

AWS re:Invent

NOV. 28 – DEC. 2, 2022 | LAS VEGAS, NV

AIM204

Automate insurance document processing with AI

Shashwat Sapre

Sr. Product Manager (Technical)
Amazon Textract

Reddi T. Gudla

Staff Vice President – Digital Engineering
Elevance Health



© 2022, Amazon Web Services, Inc. or its affiliates. All rights reserved.

Agenda

Amazon Textract – overview and features

Elevance Health use case deep dive

Important resources and links



Legacy document processes do not meet today's needs



Legacy OCR and manual processes are time-consuming, error-prone, and expensive



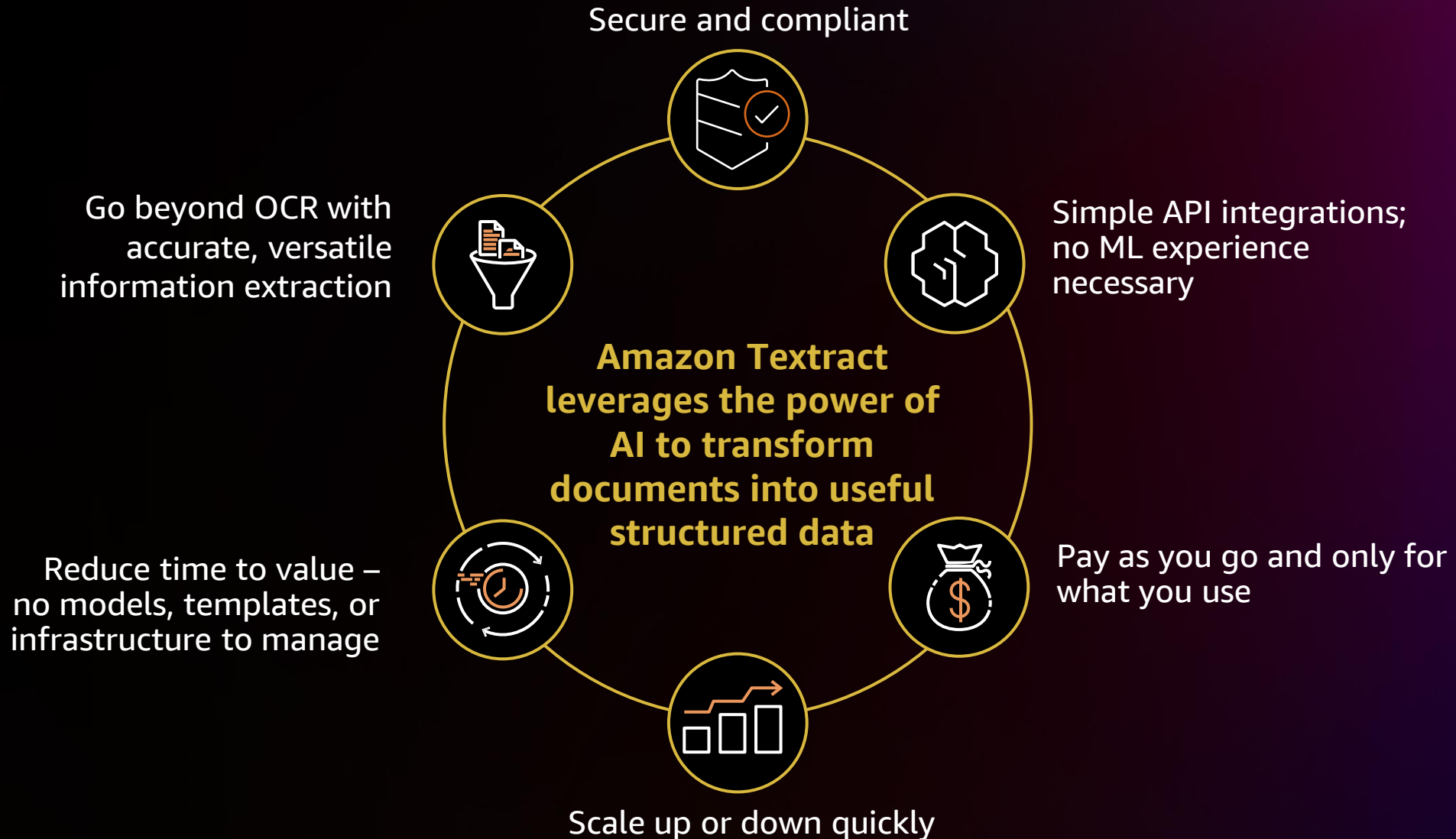
Manual processes do not scale easily with document volume



Difficult to find useful information needed for business decisions

Faster document processing shortens decision cycles;
this enables you to serve more customers and have people do higher-value tasks

Benefits of Amazon Textract



Why customers choose Amazon Textract

	Building your own ML model Prepare, build, train, and deploy high-quality machine learning models	Amazon Textract Pre-trained intelligent document processing capabilities
ML development experience	☑ Required	Not required
Data preparation – data collection, prep, transformation	☑ Required	Not required
Model selection and training – select an appropriate algorithm to train a model	☑ Required	Not required
Model tuning	☑ Required	Not required
Model deployment, monitoring, and maintenance	☑ Required	Not required
Easy-to-use API for real-time and batch inferences	Must be implemented	Ready to use

Key customers

3M

Elevance
Health

Assent

BLACK KNIGHT

BDO

beyond lucid
technologies

BlueVine

Broadridge

Canara HSBC
OBC Life Insurance

CHANGE
HEALTHCARE

COX
AUTOMOTIVE

IHS Markit

Met Office

NHS

PENNYMAC

pfs
TECH

QL Resources Berhad

Roche

rekeep

salesforce

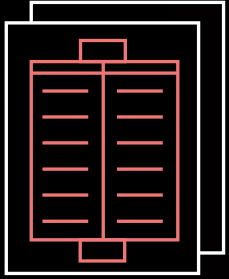
TC Energy

Wrapped
Insurance

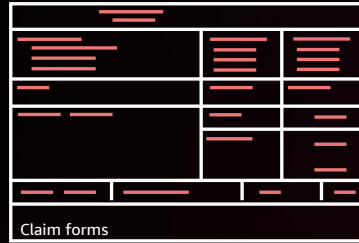
FRED HUTCH
CURES START HERE

LexisNexis

Amazon Textract: Features



Text (OCR)

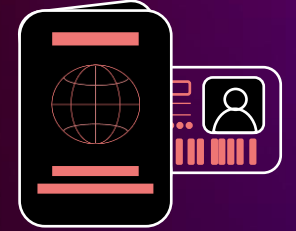


Forms

Invoices & receipts



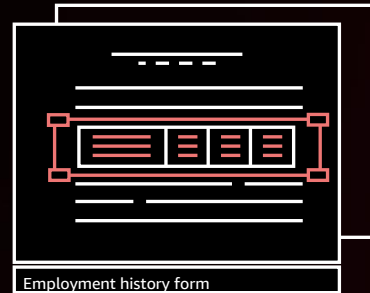
Identity documents



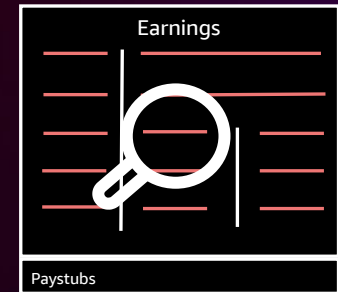
Specialized documents



Signatures



Tables



Queries

Forms and tables extraction example: CMS-1500 form

Amazon Textract Analyze Document API can automatically extract printed and handwritten information in key-value pairs, checkboxes, and tables

HEALTH INSURANCE CLAIM FORM

1. MEDICARE MEDICAID CHAMPUS CHAMPVA GROUP HEALTH PLAN FECA OTHER
(Medicare #) (Medicaid #) (Sponsor's SSN) (VA File #) (SSN or ID) (SSN) (ID)

2. PATIENT'S NAME (Last Name, First Name, Middle Initial)
Doe, Jane

3. PATIENT'S BIRTH DATE
MM DD YY M SEX F

4. INSURED'S NAME (Last Name, First Name, Middle Initial)

5. PATIENT'S ADDRESS (No., Street)
1 Any street,

6. PATIENT RELATIONSHIP TO INSURED
Self ☒ Spouse ☐ Child ☐ Other ☐

7. INSURED'S ADDRESS (No., Street)

8. PATIENT STATUS
Single ☐ Married ☒ Other ☐

9. OTHER INSURED'S NAME (Last Name, First Name, Middle Initial)

10. IS PATIENT'S CONDITION RELATED TO:
a. EMPLOYMENT? (CURRENT OR PREVIOUS) ☐ YES ☐ NO
b. AUTO ACCIDENT? ☐ YES ☐ NO PLACE (State) ☐
c. OTHER ACCIDENT? ☐ YES ☐ NO

11. INSURED'S POLICY GROUP OR FECA NUMBER

12. PATIENT'S OR AUTHORIZED PERSON'S SIGNATURE I authorize the release of any medical or other information necessary to process this claim. I also request payment of government benefits either to myself or to the party who accepts assignment below.
SIGNED Name DATE 1-1-2021

13. INSURED'S OR AUTHORIZED PERSON'S SIGNATURE I authorize payment of medical benefits to the undersigned physician or supplier for services described below.
SIGNED

14. DATE OF CURRENT: ILLNESS (First symptom) OR INJURY (Accident) OR PREGNANCY (LMP)
MM DD YY

15. IF PATIENT HAS HAD SAME OR SIMILAR ILLNESS. GIVE FIRST DATE
MM DD YY

16. DATES PATIENT UNABLE TO WORK IN CURRENT OCCUPATION
FROM MM DD YY TO MM DD YY

17. NAME OF REFERRING PHYSICIAN OR OTHER SOURCE

17a. I.D. NUMBER OF REFERRING PHYSICIAN

18. HOSPITALIZATION DATES RELATED TO CURRENT SERVICES
FROM MM DD YY TO MM DD YY

19. RESERVED FOR LOCAL USE

20. OUTSIDE LAB? ☐ YES ☐ NO \$ CHARGES

21. DIAGNOSIS OR NATURE OF ILLNESS OR INJURY. (RELATE ITEMS 1,2,3 OR 4 TO ITEM 24E BY LINE)
1. ☐ 2. ☐ 3. ☒ K92.1 4. ☐

22. MEDICAP RESUBMISSION CODE(S) ORIGINAL REF. NO.

23. PRIOR AUTHORIZATION NUMBER

24. A	B	C	D	E	F	G	H	I	J	K
DATE(S) OF SERVICE From To	Place of Service	Type of Service	PROCEDURES, SERVICES, OR SUPPLIES (Explain Unusual Circumstances) CPT/HCPCS MODIFIER	DIAGNOSIS CODE	\$ CHARGES	DAYS EPISODE OR UNITS	Family Plan	EMG	COB	RESERVED FOR LOCAL USE
01 01 2017				3	500					

Forms with checkbox

1a. INSURED'S I.D. NUMBER (Medicare #)
1-1111-1111
SELECTED

Single
NOT_SELECTED

Married
SELECTED

Other
NOT_SELECTED

ZIP CODE
12345

Handwriting

SIGNED
Name

Table

24.	A			D		E	F		G
MM	From DD	DATE(S) OF YY	SERVICE MM	SERVICES, Unusual	OR SUPPLIES Circumstances) MODIFIER	DIAGNOSIS CODE	\$ CHARGES		DAYS OR UNITS
01	01	2017				3	500		

Amazon Textract AnalyzeExpense can easily capture summary (including normalized) and line-item details from invoices and receipts at scale

[illegible]

In-patient service charges (PPD-01): \$93.00



Outputs headline amounts,
line-item details and inferred fields
(like vendor name)



Supports any style of invoice or receipt



No templates or configuration required

Semi-structured data extraction: Insurance card example

Amazon Textract Queries can extract information from a long tail of documents through a natural language query interface

OUTPUT



AnyInsurance Co.	
Jacob Michael	
Member id	SILVER
XZ 9147589652	
Effective Date	11/02/2021
Contract Code	XZ
Rx Be	2035699
Rx Pcn	XZYZ
Plan	050
Office Visit	\$55/0%
Specialist Visit	\$65/0%
Oop Max	\$6000/\$12000
Coinsurance	30%
Dad, Coins and Ov Time Apply	
AnyPlan X-EPO	



1. **What is the member name?**
Jacob Michael
2. **What is the member ID?**
XZ 9147589652
2. **Who is the insurance provider?**
AnyInsurance Co.
3. **What is the plan type?**
AnyPlan X-EPO
4. **What is the out-of-pocket max?**
\$6,000/\$12,000

Elevance Health

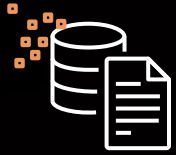
Reddi T. Gudla

Staff Vice President – Digital Engineering
Elevance Health



Current business

CHALLENGES



1000s of disparate data sources



Various data formats



Current data model requires extensive enterprise knowledge

OPPORTUNITIES



Provide insights leveraging advance modeling technique using AI/ML



Provide bi-directional data interoperability

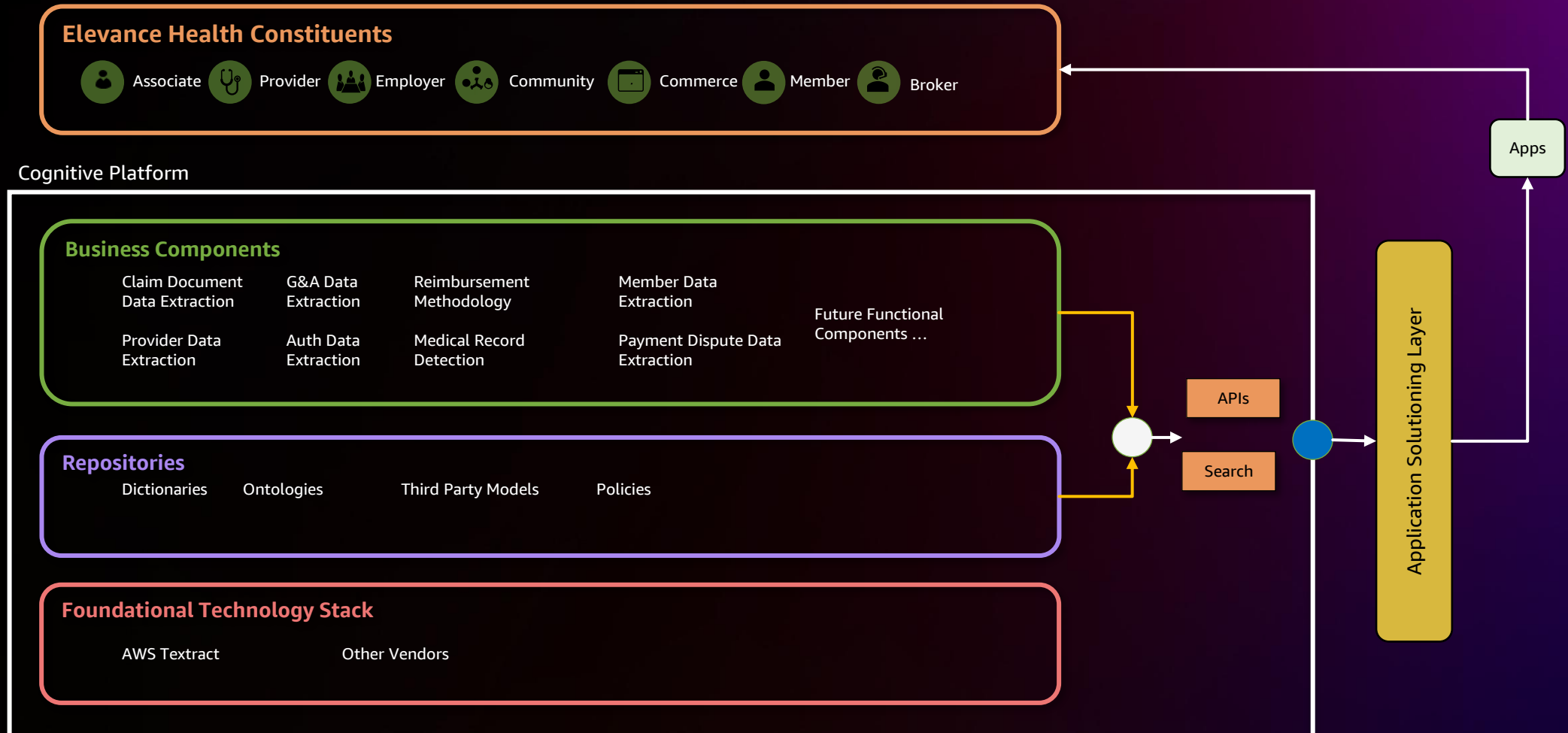


Improved data quality to our consumers

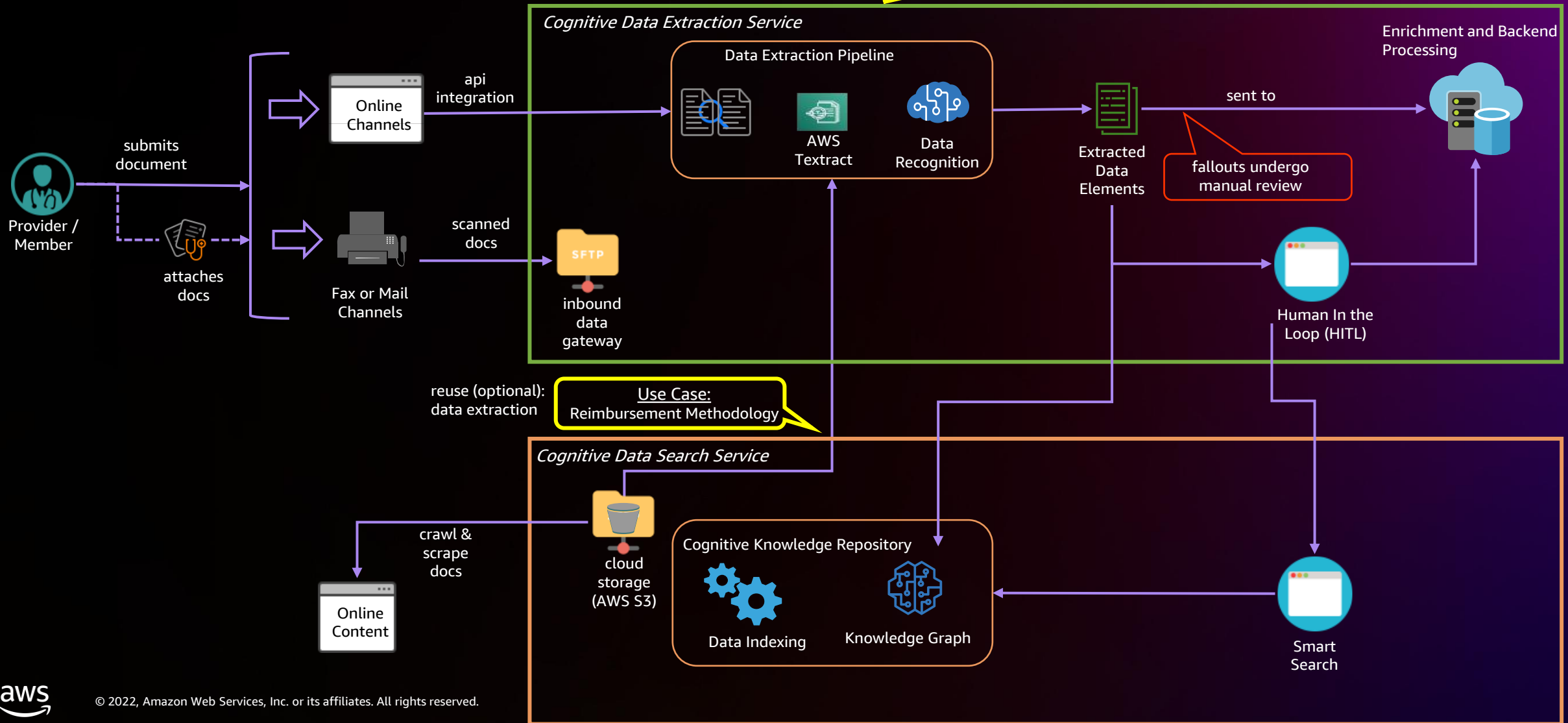
Elevance Health's AI Journey

BUILDING COGNITIVE PLATFORM

Cognitive Platform enables *Intelligent Document Processing* and *Semantic Search*



Platform Architecture



Selecting the right AI solution for document processing

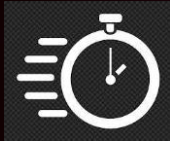
1. Textual OCR capabilities with confidence indicator
2. Coordinate mapping
3. Tabular form and row/cell wise data detection
4. Image & page alignment
5. Form detection with key-value pair extraction
6. Simple data type detection & conversions

Amazon Textract - Benefits

1. **Amazon Textract ranked higher than the rest in terms of features**
2. **Met Elevance Health's Security and Compliance needs**
3. **Easy and flexible to work with**
4. **Open to feedback and quick turnaround via beta releases helped solve many problems involving high value**
5. **Prompt support for any issues or clarifications**

Why Amazon Textract?

How it enabled us:

Use Case	Value
Classify correspondence documents from Providers for Claim processing	<p>\$\$\$</p> <p>\$500K savings</p>
Classify and extract data for identification and automation of Case creation for Grievances & Appeals and Provider disputes	<p>\$\$\$</p> <p>\$9 Million savings within next 5 years</p>
Provide an interface to search across multiple internal and external documents for responding to a Reimbursement query	<p></p> <p>Reduce turn around time from 7 to 15 days to near real time</p>

What's next...

- **Expand our repositories with more domain-specific models using services like Amazon Comprehend**
- **Co-create solutions with AWS to build use cases using custom form recognizer**
- **Expand our Intelligent Document Processing pipeline with Amazon A2I**

Amazon partners can help accelerate IDP projects



	Suggest Build In-House	Suggest Partner
Document Processing is a top corporate competency	X	
Difficulty hiring enough experienced AWS developers with knowledge of AI/ML		X
Using a partner for digital transformation projects		X
Already use serverless architecture to manage document workflows	X	



Important Links



Service links

- Amazon Textract
<https://go.aws/3Umw0OG>
- Amazon A2I
<https://go.aws/3Tj9YLx>



Workshop

- Amazon Textract workshop
<https://bit.ly/3tblG06>



Blog posts

- Building an end-to-end intelligent document processing solution using AWS
<https://go.aws/3UdKKQ1>
- Automating customer onboarding with Lumiq's Drishti Document AI and Amazon Textract
<https://go.aws/3Um595y>
- Broadridge advances the proxy voting data process using artificial intelligence on AWS
<https://go.aws/3G1flqi>



Git source code links

- Document understanding solution
<https://bit.ly/3DLCzn0>
- Amazon Textract samples
<https://bit.ly/3UAbSbE>
- Amazon A2I samples
<https://bit.ly/3DLCZtA>
- Amazon Textract POC accelerator samples
<https://bit.ly/3tgxezo>
- Amazon Textract POC accelerator constructs
<https://bit.ly/3DRj7Fp>



Account team can provide

- Amazon Textract security papers (can be shared under NDA)
- Immersion Day training
- AWS Partner referrals

Thank you!



Please complete the session survey in the **mobile app**

