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AIM312

# Finding answers faster with intelligent search

James Rehfeld
Director of Products & Technology
PwC

Udi Hershkovich
Business Development
AWS

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# Quickly and easily find accurate information

CHALLENGES WITH ENTERPRISE SEARCH TODAY



**Low accuracy**

80% of data is unstructured

Keyword engines



**Complexity**

Scattered data silos

# The AWS ML stack

## BROADEST AND MOST COMPLETE SET OF MACHINE LEARNING CAPABILITIES

### AI SERVICES

| VISION | SPEECH | | TEXT | | | SEARCH | CHATBOTS | PERSONALIZATION | FORECASTING | FRAUD | DEVELOPMENT | CONTACT CENTERS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Amazon Rekognition | Amazon Polly | Amazon Transcribe *+Medical* | Amazon Comprehend *+Medical* | Amazon Translate | Amazon Textract | Amazon Kendra | Amazon Lex | Amazon Personalize | Amazon Forecast | Amazon Fraud Detector | Amazon CodeGuru | Contact Lens *For Amazon Connect* |

### ML SERVICES

| Amazon SageMaker | Ground Truth | AWS Marketplace for ML | SageMaker Studio IDE | | | | | | | | Neo | Augmented AI |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Built-in algorithms | Notebooks | Experiments | Processing | Model training and tuning | Debugger | Autopilot | Model hosting | Model monitor | |

### ML FRAMEWORKS & INFRASTRUCTURE

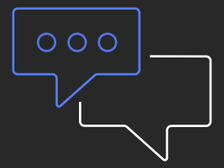
| TensorFlow, mxnet, PyTorch | GLUON, Keras, scikit-learn, Horovod, DeepGraphLibrary | Deep Learning AMIs and containers | GPUs and CPUs | Elastic Inference | Inferentia | FPGA |
|---|---|---|---|---|---|---|

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# Quickly and easily find accurate information

AMAZON KENDRA

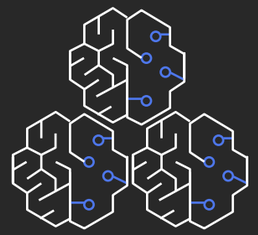
## Easy to find what you are looking for



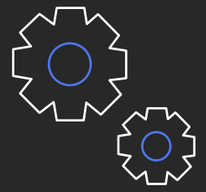
Natural language queries



NLU and machine learning core



Domain expertise



Continuous improvement

## Simple and quick to set up



Native connectors



Simple API and console experiences code samples

# Amazon Kendra

NATURAL LANGUAGE QUERIES



**Natural language queries**

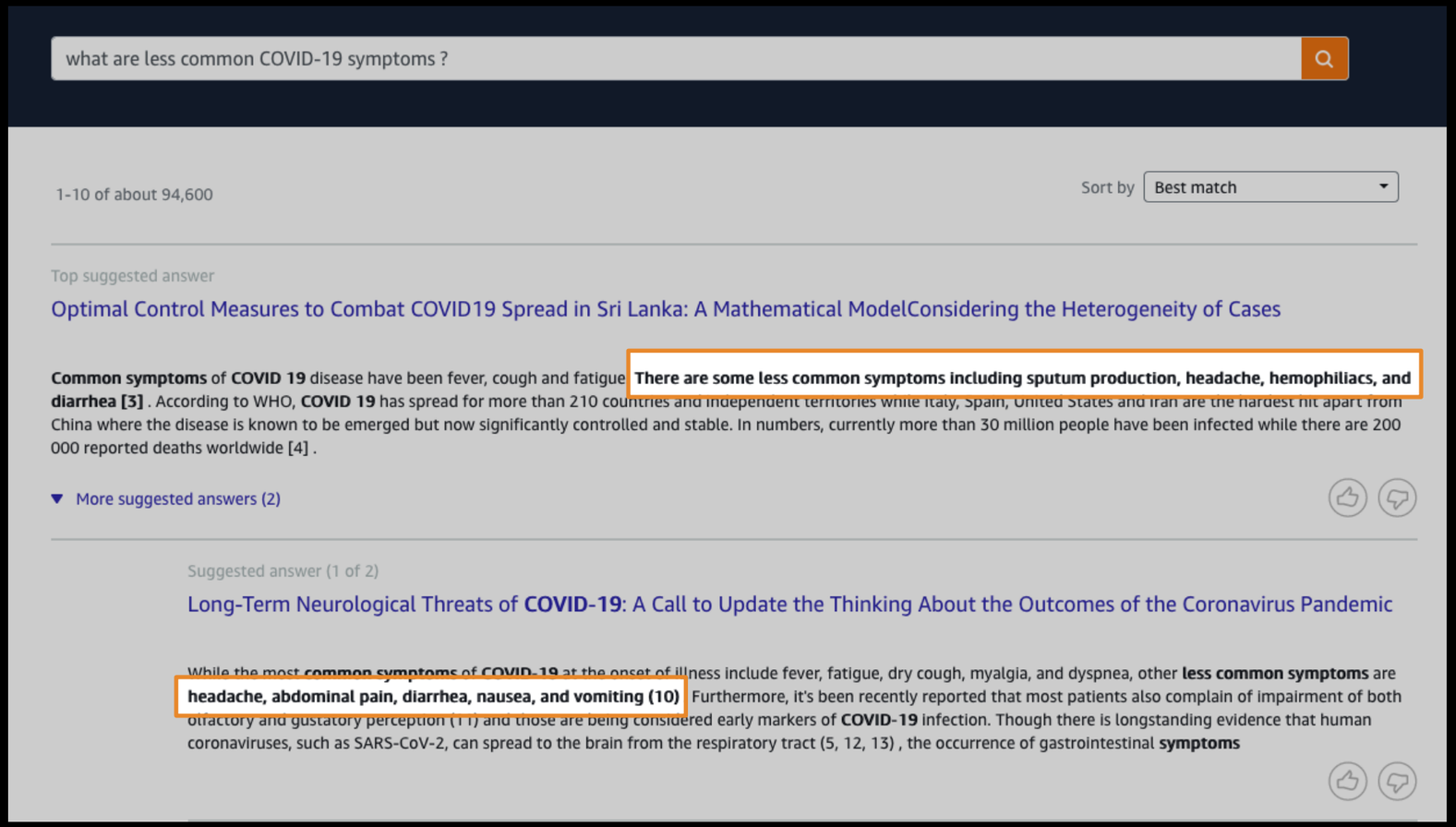
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Natural language queries

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

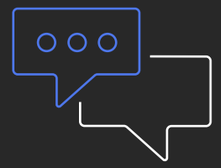
Keyword queries

“Health benefits” or “parking allowance”



# Amazon Kendra

NLU AND ML CORE



**Natural language queries**



**NLU and machine learning core**

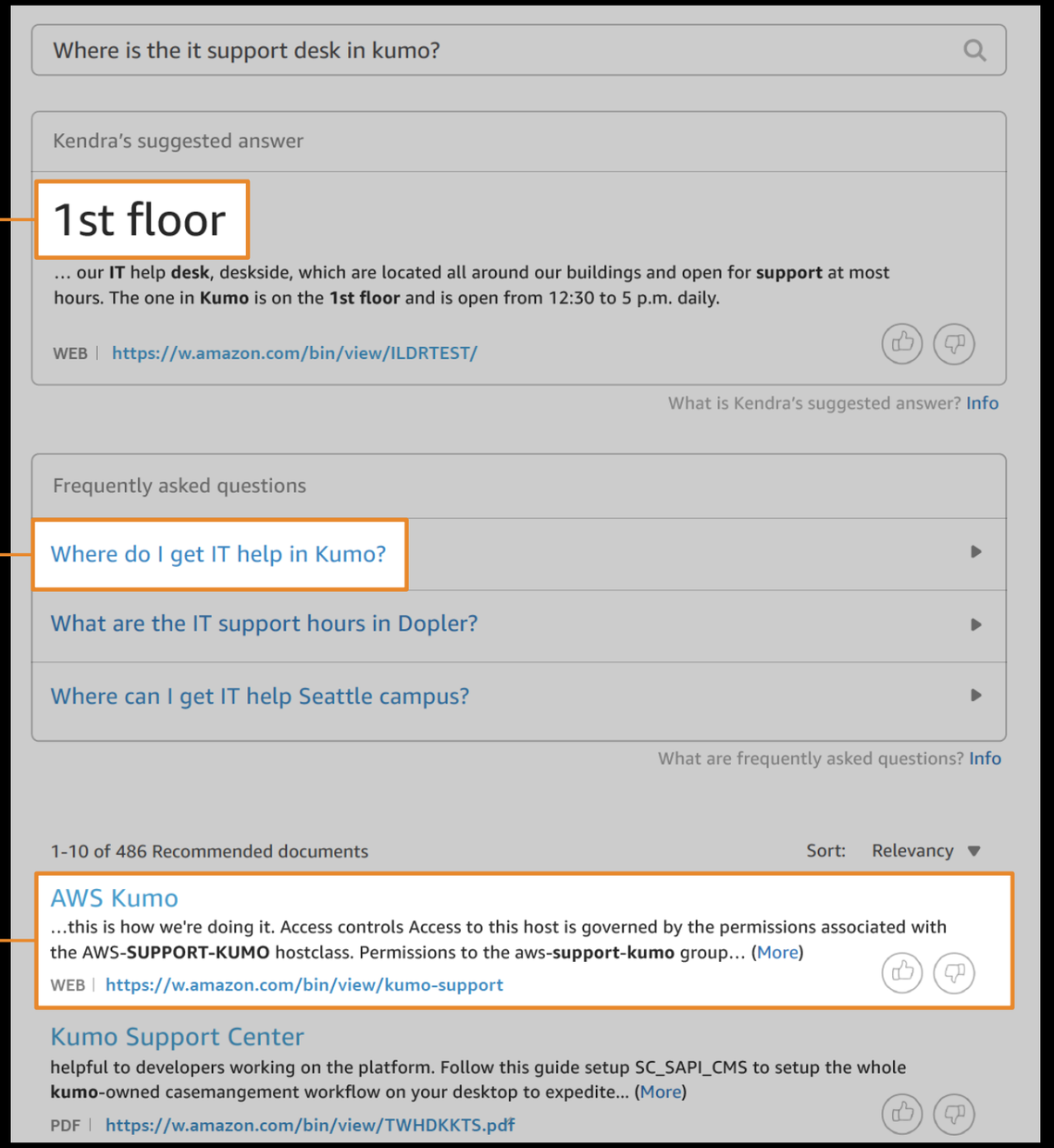
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**Better answers**

Reading Comprehension

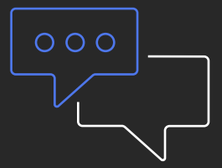
FAQ matching

Document ranking



# Amazon Kendra

DOMAIN EXPERTISE



Natural language queries



NLU and machine learning core

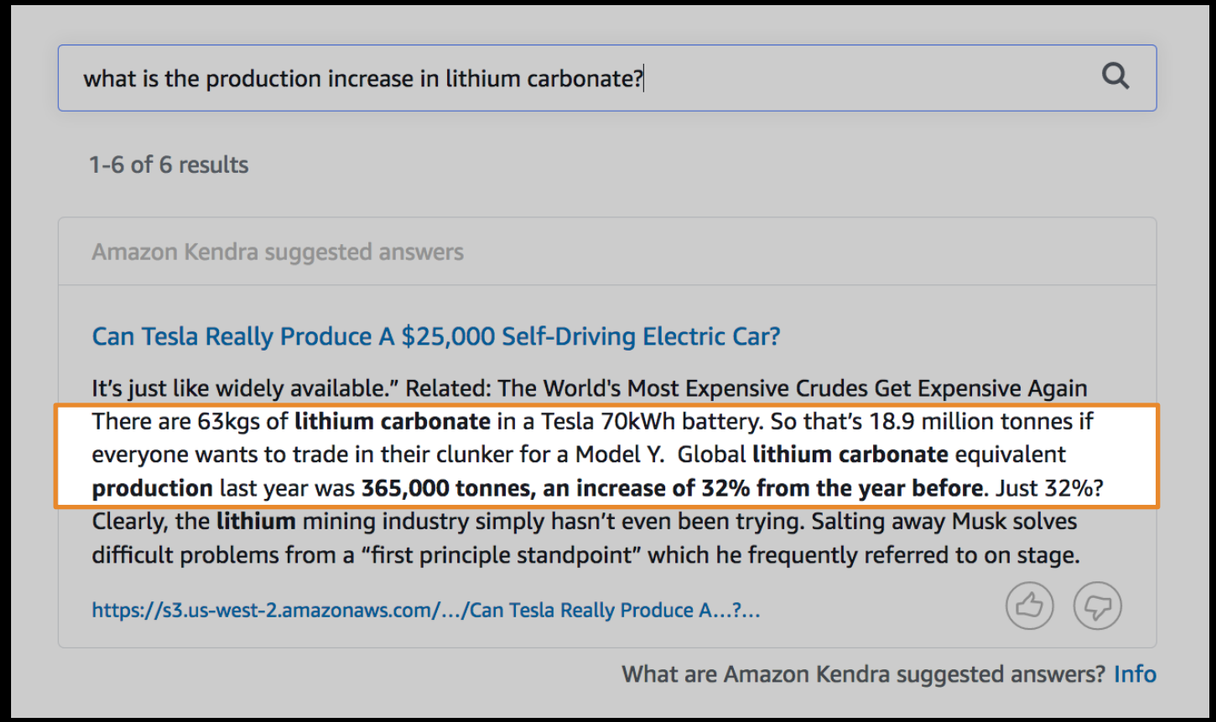


**Domain expertise**

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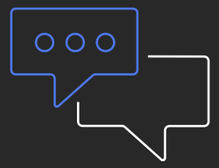
**Optimized for 14 major domains**

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



# Amazon Kendra

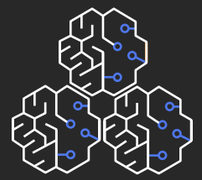
INCREMENTAL LEARNING



Natural language queries



NLU and machine learning core



Domain expertise

COMING SOON!



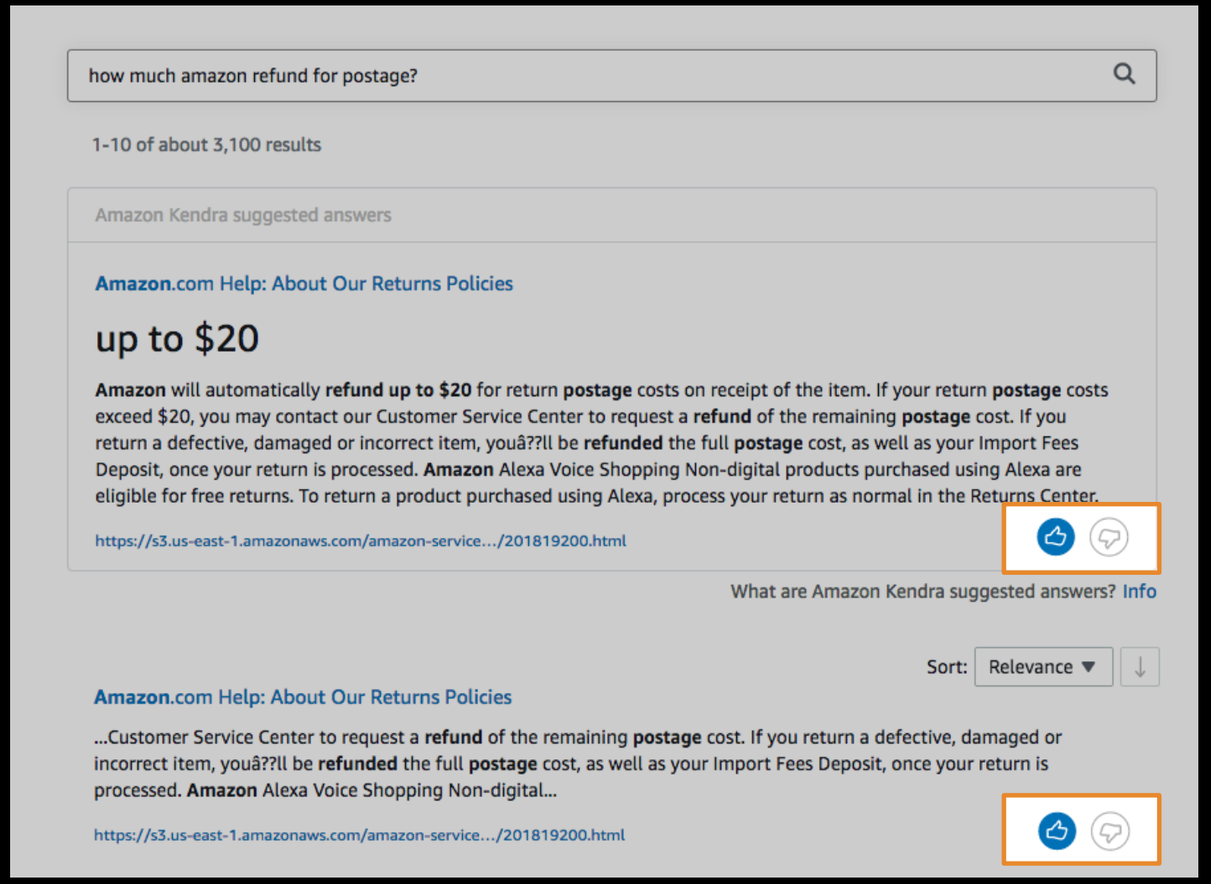
**Continuous improvement**

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**Kendra improves automatically over time**

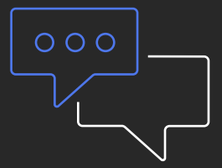
Captures click-through and user feedback

Retrains models periodically



# Amazon Kendra

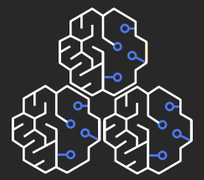
NATIVE CONNECTORS



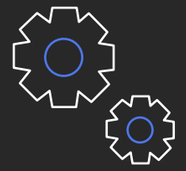
**Natural language queries**



**NLU and machine learning core**



**Domain expertise**



**Continuous improvement**



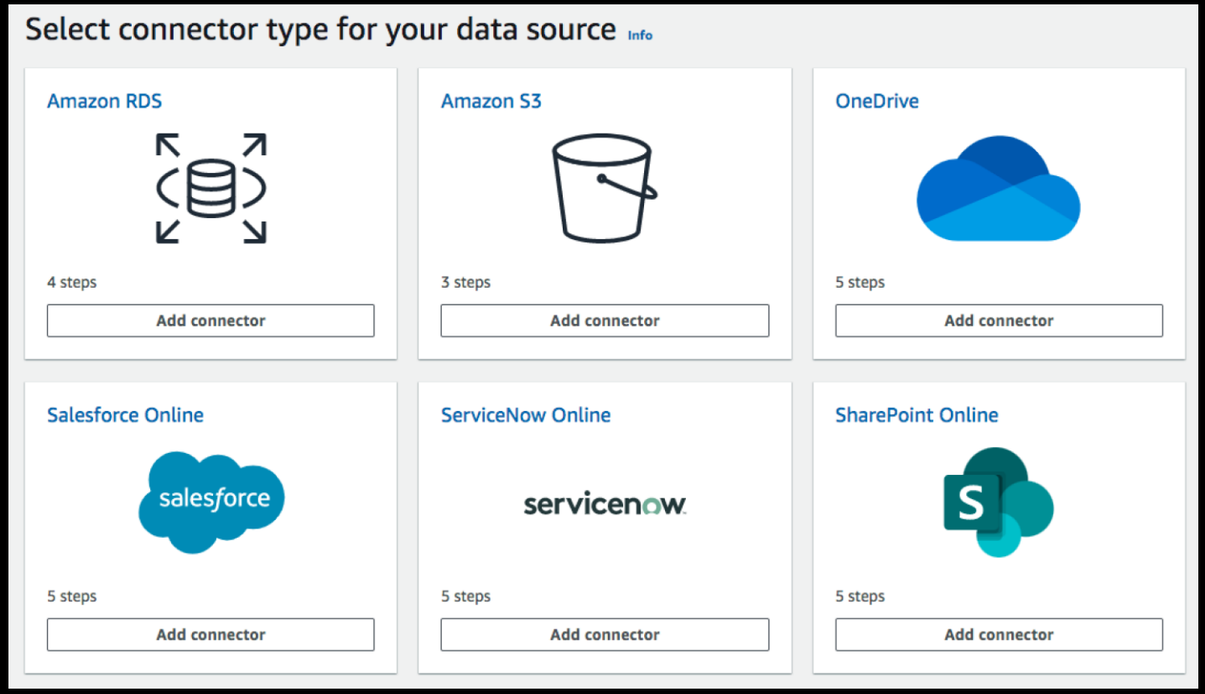
**Native connectors**

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The most popular and counting

e.g. S3, file systems (SMB), Web crawler, databases, SharePoint

Add credentials, point and shoot



# Quickly and easily find accurate information



**Increase employee productivity**
by equipping employees with the data they need to do their jobs (e.g., HR, Ops)



**Accelerate research and development**
by finding relevant information in highly technical research and engineering documents



**Enhance customer experiences**
by easily finding answers to questions on websites, in call centers and via chatbots (without bot training)



**Minimize regulatory and compliance risks**
enhancing regulatory intelligence, correspondence and access to up-to-date compliance data



**Easily build more intelligent applications**
enhancing applications with a semantic search engine for content management

# Customer spotlight

AMAZON KENDRA AND PWC

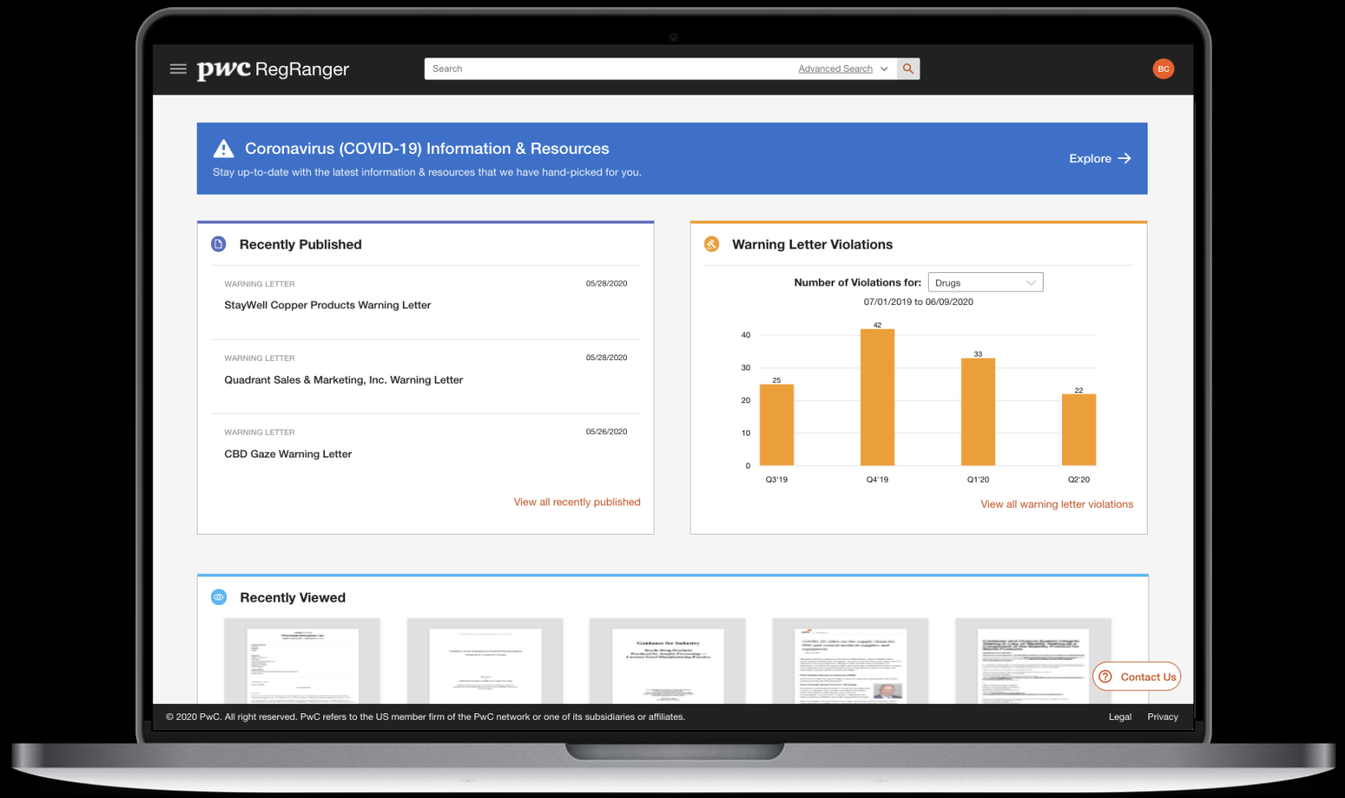


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# PwC RegRanger

## THE SMARTER REPOSITORY FOR ADDRESSING REGULATORY QUESTIONS




**Faster access** to regulatory content

**Greater insights** on leading practices, popular questions, and related documents

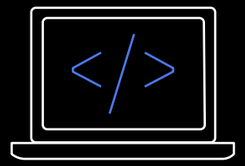
**Improved monitoring** of regulatory activity by location and topic area

**Reduced cost** over manual, outsourced, and antiquated legacy technologies

# Finding a better search experience

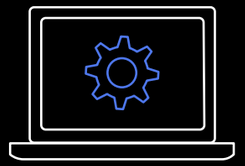
A PROOF-OF-CONCEPT TESTING INITIAL IMPRESSIONS OF AMAZON KENDRA

1



Setup

2



Testing

3



Results

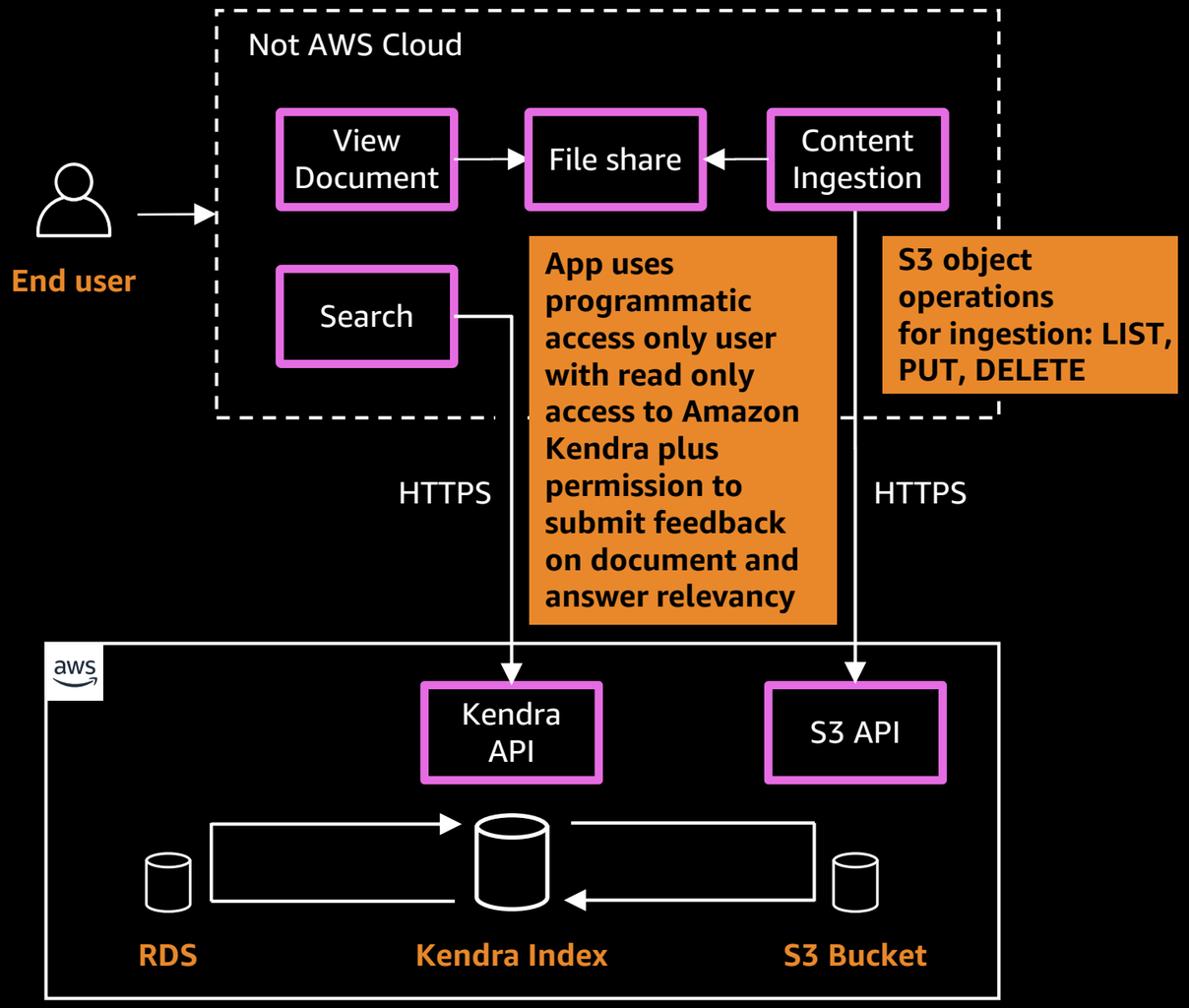
4



Conclusions

# Integrating Amazon Kendra into RegRanger

PROOF-OF-CONCEPT AND INITIAL SOLUTION DESIGN




**Initial implementation** leveraged S3 and RDS data source connectors in order to get up and running fast

**RDS PostgreSQL database contained structured content like**

- Popular questions
- Leading practices

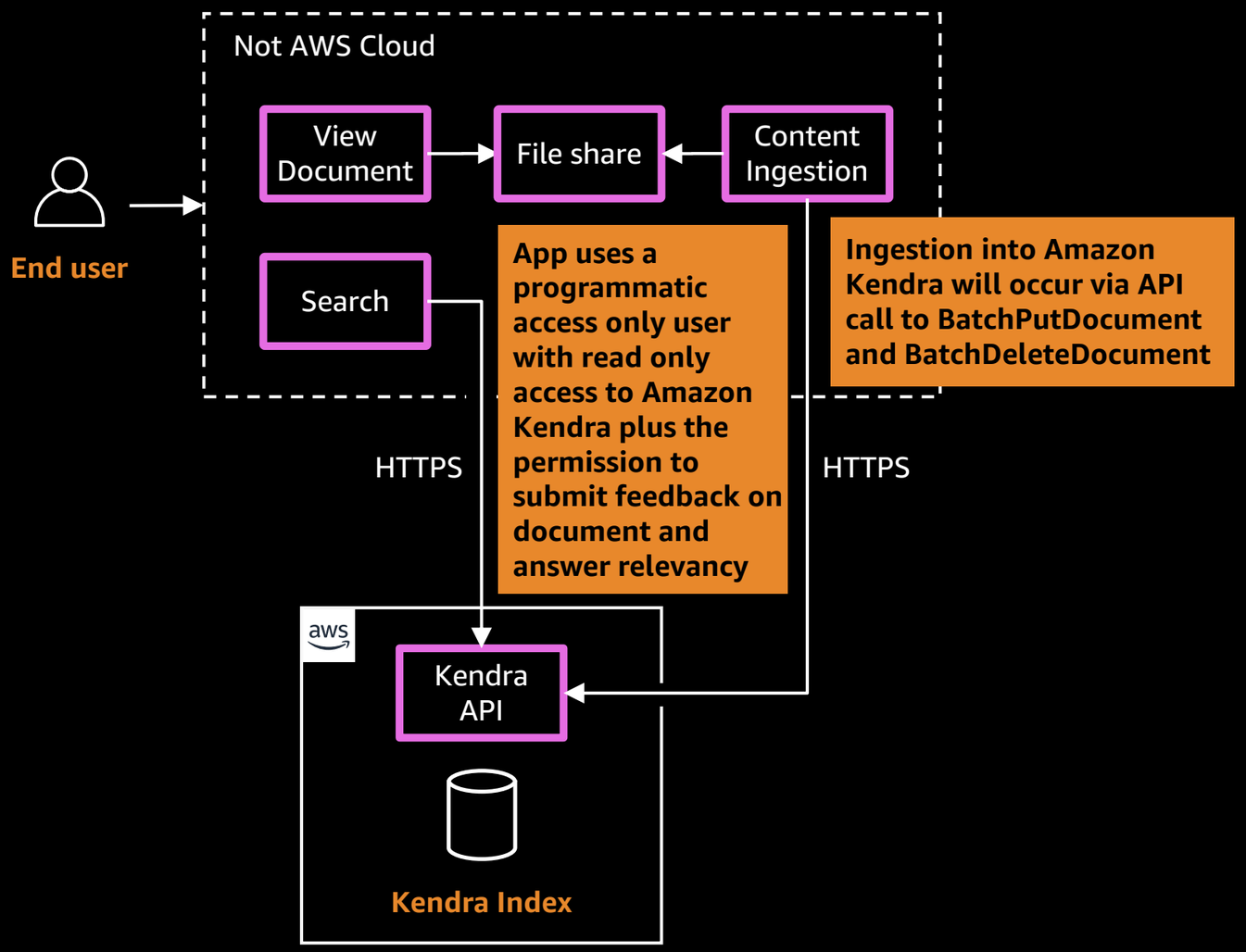
Buckets contained publicly available documents downloaded by RegRanger's crawling system

Bucket per content domain, e.g., Pharma, Payer

Iterated on the initial design to eliminate the copying content to RDS and S3

# Optimizing the implementation

GO-LIVE SOLUTION DESIGN




**Go Live solution uses the Amazon Kendra API's BatchPutDocument and BatchDeleteDocument**

- All content types share a common attributes set
- Access control list used to manage STAGE to LIVE content

**Lessons learned**

- Fixed Amazon Kendra throughput for indexing
- Track indexing failures in application database

**Feature requests**

- Raise the limit on the number of filter attributes in results (testing this new now)
- Support attribute-based exact lookup and deletion

# Amazon Kendra's value to RegRanger and PwC

Since going live with Amazon Kendra in the early summer of 2020, three categories of value stand out

1



**Enhanced user experience**

2



**Reduced SME labor**

3



**Long-term savings and gains**

# How we can help

## Solution architects



- Engage with a solutions architect dedicated to your account
- Brainstorm use cases and get support for solution implementation

## ML Solutions Lab



- Identify key areas where machine learning could help you with an AWS AI expert
- Let AWS experts build POCs and custom solutions for your use case

## AWS Partner Network



- Let AWS certified partners help you with the POC and build integrations with your current systems to productionize

## Immersion day, workshops, training, and certification



- Conduct training workshops and hackathons for builders in your organization
- Practical education on ML for new and experienced practitioners
- Based on the same material used to train Amazon developers

# Get started

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