
Amazon Lookout for Vision

Healthcare
Amazon HealthLake
Amazon Comprehend Medical
Amazon Transcribe Medical

CORE

Text & Documents
Amazon Translate
Amazon Comprehend
Amazon Textract

Chatbots
Amazon Lex

Speech
Amazon Polly
Amazon Transcribe
Amazon Transcribe Call Analytics

Vision
Amazon Rekognition
AWS Panorama

ML SERVICES

SAGEMAKER CANVAS

SAGEMAKER STUDIO LAB

AMAZON SAGEMAKER

Label data

No-code ML for business analysts

Learn ML

| Prepare data | Store features | Detect bias | Build with notebooks | Train models | Tune parameters | Deploy in production | Explain predictions | Manage & monitor | Manage edge devices |

CI/CD

ML FRAMEWORKS & INFRASTRUCTURE

| PyTorch, Apache MXNet, TensorFlow | Amazon EC2 | CPUs | GPUs | AWS Inferentia | AWS Trainium | Habana Gaudi | FPGA | Elastic inference |

aws

Amazon Rekognition
Deep-Learning Based Image & Video Analysis

Amazon Rekognition

Amazon Rekognition Image & Video

OBJECT, SCENE, AND ACTIVITY

CUSTOM LABELS

CONTENT MODERATION

TEXT

PPE DETECTION

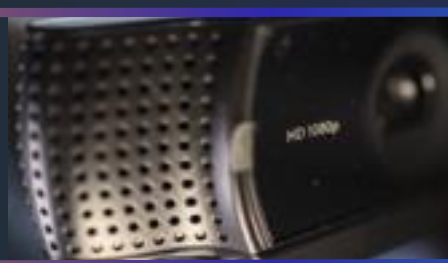**FACE DETECTION AND ANALYSIS**

FACE COMPARE & SEARCH

CELEBRITY RECOGNITION

VIDEO SEGMENTS

LIVE STREAM VIDEO

PATHING

Common Applications of Amazon Rekognition

Automated image and video analysis at scale

WORKPLACE SAFETY

PPE detection

Vehicle or person detection

Person of interest

IDENTITY VERIFICATION

Test taker fraud detection

Know your customer (KYC)

Service access verification

MEDIA ANALYSIS

Search & discovery tagging

Content operations

Inappropriate content

INDUSTRIAL & RETAIL

Parts classification
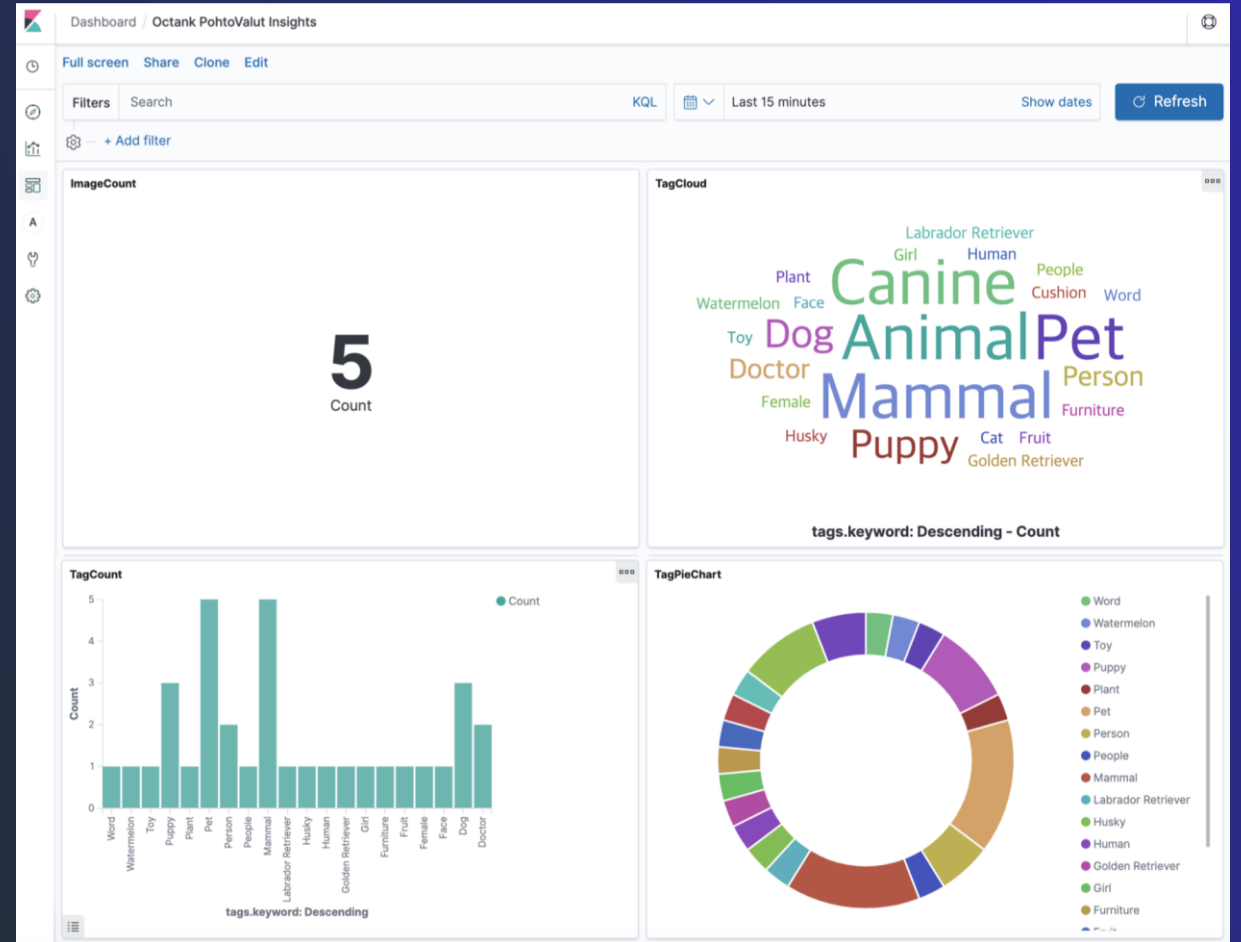
Inventory management

Damage detection

aws

Video/Image Search Index using Amazon Rekognition

Retrieve metadata for celebrities, emotions, key topics in video with timestamp for search

Upload video to S3

Image/Video

Amazon Simple Storage Service

Object Created event

AWS Lambda

Amazon Rekognition Video

Input to Search Engine

Amazon DynamoDB

Output persisted as metadata into DynamoDB to ensure durability
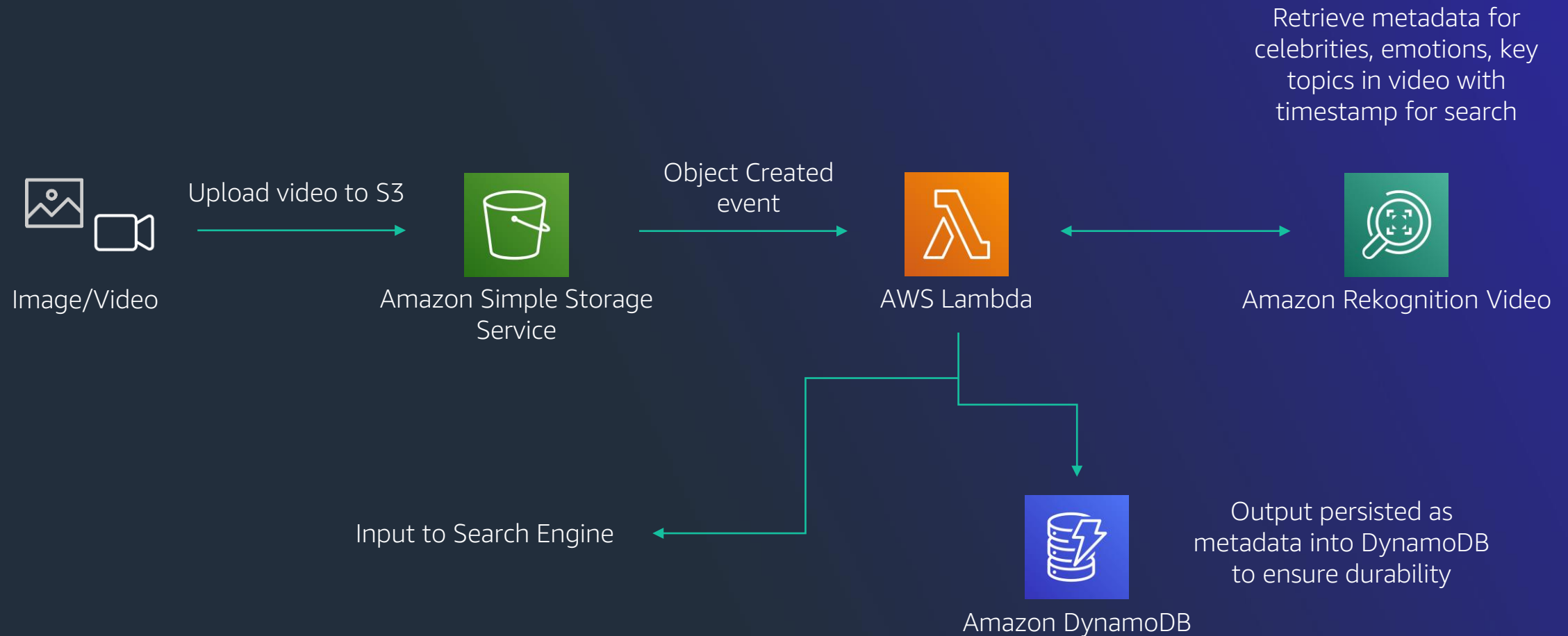
Try This – Build Image Insights Dashboard

https://github.com/ksmin23/image-insights

Amazon Polly & Transcribe

Text-to-Speech / Speech-to-Text

Amazon Polly

Text-to-speech

Speech Synthesis Markup Language (SSML)

Lexicons

Speech marks

Brand voice

Amazon Polly – Language Support

EMEA
- Danish
- Dutch
- English (UK)
- English (SA)
- French
- German
- Icelandic
- Italian
- Norwegian
- Polish
- Portuguese
- Romanian
- Russian
- Spanish
- Swedish
- Turkish
- Welsh
- Welsh English

Americas
- Brazilian Portuguese
- Canadian French
- English (US)
- Spanish (Mexican)
- Spanish (US)

APAC
- Arabic
- English (AU)
- English (IN)
- Japanese
- Hindi
- Korean
- Mandarin
- English (NZ)

Try it – Amazon Polly

Amazon Polly

Amazon Polly is a cloud service that converts text into lifelike speech. You can use Amazon Polly to develop applications that increase engagement and accessibility. Amazon Polly supports multiple languages and includes a variety of lifelike voices, so you can build speech-enabled applications that work in multiple locations and use the ideal voice for your customers. With Amazon Polly, you only pay for the text you synthesize. You can also cache and replay Amazon Polly's generated speech at no additional cost.

For a full breakdown of the available voices and their respective locales, view the docs here.

In this example, we're going to show how easy it is to send text to Amazon Polly to synthesize audio.

Methods:

getSynthesizeSpeechUrl()
Send audio data to Polly, and return the URL where the result will be.
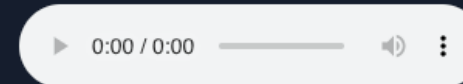
Step 1: Choose a voice

Standard
Seoyeon

Step 2: Write text

Enter the text you would like Polly to say
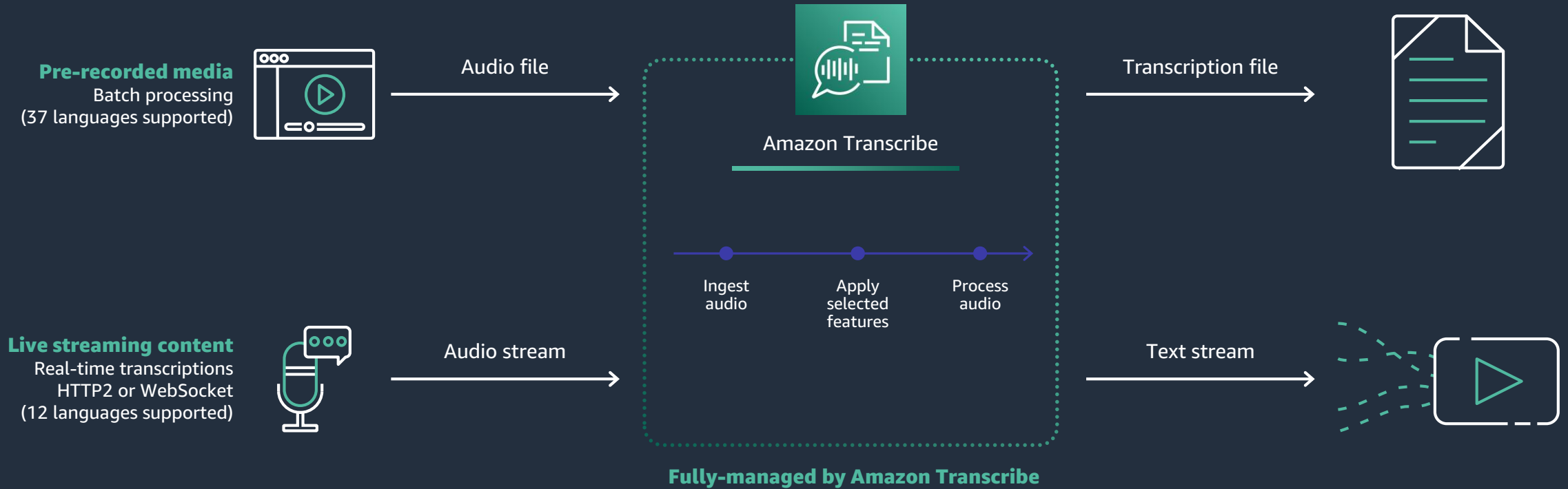
Voice My Message Using Polly

Step 3: Get Result

▶ 0:00 / 0:00 🔊 ⋮

https://ai-service-demos.go-aws.com/polly

Amazon Transcribe

A fully-managed and continuously trained automatic speech recognition (ASR) service

Pre-recorded media
Batch processing
(37 languages supported)

Audio file →

Amazon Transcribe

Ingest audio — Apply selected features — Process audio

Transcription file →

Live streaming content
Real-time transcriptions
HTTP2 or WebSocket
(12 languages supported)

Audio stream →

Text stream →

Fully-managed by Amazon Transcribe

Amazon Transcribe Features

Punctuation, capitalization

Speaker labelling/channel identification

Word-level time stamps

Word-level confidence scores
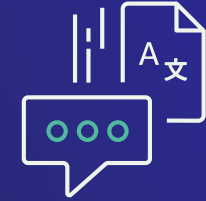
Language ID

Custom vocabulary

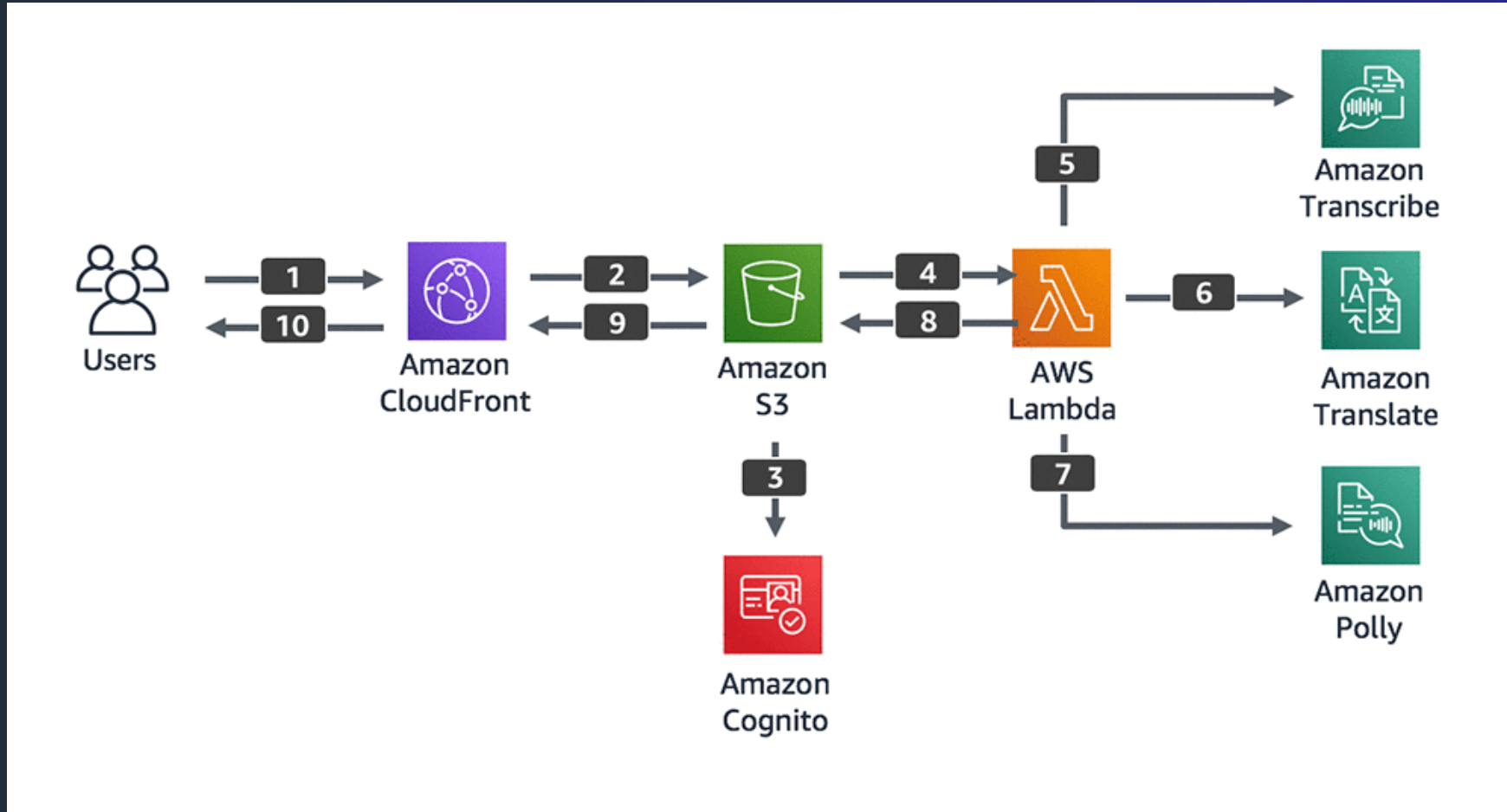**Custom Language Models (CLM)**

Alternative Transcriptions
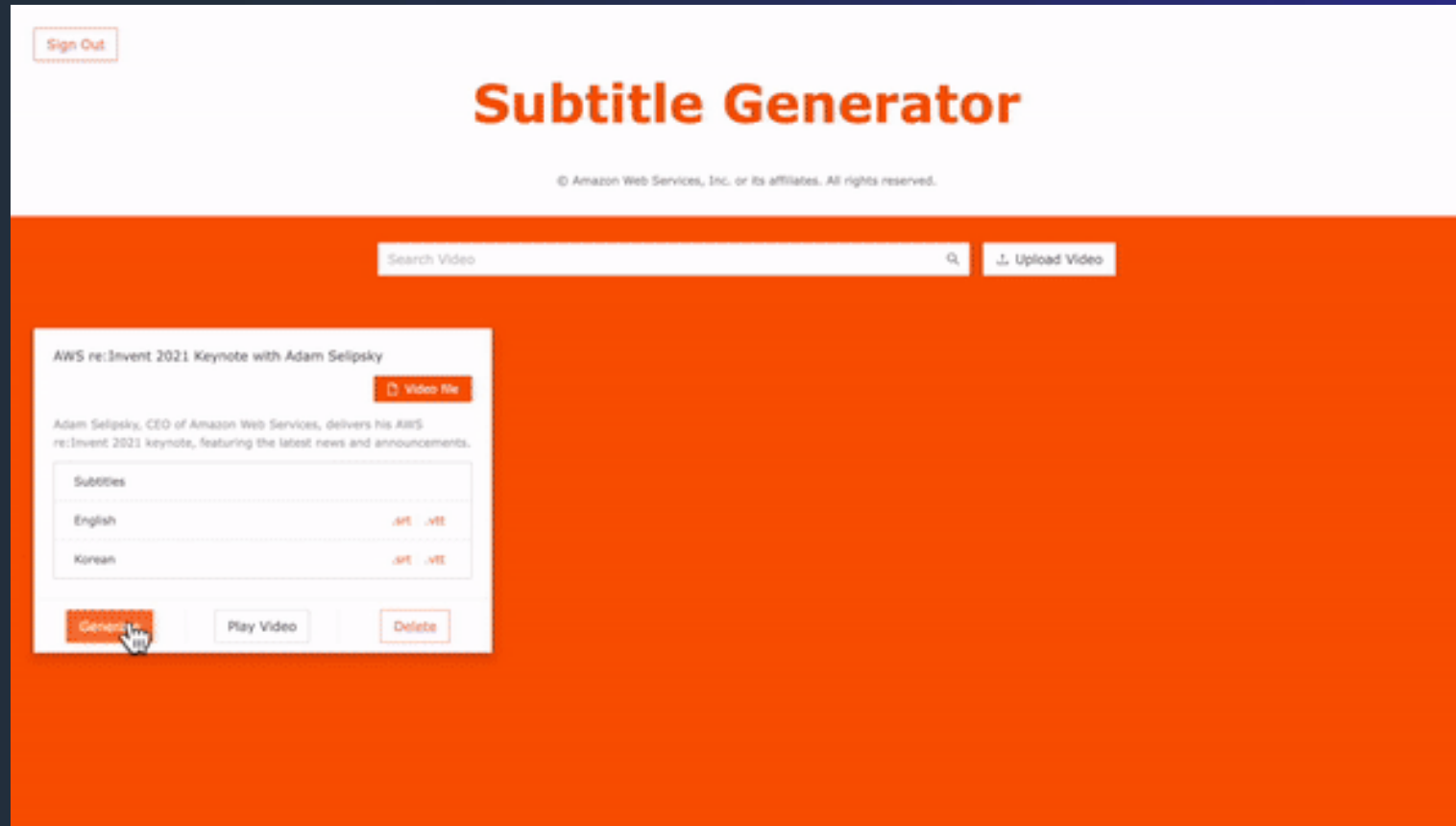
Vocabulary Filtering

PCI/PII content redaction

원하는 형태로 **AWS** 서비스를 조합

https://aws.amazon.com/ko/blogs/machine-learning/build-your-own-real-time-voice-translator-application-with-aws-services/

Try It – Subtitle Generator with Amazon Transcribe

https://github.com/aws-samples/subtitle-generator-cdk-app

aws

Amazon Personalize
Improve your customer experience

Amazon Personalize
Create personalized user experiences, no machine learning expertise required

**Delivers personalized
user experiences faster**

**Responds quickly to
changing user intent using
real-time recommendations**

**Managed ML service
reduces time to market**

**Automates steps to
deploy recommendations**

**Easily integrates
with existing systems**

Amazon Personalize
How it works

User events/interactions
(views, signups, conversions, etc.)

Item metadata
(details of articles, products, videos, etc.)

User metadata
(age, location, etc.)

Amazon Personalize
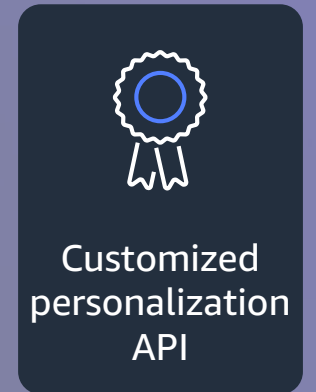
Inspect data

Identify features

Select hyper-parameters

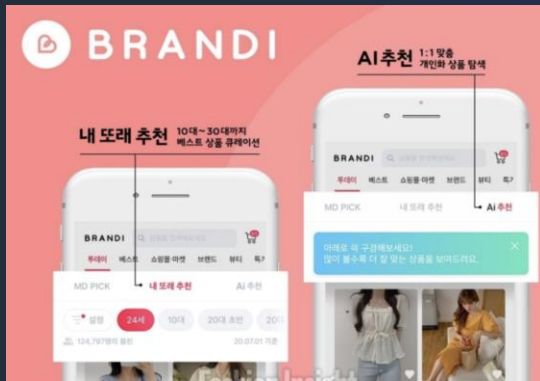Train models

Optimize models

Host models
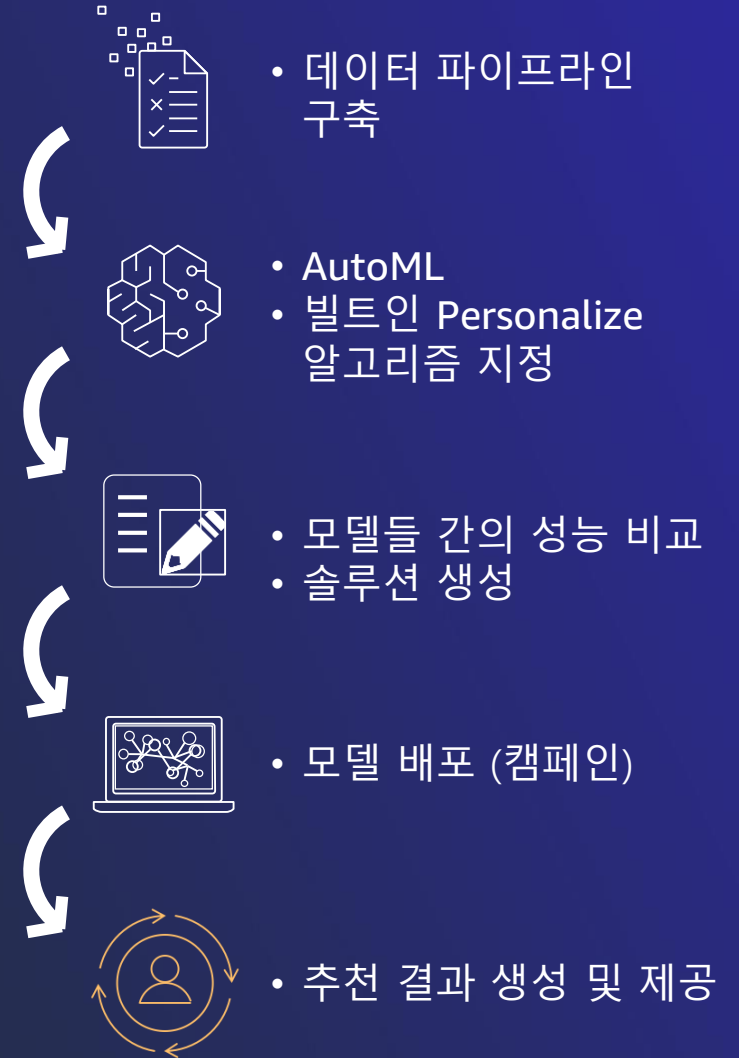
Real-time feature store

Customized personalization API

Amazon Personalize – Customer Cases

다양한 고객사례: https://aws.amazon.com/ko/personalize/customers/

Amazon Personalize 워크플로우

- **Dataset 및 Dataset Group 생성**

- **트레이닝 데이터 준비**
  - ✓ Dataset group으로 트레이닝 데이터 Import
  - ✓ Dataset group에 사용자 이벤트를 기록(record) - 실시간

- **레시피Recipe를 이용하여 개인화 & 추천 모델(솔루션Solution)생성**

- **성능 평가 지표metrics를 이용한 솔루션 성능 분석**

- **캠페인 생성 (:= 솔루션 배포)**

- **사용자에게 추천 결과 제공**

- **사용자 액티비티를 기반으로 한 솔루션의 지속적인 업데이트**

- 데이터 파이프라인 구축

- AutoML
- 빌트인 Personalize 알고리즘 지정

- 모델들 간의 성능 비교
- 솔루션 생성

- 모델 배포 (캠페인)

- 추천 결과 생성 및 제공

Try It – Amazon Personalize A to Z
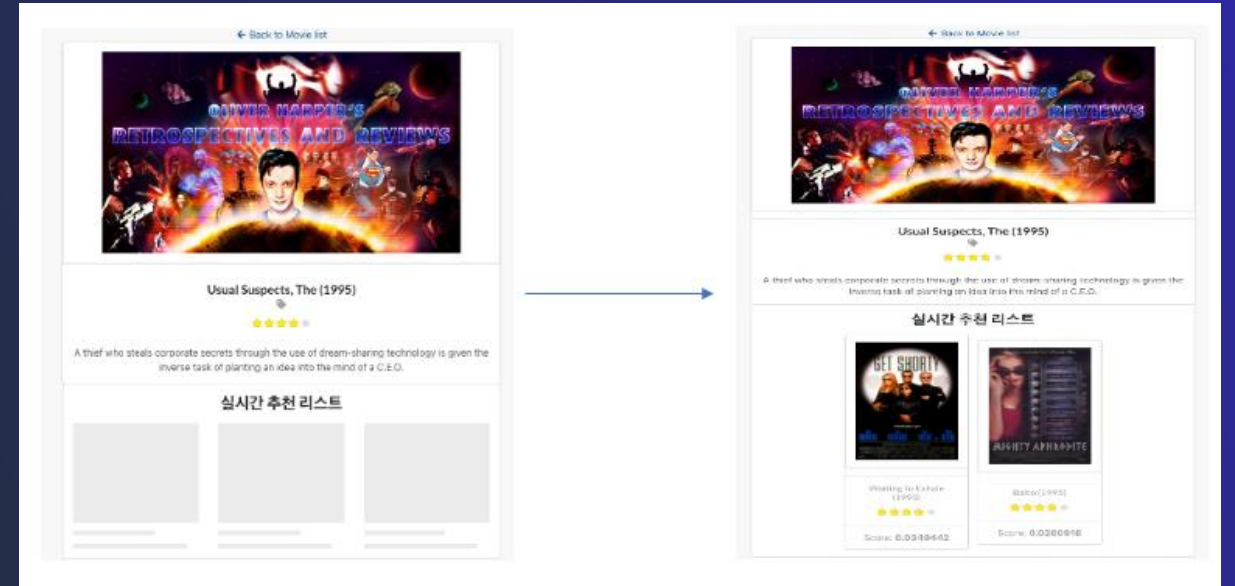

데이터 준비 및 가공

Amazon
Personalize

모델 훈련 및 배포

실시간 사용자 행동기반 추천

배치 추천

추천 서비스 결과값 확인하기

https://catalog.us-east-1.prod.workshops.aws/workshops/ed82a5d4-6630-41f0-a6a1-9345898fa6ec/ko-KR

Amazon Kendra

Highly accurate intelligent search service powered by ML

Find more accurate answers with Amazon Kendra

EASY TO FIND WHAT YOU ARE LOOKING FOR

Natural language queries

Intuitive search within unstructured content

NLU and machine learning (ML) core

Instant answers
FAQ matching
Document ranking

Broad domain expertise

Pre-trained for 14 domains and industries

Continuous improvement

Incrementally learns from user feedback

QUICK SETUP

Accelerators

Native and partner connectors
Automate ingestion with custom metadata enrichment
No-/low-code UI builder

SECURE

Secure search

Encrypted in transit and rest
Token-based access control
AWS SSO integration

Employees and customers want answers quickly

Traditional search

Intelligent search

Amazon Kendra

Natural language queries

"Where is the IT support desk in Kumo?" → "1st floor"

Keyword queries

"Health benefits" or "parking allowance"

Amazon Kendra

NLU and ML core

Natural language queries

NLU and ML core

Better answers
Reading comprehension
FAQ matching
Document ranking

Where is the it support desk in kumo?

Kendra's suggested answer

1st floor

… our **IT** help **desk**, deskside, which are located all around our buildings and open for **support** at most hours. The one in **Kumo** is on the **1st floor** and is open from 12:30 to 5 p.m. daily.

WEB | https://w.amazon.com/bin/view/ILDRTEST/

What is Kendra's suggested answer? Info

Frequently asked questions

Where do I get IT help in Kumo?

What are the IT support hours in Dopler?

Where can I get IT help Seattle campus?

What are frequently asked questions? Info

1-10 of 486 Recommended documents   Sort: Relevancy ▼

AWS Kumo
…this is how we're doing it. Access controls Access to this host is governed by the permissions associated with the AWS-**SUPPORT-KUMO** hostclass. Permissions to the aws-**support-kumo** group… (More)

WEB | https://w.amazon.com/bin/view/kumo-support

Amazon Kendra

Domain expertise

Natural language queries

NLU and ML core

Domain expertise

14개 주요 도메인에 최적화

IT, Financial Services, Insurance, Pharma, Industrial, Energy, Legal, Media and Entertainment, Travel and Hospitality, Health, HR, News, Telecommunications, and Automotive

---

what is the production increase in lithium carbonate?

1-6 of 6 results

Amazon Kendra suggested answers

Can Tesla Really Produce A $25,000 Self-Driving Electric Car?

It's just like widely available." Related: The World's Most Expensive Crudes Get Expensive Again

There are 63kgs of **lithium carbonate** in a Tesla 70kWh battery. So that's 18.9 million tonnes if everyone wants to trade in their clunker for a Model Y. Global **lithium carbonate** equivalent **production** last year was **365,000 tonnes, an increase of 32% from the year before**. Just 32%? Clearly, the **lithium** mining industry simply hasn't even been trying. Salting away Musk solves difficult problems from a "first principle standpoint" which he frequently referred to on stage.

https://s3.us-west-2.amazonaws.com/.../Can Tesla Really Produce A...?...

What are Amazon Kendra suggested answers? Info

Amazon Kendra

Incremental learning

Natural language queries

NLU and ML core

Domain expertise

Continuous improvement

Amazon Kendra improves automatically over time

Captures click-through and user feedback

Retrains models periodically

---

how much amazon refund for postage?

1-10 of about 3,100 results

Amazon Kendra suggested answers

Amazon.com Help: About Our Returns Policies

up to $20

Amazon will automatically **refund up to $20** for return **postage** costs on receipt of the item. If your return **postage** costs exceed $20, you may contact our Customer Service Center to request a **refund** of the remaining **postage** cost. If you return a defective, damaged or incorrect item, youâ??ll be **refunded** the full **postage** cost, as well as your Import Fees Deposit, once your return is processed. **Amazon** Alexa Voice Shopping Non-digital products purchased using Alexa are eligible for free returns. To return a product purchased using Alexa, process your return as normal in the Returns Center.

https://s3.us-east-1.amazonaws.com/amazon-service.../201819200.html

What are Amazon Kendra suggested answers? Info

Sort: Relevance ▼

Amazon.com Help: About Our Returns Policies

...Customer Service Center to request a **refund** of the remaining **postage** cost. If you return a defective, damaged or incorrect item, youâ??ll be **refunded** the full **postage** cost, as well as your Import Fees Deposit, once your return is processed. **Amazon** Alexa Voice Shopping Non-digital...

https://s3.us-east-1.amazonaws.com/amazon-service.../201819200.html

Amazon Kendra

Native connectors

Natural language queries

NLU and ML core

Domain expertise

Continuous improvement

Native and partner connectors

Popular data sources including Microsoft SharePoint, Atlassian Confluence and Jira, Adobe Experience Manager, ServiceNow, and Salesforce

Add credentials, then point and shoot
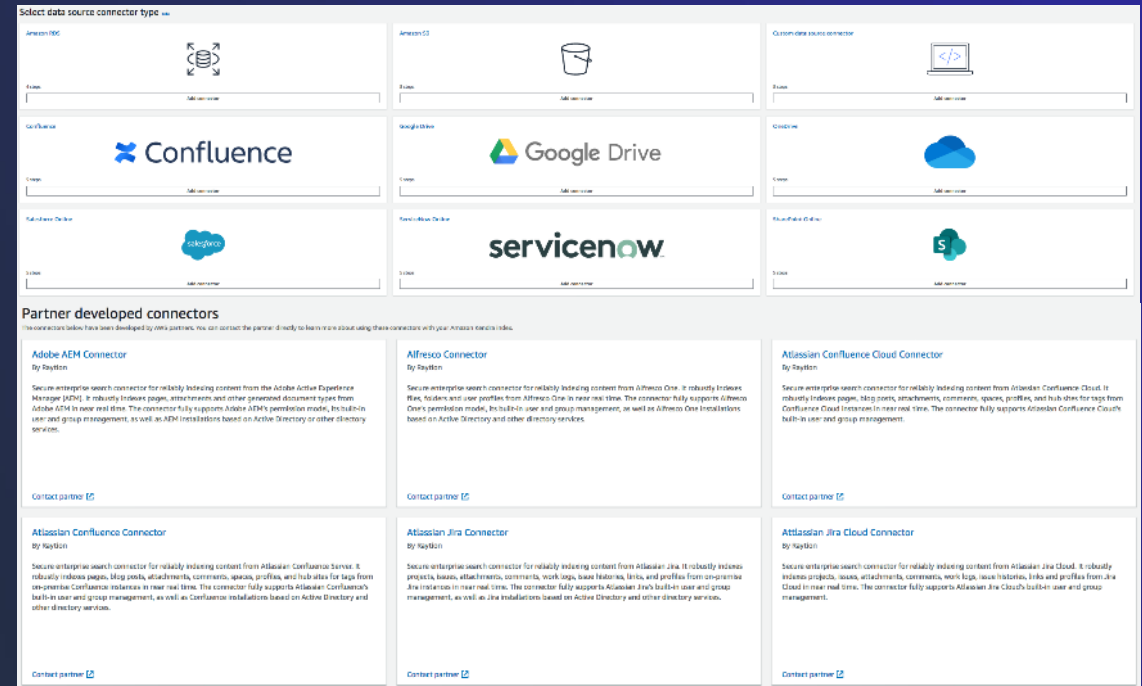
Amazon Kendra

Native connectors

Natural language queries

NLU and ML core

Native and partner connectors
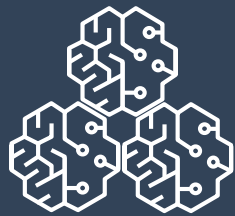
Domain expertise

Continuous improvement

Secure search

Highly secure
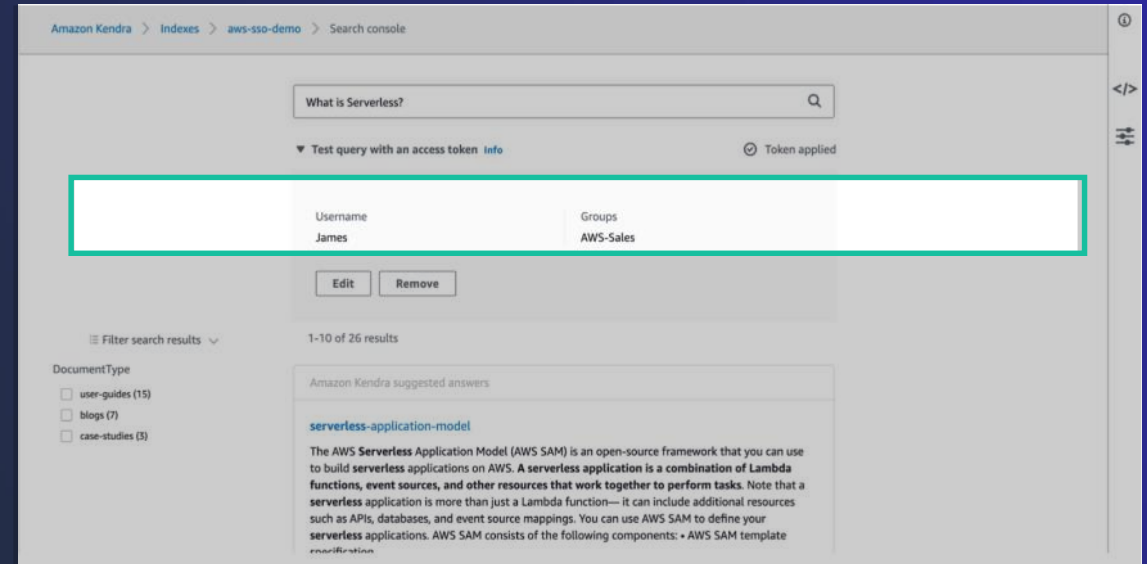
 Data encrypted in transit and at rest

Token-based user access control

Amazon Kendra analytics dashboard

- Key quality and usability metrics
- Helps admins and content creators
  - Understand how easily users are finding relevant search results
  - Quality of the search results
  - Gaps in the content
  - Role of instant answer in providing answers to users' results
- Viewed in console dashboard or accessed through an API
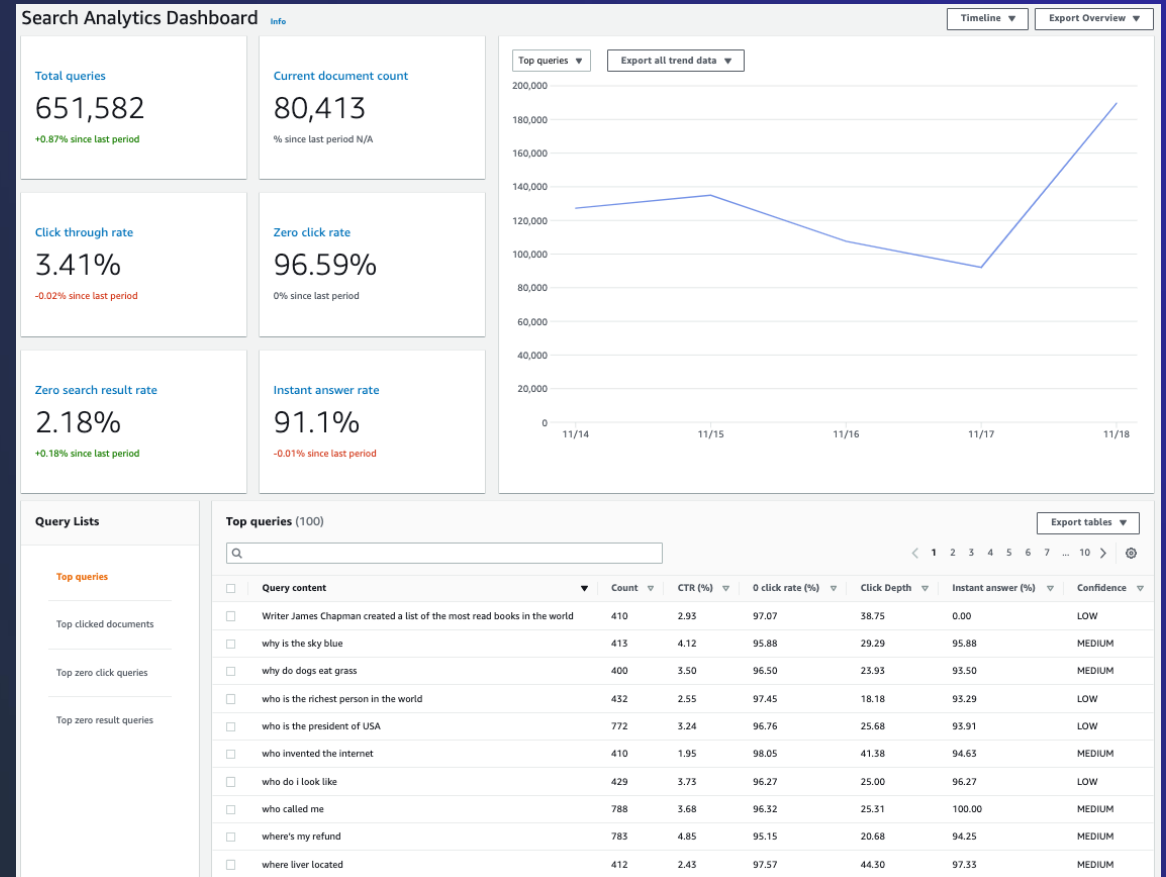
Amazon Kendra Experience Builder – key features

- Deploy Amazon Kendra Search UI in a few clicks

- Drag and drop Search UI builder

- AWS SSO integration for secure access and search filtering

- Fully managed/hosted

- No ML or coding expertise needed

The AWS AI/ML Stack – Choose What you Need!

AI SERVICES

SPECIALIZED

Business processes	**Search**	**Code + DevOps**	**Industrial**	**Healthcare**
Amazon Personalize	Amazon Kendra	Amazon CodeGuru	Amazon Monitron	Amazon HealthLake
Amazon Forecast		Amazon DevOps Guru	Amazon Lookout for Equipment	Amazon Comprehend Medical
Amazon Fraud Detector			Amazon Lookout for Vision	Amazon Transcribe Medical
Amazon Lookout for Metrics				

CORE

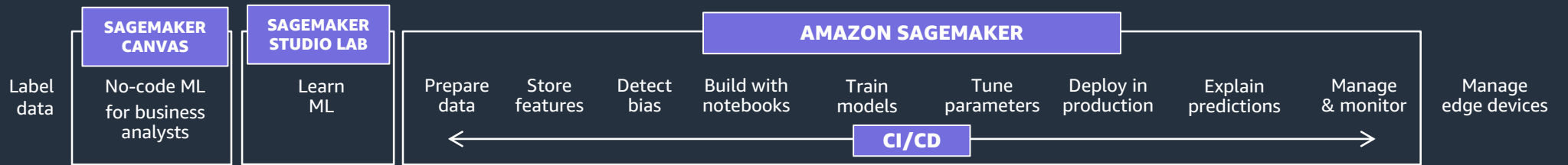| **Text & Documents**	**Chatbots**	**Speech**	**Vision**
Amazon Translate	Amazon Lex	Amazon Polly	Amazon Rekognition
Amazon Comprehend		Amazon Transcribe	AWS Panorama
Amazon Textract		Amazon Transcribe Call Analytics	

ML SERVICES

SAGEMAKER CANVAS

SAGEMAKER STUDIO LAB

AMAZON SAGEMAKER

Label data

No-code ML for business analysts

Learn ML

Prepare data	Store features	Detect bias	Build with notebooks	Train models	Tune parameters	Deploy in production	Explain predictions	Manage & monitor	Manage edge devices

CI/CD

ML FRAMEWORKS & INFRASTRUCTURE

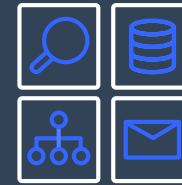| PyTorch, Apache MXNet, TensorFlow	Amazon EC2	CPUs	GPUs	AWS Inferentia	AWS Trainium	Habana Gaudi	FPGA	Elastic inference

aws

Start your Journey with AWS

TRAINING

PROOF OF CONCEPT

PRODUCTION

Resources

AWS ML/AI website & documentation
https://ml.aws

AWS Articial Intelligence Services website
https://aws.amazon.com/machine-learning/ai-services/

AWS Machine Learning Blog
https://aws.amazon.com/blogs/machine-learning/

AWS Training and Certification portal
https://www.aws.training/LearningLibrary

Thank you!

Jonathan Kim

Solutions Architect, AWS Korea

Intelligent search for agent assist

Customer → Real-time call → Amazon Transcribe → Amazon Comprehend → Amazon S3 → Dashboard

Sentiment, entities, and key phrases

Amazon Kendra

Next best action
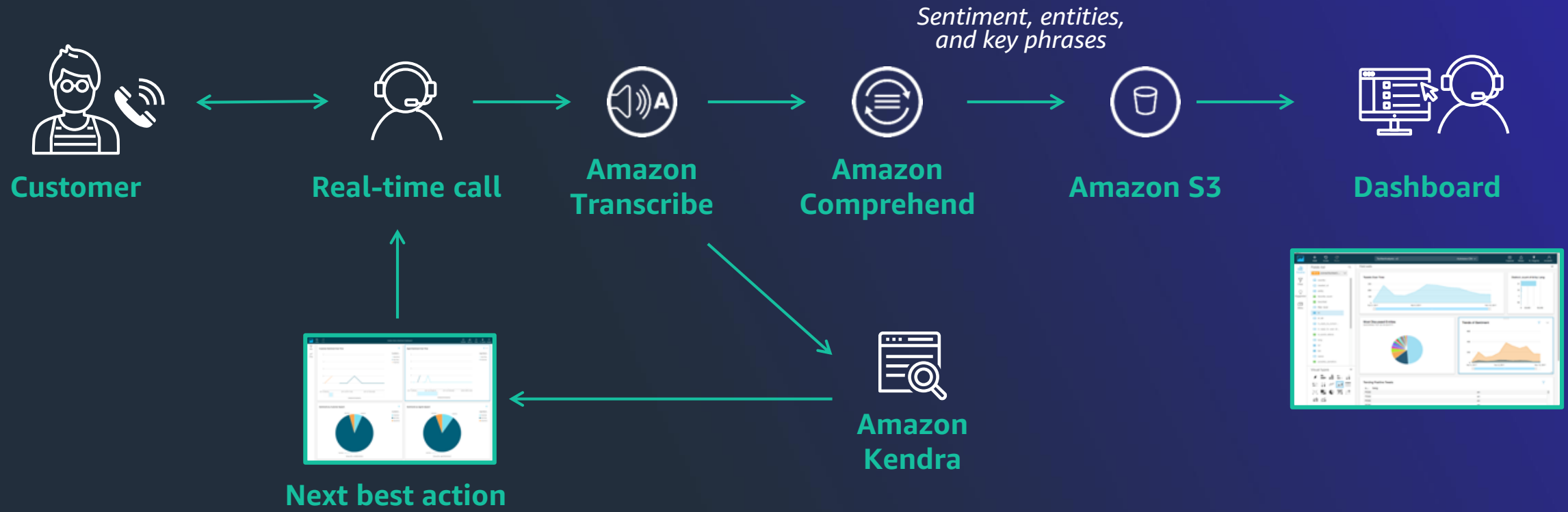
Self-service chatbots with intelligent search

Customer   Amazon Lex   Amazon Kendra

Amazon S3

Other doc sources

49
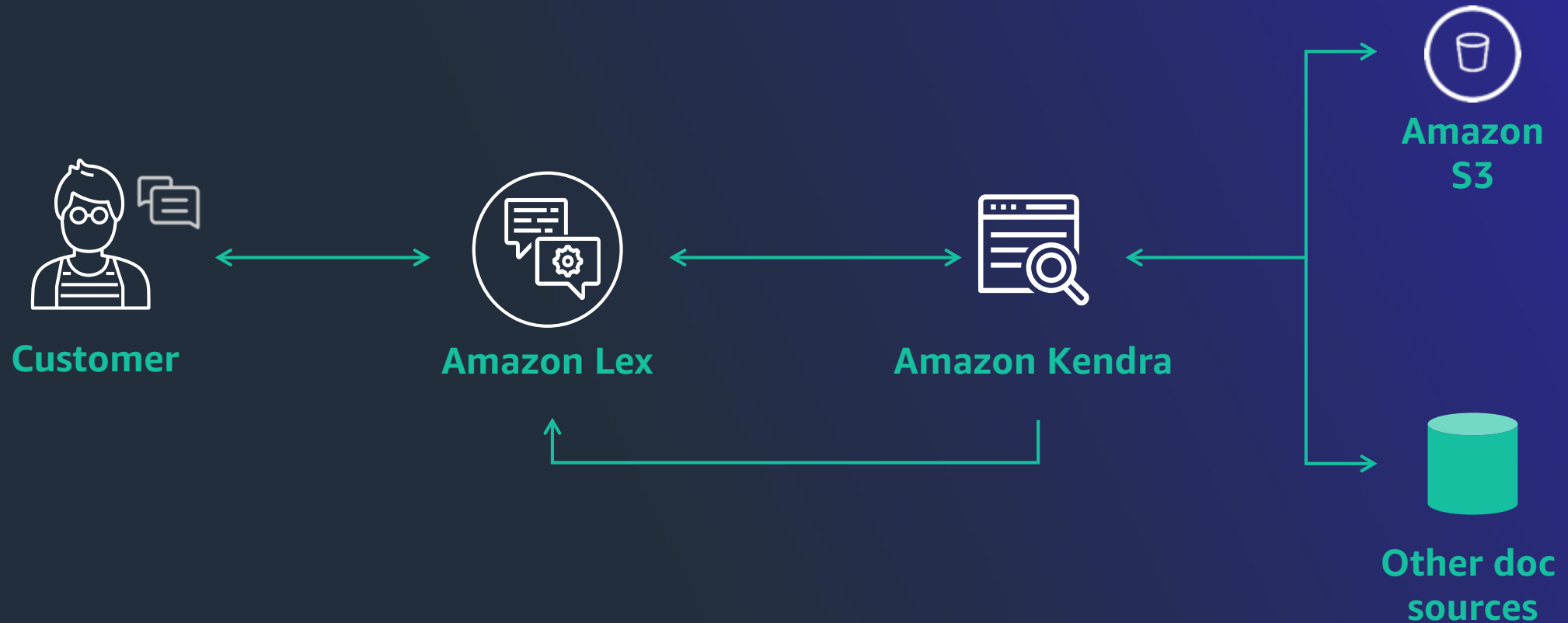
Should I use Amazon Kendra or Amazon OpenSearch Service?

Amazon Kendra	Amazon OpenSearch Service
Why ? No-code, ML-powered, fully managed search service with built-in connectors, WYSIWYG search experience builder, access control, and incremental learning	**Why?** Managed service delivering OpenSearch – the open-source search and analytics engine. Use for log-based monitoring. Build on its REST APIs for a highly customized search experience.
Use cases Internal search (R&D, compliance, enterprise-wide), contact center/support (agent assist, chatbot Q/A, website), ISV (Salesforce, Atlassian, DevFactory, and so on)	**Use cases** Logs – infrastructure, application, IoT, and security monitoring. Trace analytics for observability. ML features for anomaly detection. Search – eCommerce, ad serving.
Type of search High accuracy with **keyword** and **natural language Q/A:** *Ex: Q: What time is the IT desk open? A: 9:00 am – 5:00 pm* *Rich keyword-based **query language** for complex queries:* *ex: title:"history" AND "movies" NOT "fiction"*	**Type of search** Rich keyword-based query language for complex queries Built-in, adjustable ranking Aggregations for faceted search and log analysis Ex: color:"blue" AND category:"men's clothing" AND description:"wool"
Who is the ideal persona for this service? CIO/VP/Director responsible for employee productivity, R&D, compliance, knowledge management VP/Director responsible for customer service VP/Director of engineering at ISVs, building applications with intelligent search	**Who is the ideal persona for this service?** CIO/VP/Director of engineering managing IT departments, developers using DevOps CISO for enterprise security monitoring and compliance
How do customers get data to this service? Amazon Kendra has pre-built connectors with Amazon RDS, Amazon S3, Amazon WorkDocs, Atlassian Confluence + Cloud, Microsoft OneDrive, Microsoft SharePoint, ServiceNow, Salesforce, Google Drive, Web Crawler, and custom data through API. Total catalog is 100+ connectors.	**How do customers get data to this service?** Can use native integration with Amazon Kinesis Data Firehose or other AWS services to build and manage your own ingestion ecosystem
Pricing Discounted pricing is available for customers who are willing to make certain minimum volume commits. Please <u>contact AWS</u> for details. Credits available for POCs.	**Pricing** Charges for instances, storage, and networking. On-demand, and Reserved Instances. Tiered storage for cost-optimal, long-term retention of log data. Credits available for POCs.