



Dublin Cloud Day

DUBLIN | MAR 28TH 2023

DCD-T1

What are you waiting for to add AI capabilities to your applications?

Gillian Armstrong
Solutions Architect
AWS





Most companies, around the world and across all industries, want to add AI capabilities to their applications and processes

But they don't always have the skill or time to develop their own ML models

Easily add intelligence to your business application or workflow with AWS

AWS offers the broadest and most complete set of AI services . . .

A series of pretrained ML models that you can use to implement common business use cases

Speech



Text and documents



Vision



Search



Business processes



Industrial AI



Healthcare



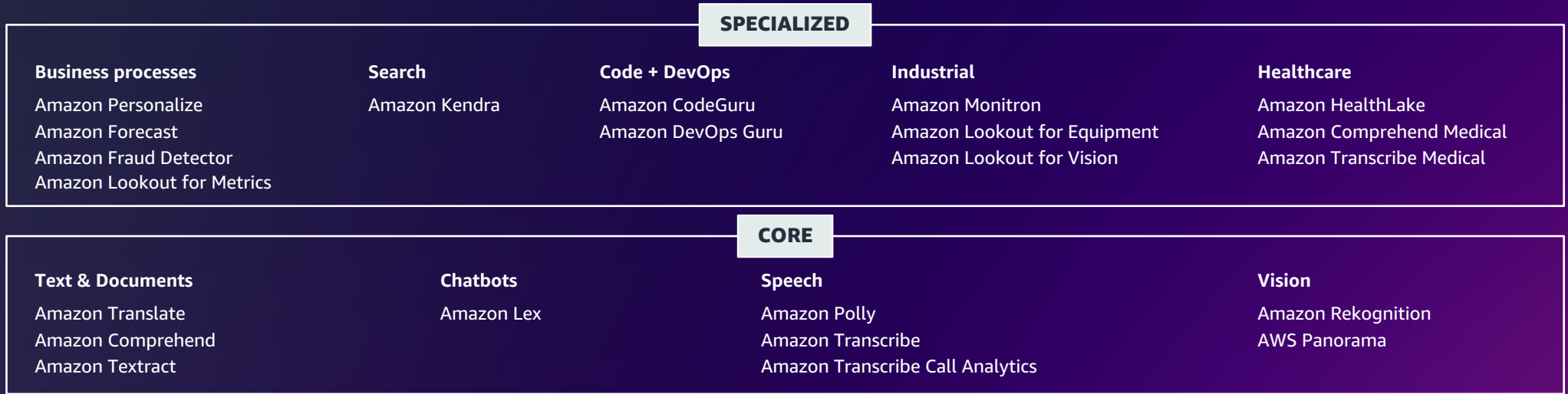
Chatbots



The AWS ML stack

Broadest and most complete set of machine learning capabilities

AI SERVICES



ML SERVICES



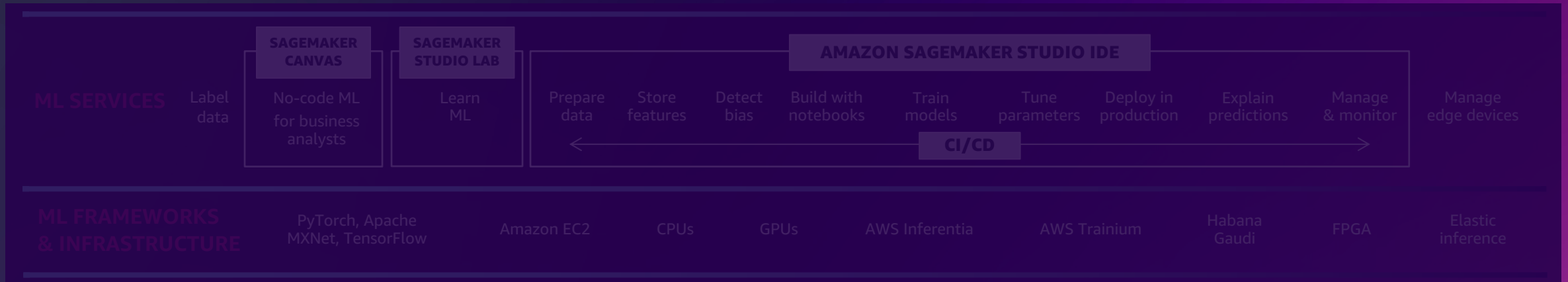
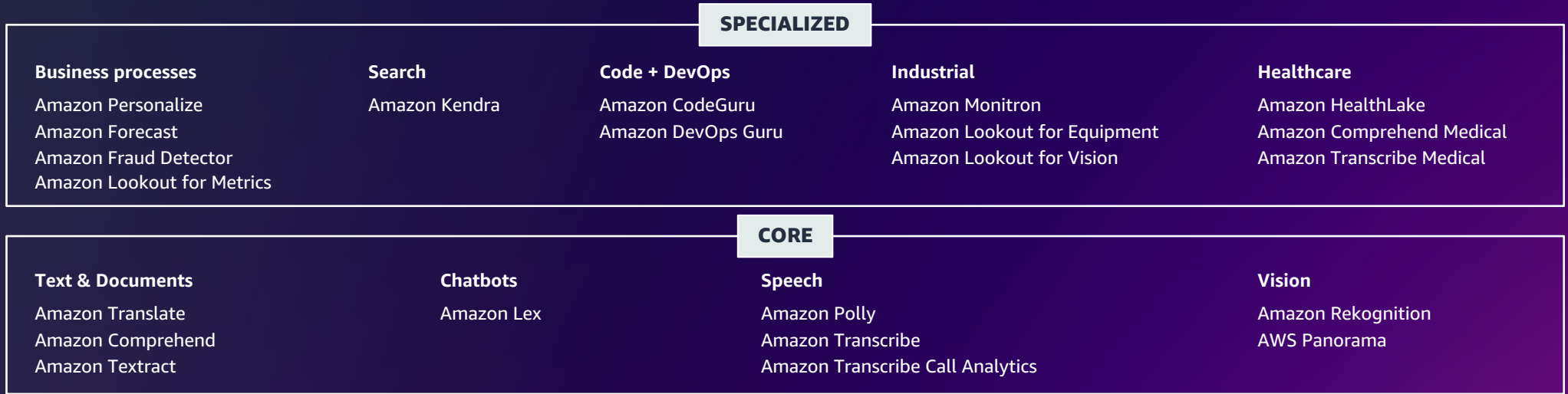
ML FRAMEWORKS & INFRASTRUCTURE



The AWS ML stack

Broadest and most complete set of machine learning capabilities

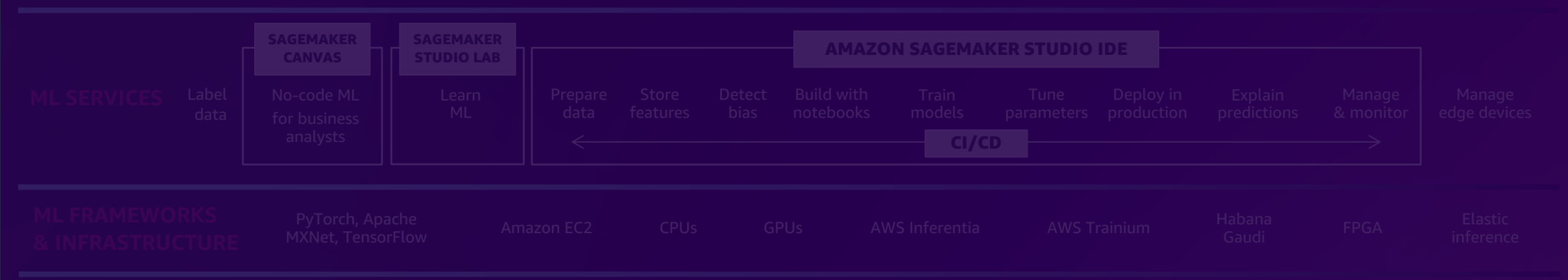
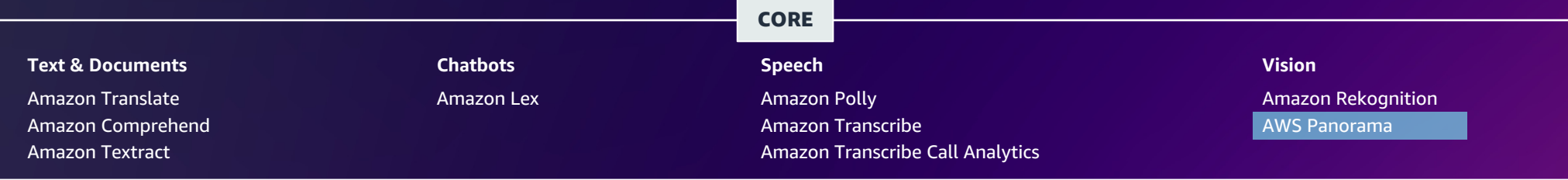
AI SERVICES



The AWS ML stack

Broadest and most complete set of machine learning capabilities

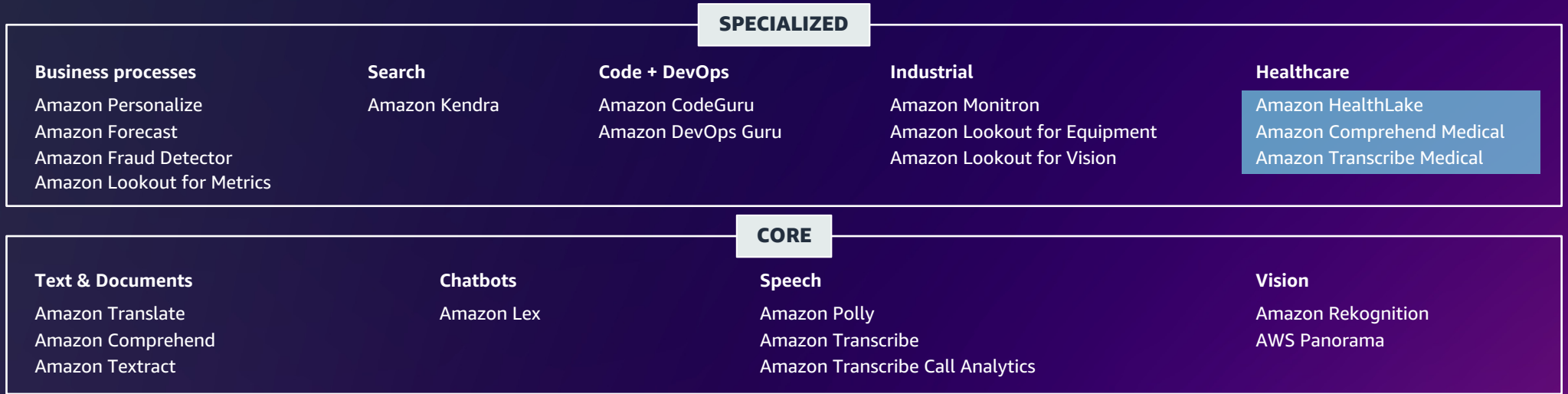
AI SERVICES



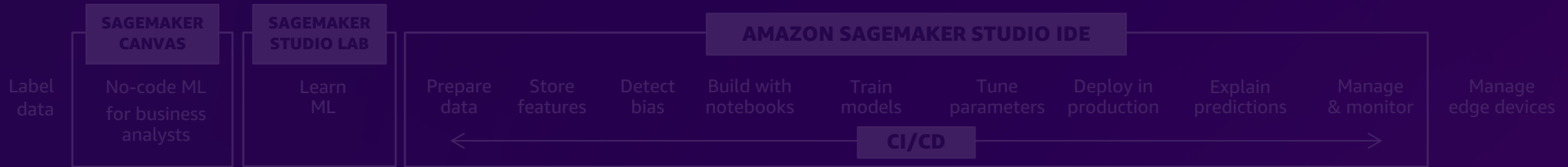
The AWS ML stack

Broadest and most complete set of machine learning capabilities

AI SERVICES



ML SERVICES



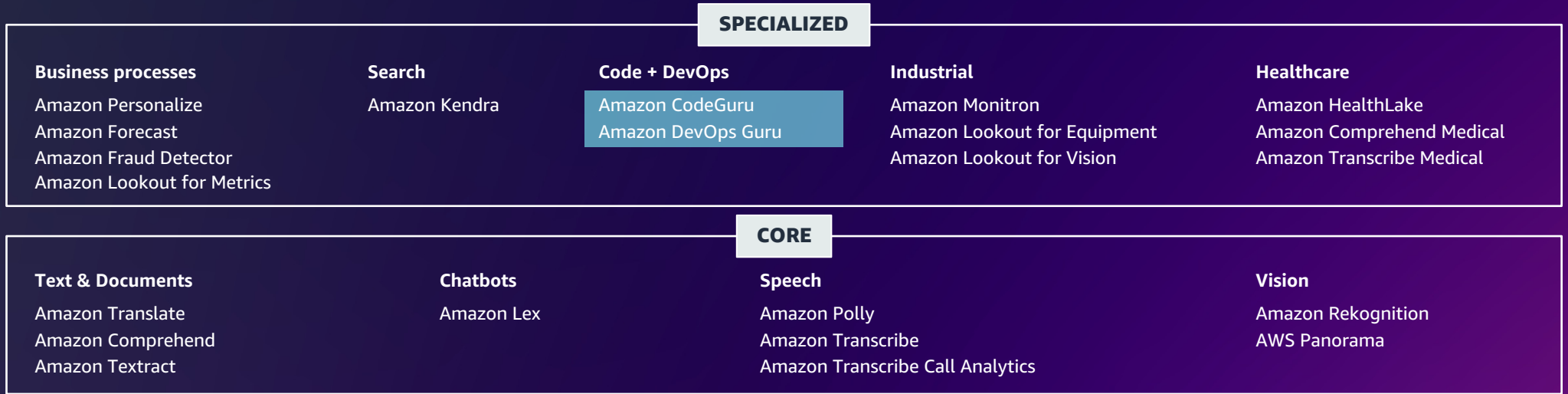
ML FRAMEWORKS & INFRASTRUCTURE



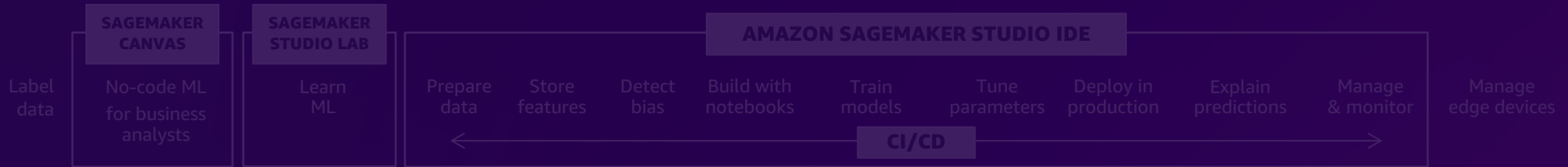
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Broadest and most complete set of machine learning capabilities

AI SERVICES



ML SERVICES



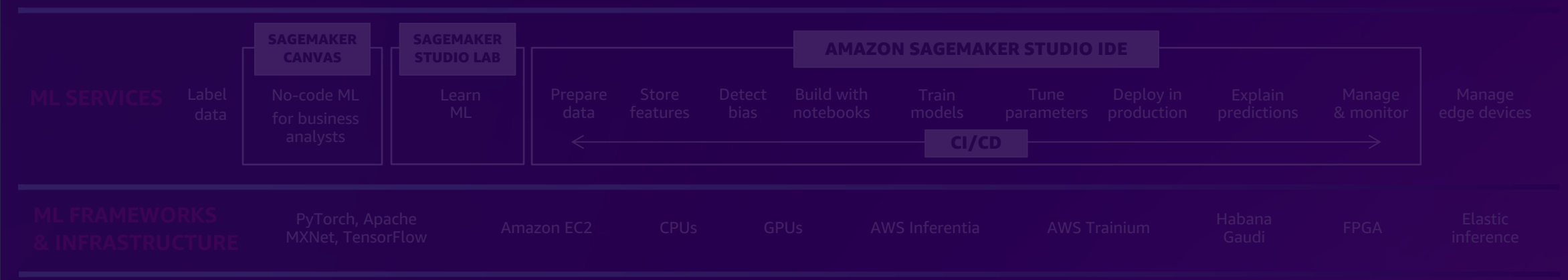
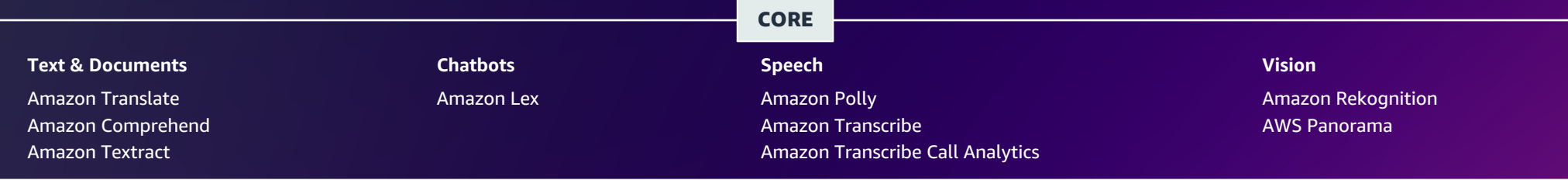
ML FRAMEWORKS & INFRASTRUCTURE



The AWS ML stack

Broadest and most complete set of machine learning capabilities

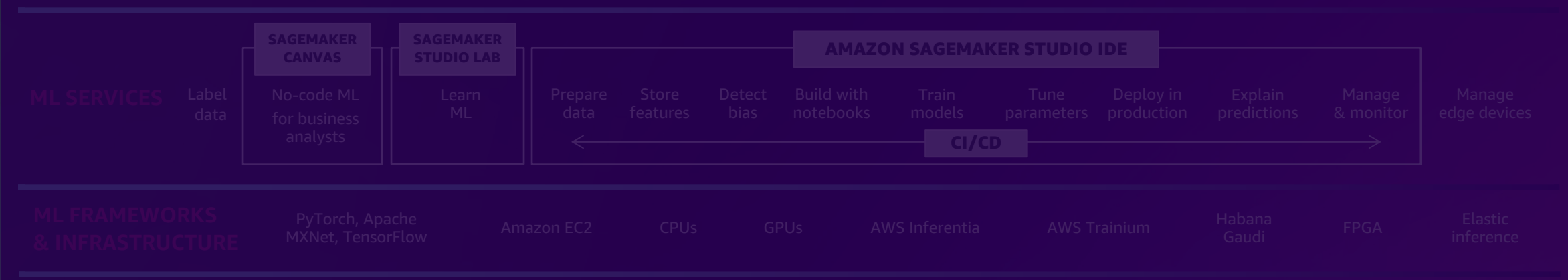
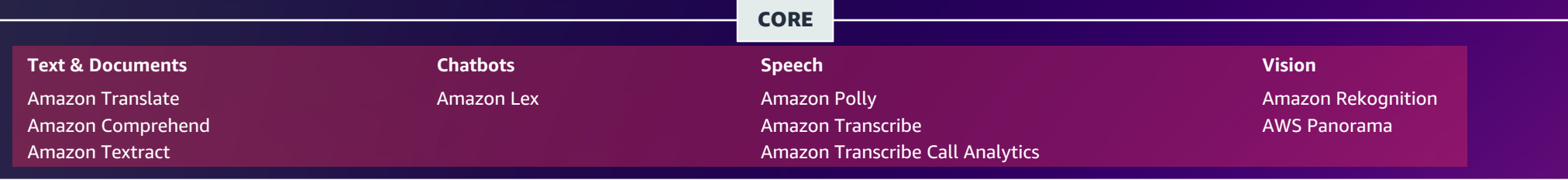
AI SERVICES



The AWS ML stack

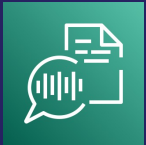
Broadest and most complete set of machine learning capabilities

AI SERVICES



Real business use cases

Contact center intelligence



Amazon Transcribe



Amazon Translate



Amazon Comprehend



Amazon Lex



Amazon Kendra

Intelligent document processing



Amazon Textract



Amazon Translate

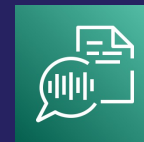


Amazon Comprehend

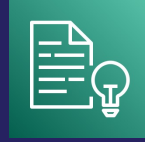
Content moderation



Amazon Rekognition



Amazon Transcribe



Amazon Comprehend



Amazon Translate

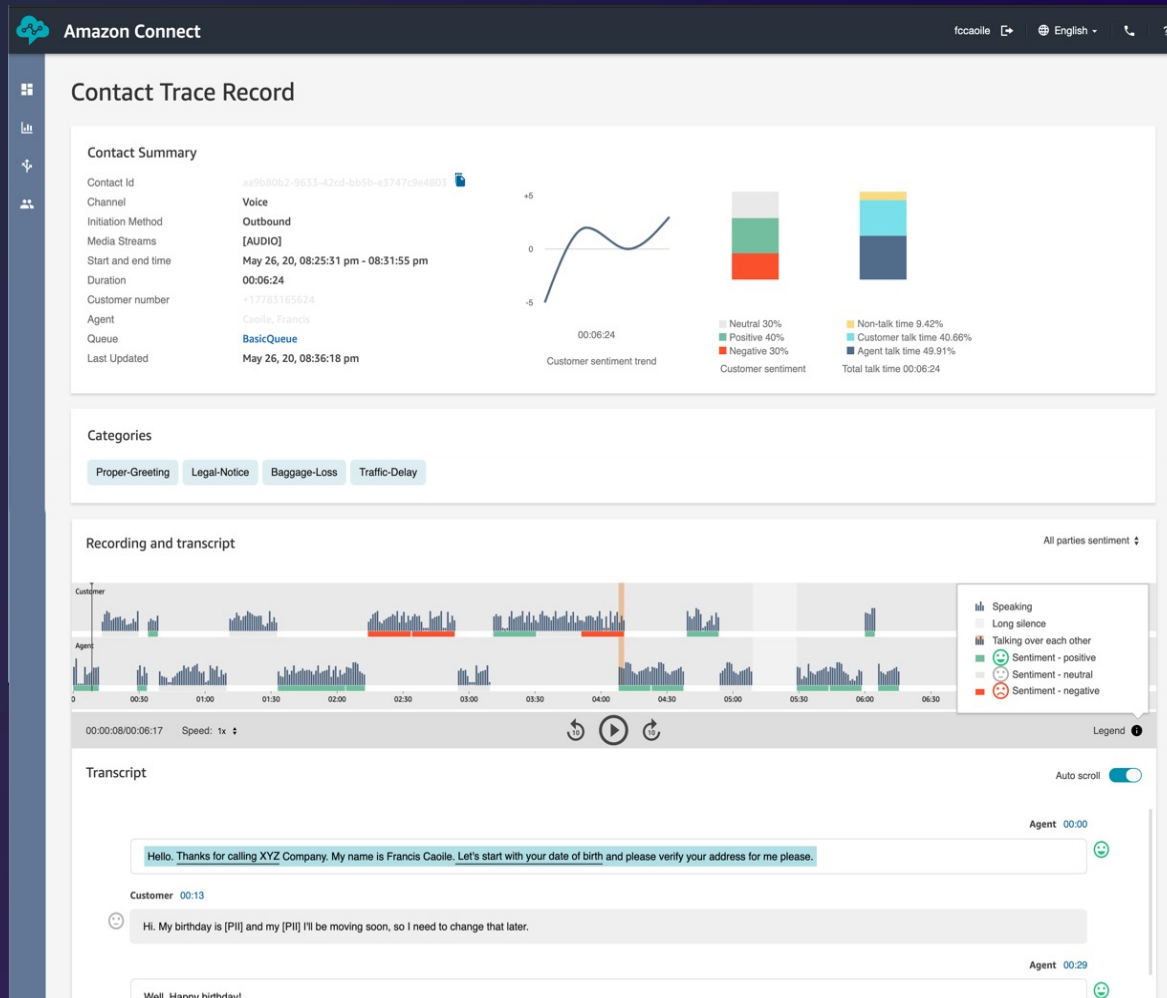


Amazon Augmented AI
(Amazon A2I)

Use-case

Contact center intelligence (CCI)

In Amazon Connect you have built-in intelligence with features like Contact Lens



But what if you aren't using Amazon Connect?

You can unlock the value with transcription, but traditional methods are...



Manual



Slow



Expensive

Create easy to read and review transcripts with Amazon Transcribe



Punctuation, capitalization



Speaker labelling/channel identification



Word-level time stamps



Word-level confidence scores



Alternative Transcriptions



Custom vocabulary



Vocabulary Filtering



Custom Language Models (CLM)



Language ID



PCI/PII content redaction

Amazon Transcribe Call Analytics API

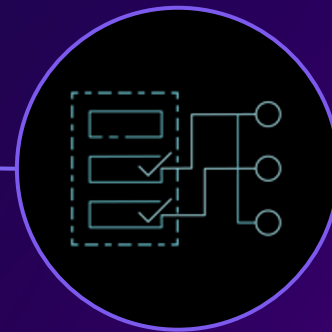
Easy to use, call analytics API that can enable you to extract and add actionable insights from your customer interactions into your applications.



High-quality ASR and NLP models
specifically trained for call analytics



Easy to use—fully managed AI service

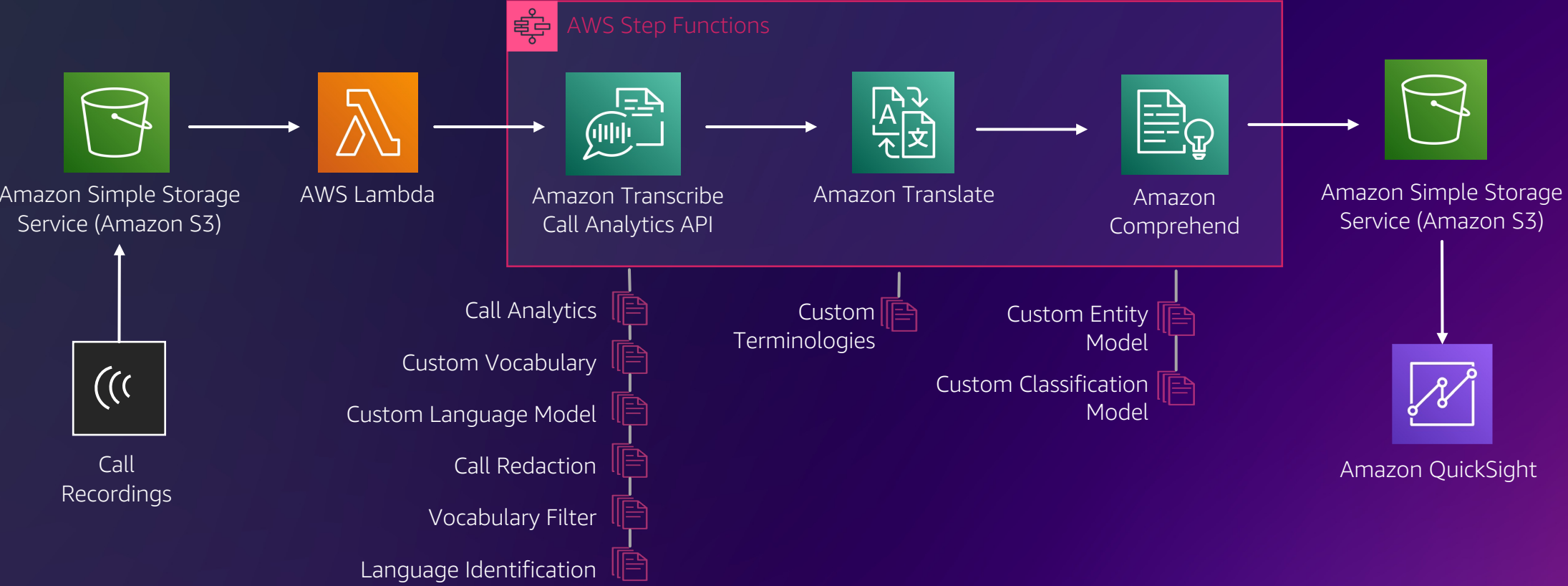


Automated call **categorization**

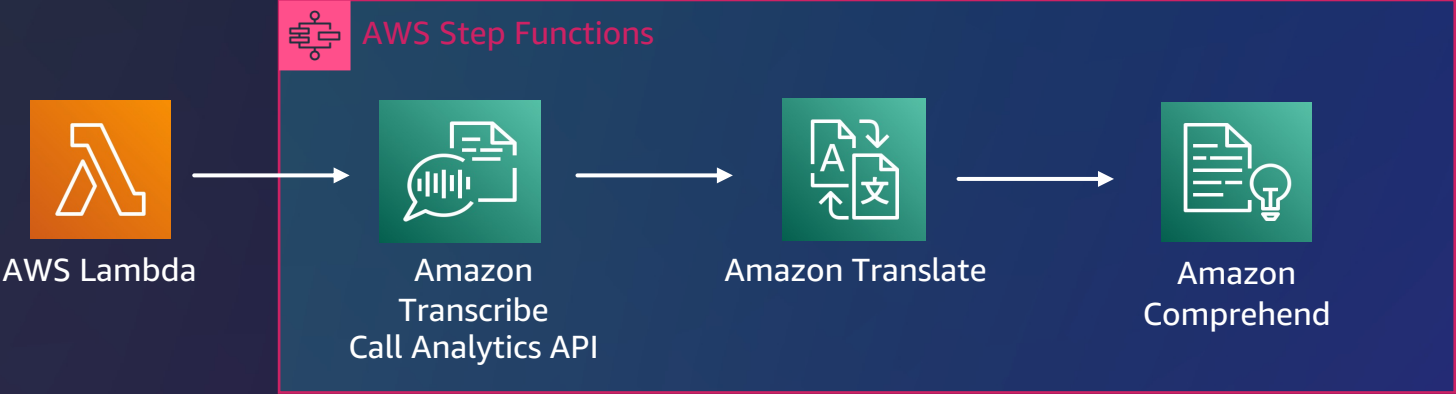


Detailed **analytics** and sentiment analysis

Post-call analytics – how is it implemented?



Contact center intelligence – sample solution



<https://amazon.com/post-call-analytics>

AWS blogs
GitHub code repositories
1-Click installers

<https://amazon.com/live-call-analytics>



Post-Call Analytics



Live-Call Analytics

Use-case **Intelligent document processing (IDP)**

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's Intelligent Document Processing

Go beyond OCR with accurate, versatile information extraction



Analyze documents and send key insights to downstream systems and workflows



Amazon enables a fully automated IDP workflow, no ML experience required

Serve end customers faster

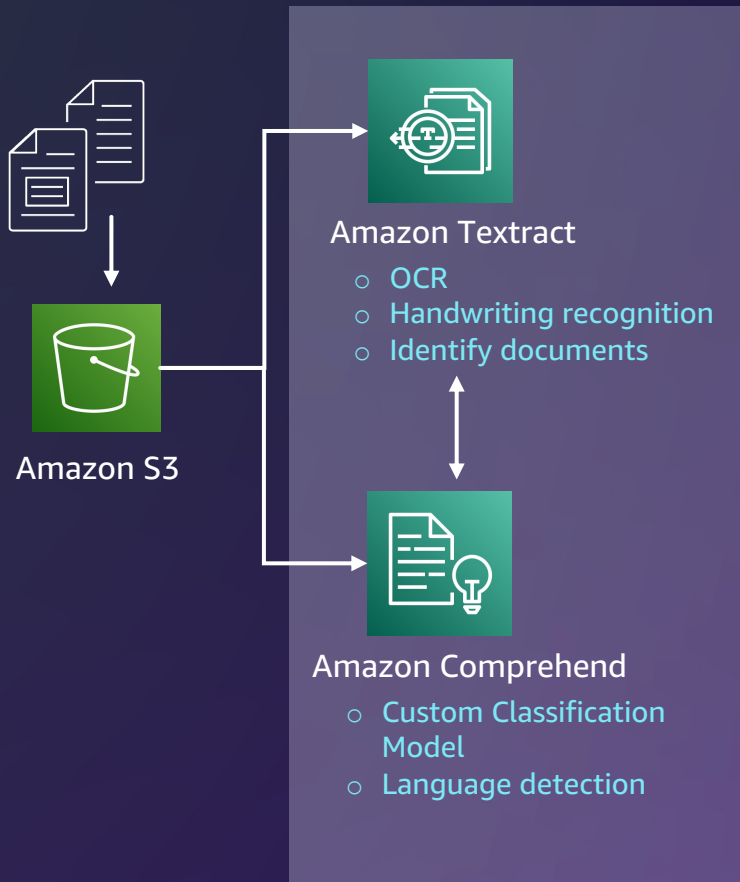


Reduce the total cost of document processing



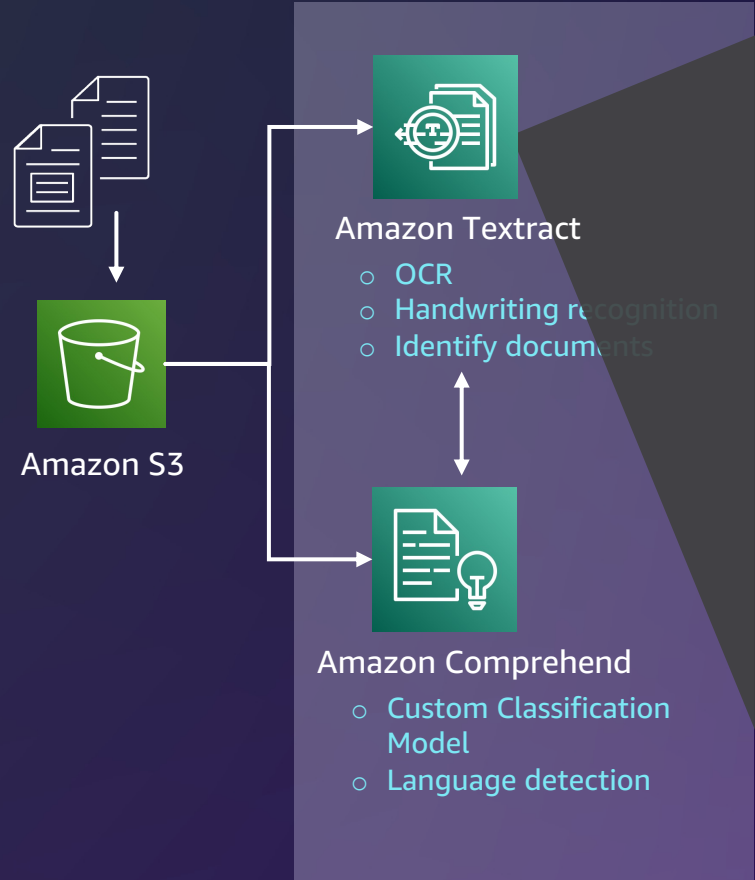
Typical Intelligent Document Processing workflow

Data capture and Classification



Typical Intelligent Document Processing workflow

Data capture and Classification



Amazon Textract

INPUT → **OUTPUT**

Employment Application

Application Information
 Full Name: Jane Doe
 Phone Number: 555-0100
 Home Address: 123 Any Street, Any Town, USA
 Mailing Address: same as above

How did you hear about this position?
 Job fair Website Company Employee

Previous Employment History

Start Date	End Date	Employer Name	Position Held	Reason for leaving
1/15/2009	6/30/2011	Any Company	Assistant baker	relocated
7/1/2011	8/10/2013	Example Corp.	Baker	better opp.
8/15/2013	Present	AnyCompany	head baker	N/A, current

Raw Text

Employment Application	Application Information	Full Name: Jane Doe
Phone Number: 555-0100	Home Address: 123 Any street, Any Town. USA	

Forms

Job fair SELECTED	Website NOT_SELECTED
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Table Recognition

7/1/2011	8/10/2013	Example Corp.	Baker	better opp.
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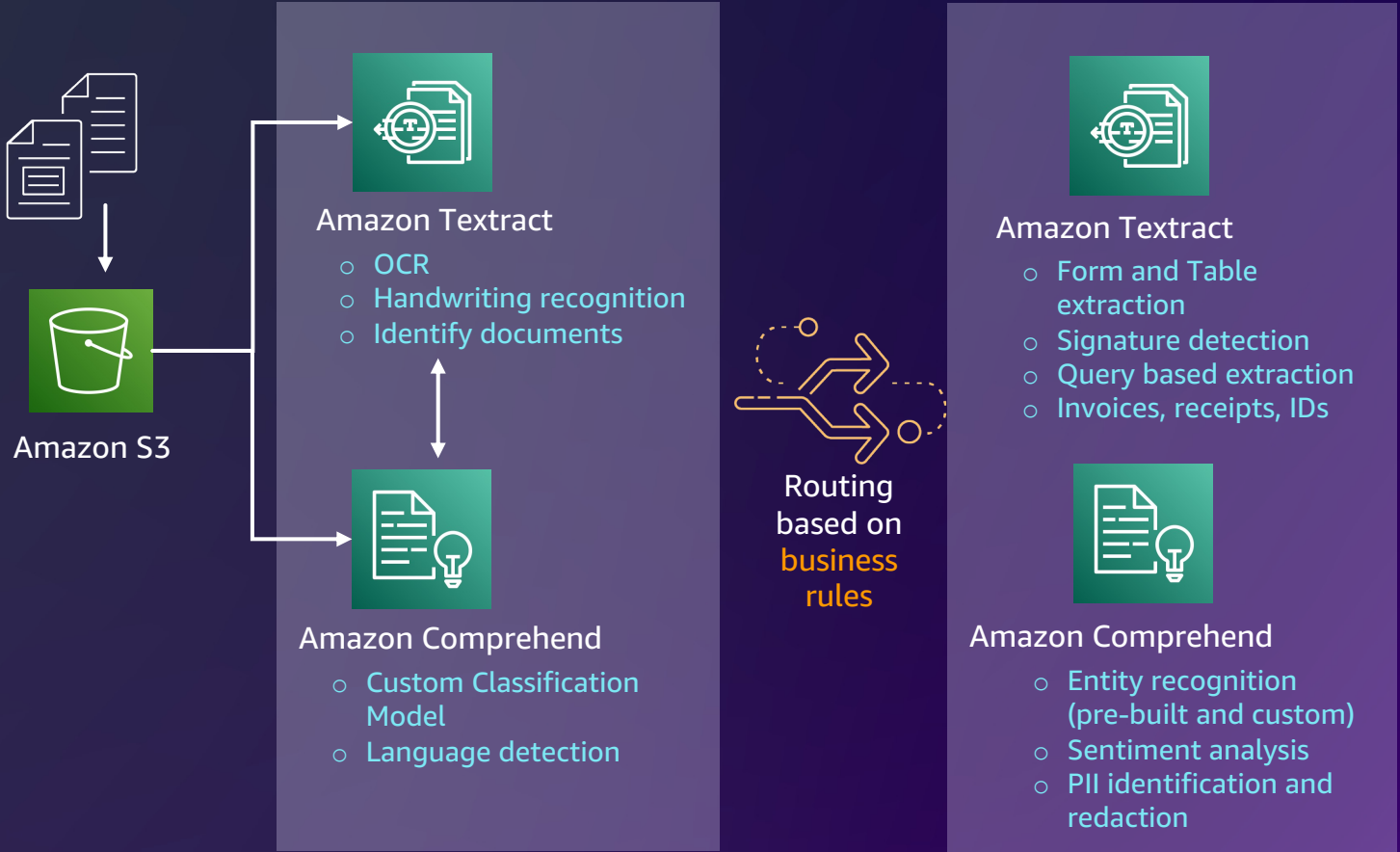


Typical Intelligent Document Processing workflow

Data capture and Classification



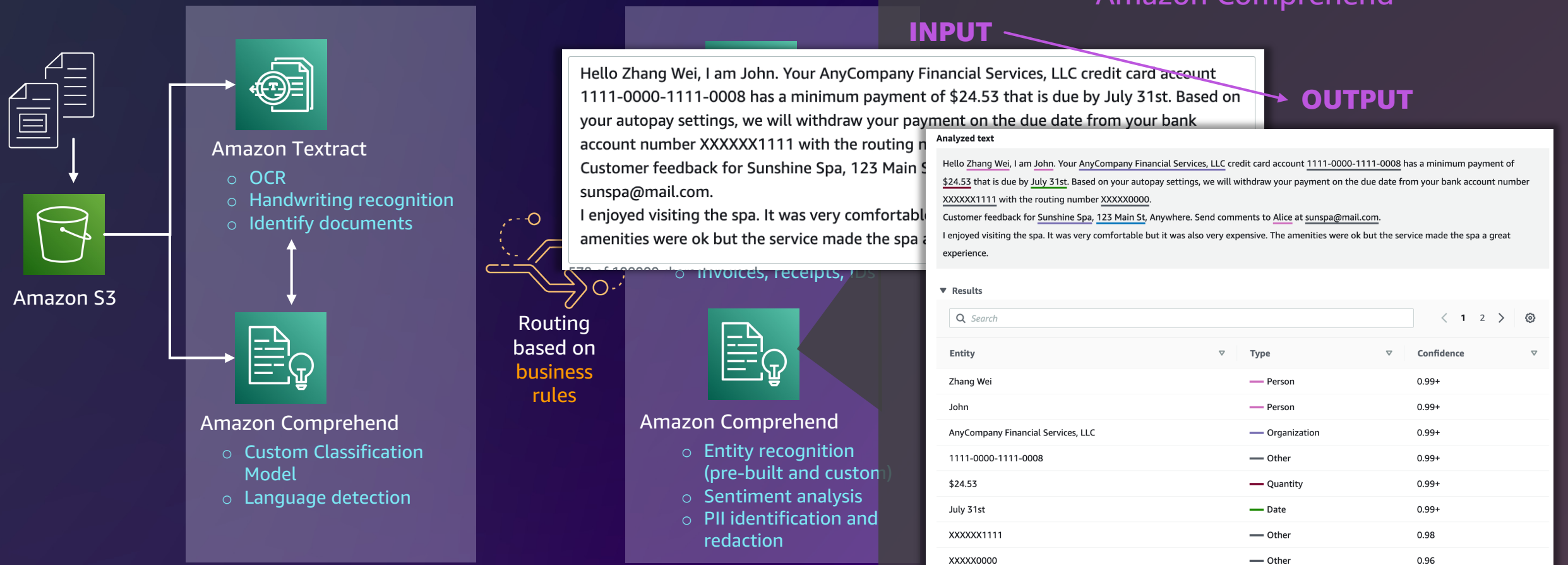
Extraction and Enrichment



Typical Intelligent Document Processing workflow

Data capture and Classification

Extraction and Enrichment



INPUT

Hello Zhang Wei, I am John. Your AnyCompany Financial Services, LLC credit card account 1111-0000-1111-0008 has a minimum payment of \$24.53 that is due by July 31st. Based on your autopay settings, we will withdraw your payment on the due date from your bank account number XXXXXX1111 with the routing number XXXXX0000. Customer feedback for Sunshine Spa, 123 Main St, Anywhere. Send comments to Alice at sunspa@mail.com. I enjoyed visiting the spa. It was very comfortable but it was also very expensive. The amenities were ok but the service made the spa a great experience.

OUTPUT

Analyzed text

Hello Zhang Wei, I am John. Your AnyCompany Financial Services, LLC credit card account 1111-0000-1111-0008 has a minimum payment of \$24.53 that is due by July 31st. Based on your autopay settings, we will withdraw your payment on the due date from your bank account number XXXXXX1111 with the routing number XXXXX0000. Customer feedback for Sunshine Spa, 123 Main St, Anywhere. Send comments to Alice at sunspa@mail.com. I enjoyed visiting the spa. It was very comfortable but it was also very expensive. The amenities were ok but the service made the spa a great experience.

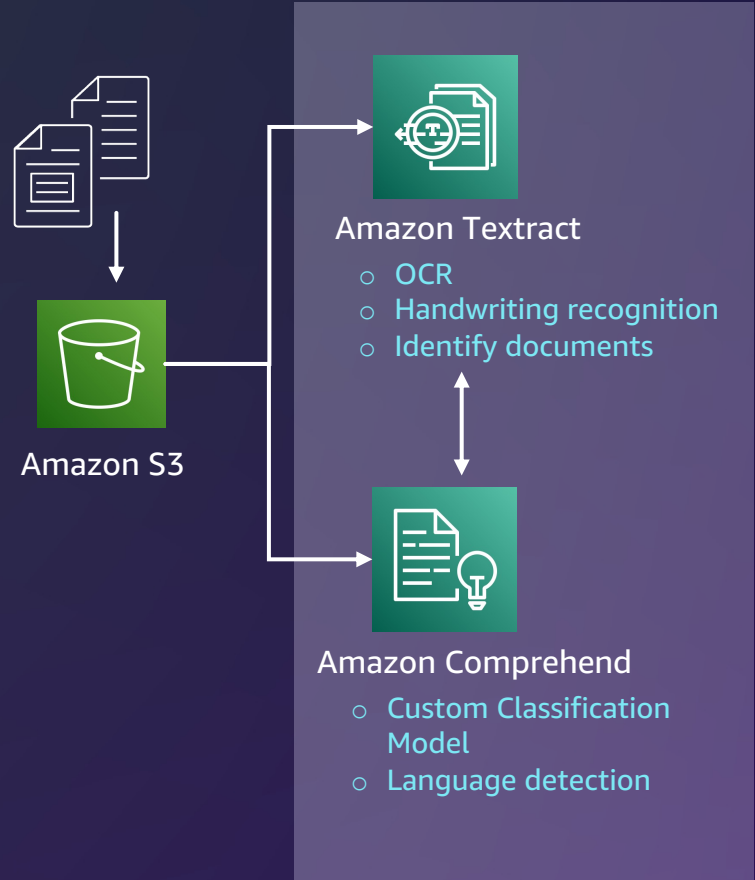
Results

Entity	Type	Confidence
Zhang Wei	Person	0.99+
John	Person	0.99+
AnyCompany Financial Services, LLC	Organization	0.99+
1111-0000-1111-0008	Other	0.99+
\$24.53	Quantity	0.99+
July 31st	Date	0.99+
XXXXXX1111	Other	0.98
XXXXX0000	Other	0.96
Sunshine Spa	Organization	0.98
123 Main St	Location	0.98



Typical Intelligent Document Processing workflow

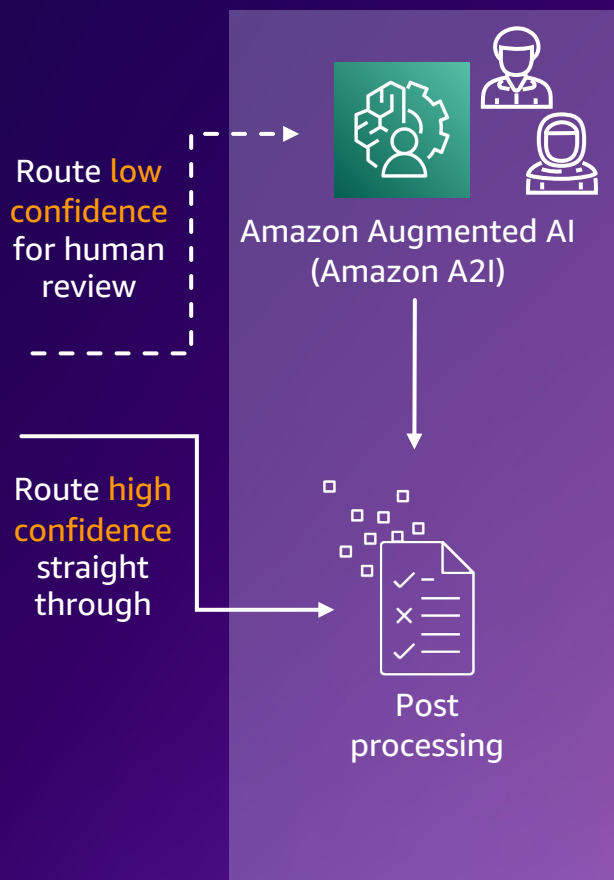
Data capture and Classification



Extraction and Enrichment



Verification and human review



Typical Intelligent Document Processing workflow

Data capture and Classification → Amazon Augmented AI (Amazon A2I) → Extraction and Classification

Verification and human review



Amazon S3

Instructions ×

Review the key-value pairs to the right and correct them if they do not match the document below.

View full instructions
View tool guide

Click on a key-value block or input box to highlight the corresponding key-value pair in the document.

If it is a key-value pair, review the content for the key or value. If the content is incorrect, correct it.

If it's not a key-value relationship, mark it **No**.

Jane Doe **123 Any Street, Any Town, USA**

Key-value pair Yes No
Jane Doe Key is not found
123 Any Street, Value is blank

If you can't find the key in the document, mark **Key is not found**.

Key-value pair Yes No
Mail address Key is not found
 Value is blank

If the content of a field is empty, mark **Value is blank**.

Cell number Value is blank

Employment Application

Application Information

Full Name: Jane Doe

Phone number: 550-0100

Home address: 123 Any Street, Any Town, USA

Mail address: same as home address

Sample

Key-value pairs to review

Key-value pair Yes No

Full name: Jane Done Key is not found
 Value is blank

Key-value pair Yes No

Phone number: 550-0100 Key is not found
 Value is blank

No adjustment needed **Submit**

Zoom in Zoom out Move Fit image



Amazon Augmented AI (Amazon A2I)

high confidence right enough



Post processing

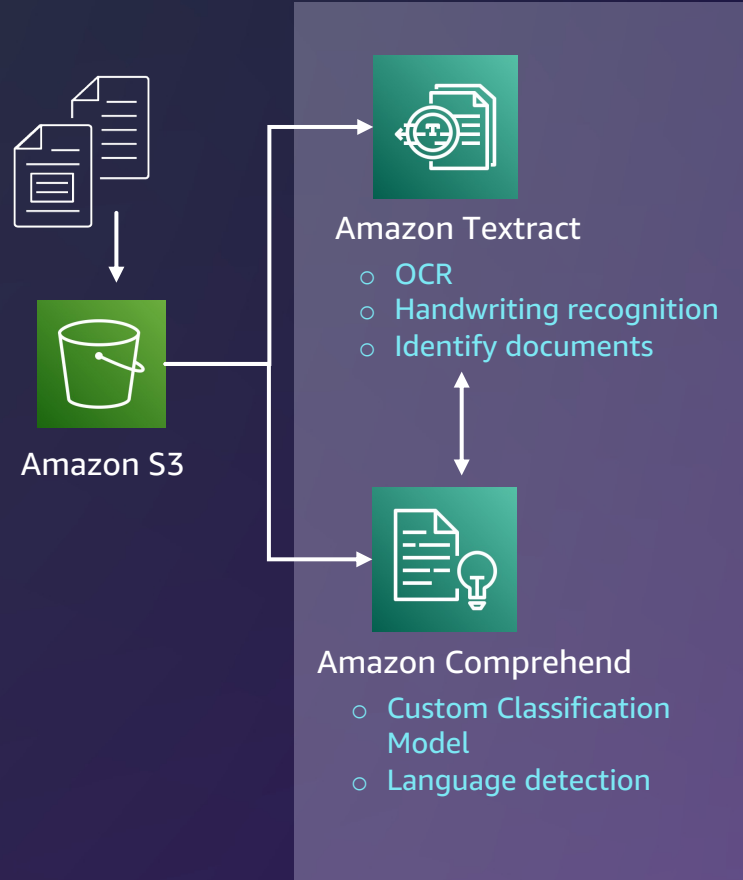
Custom Classification Model
Language detection

- Entity recognition (pre-built and custom)
- Sentiment analysis
- PII identification and redaction



Typical Intelligent Document Processing workflow

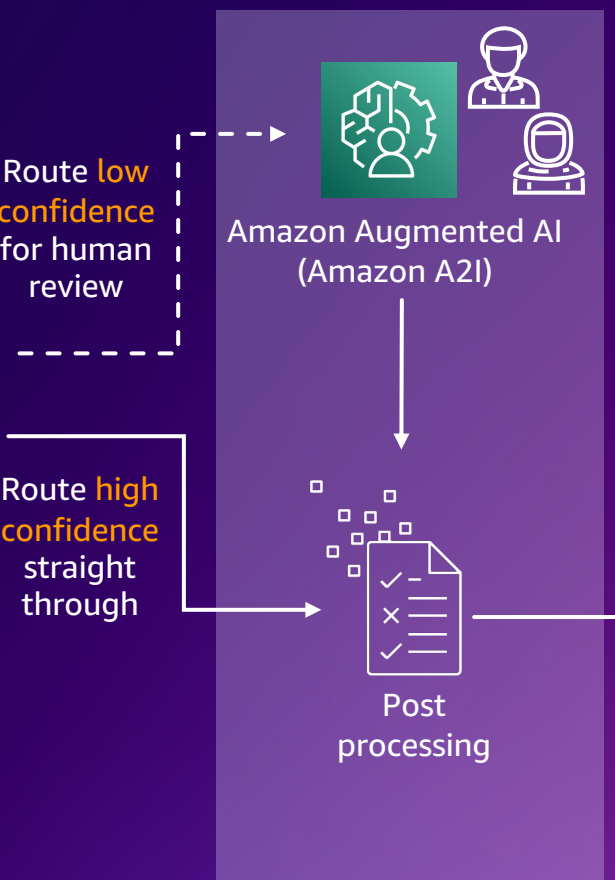
Data capture and Classification



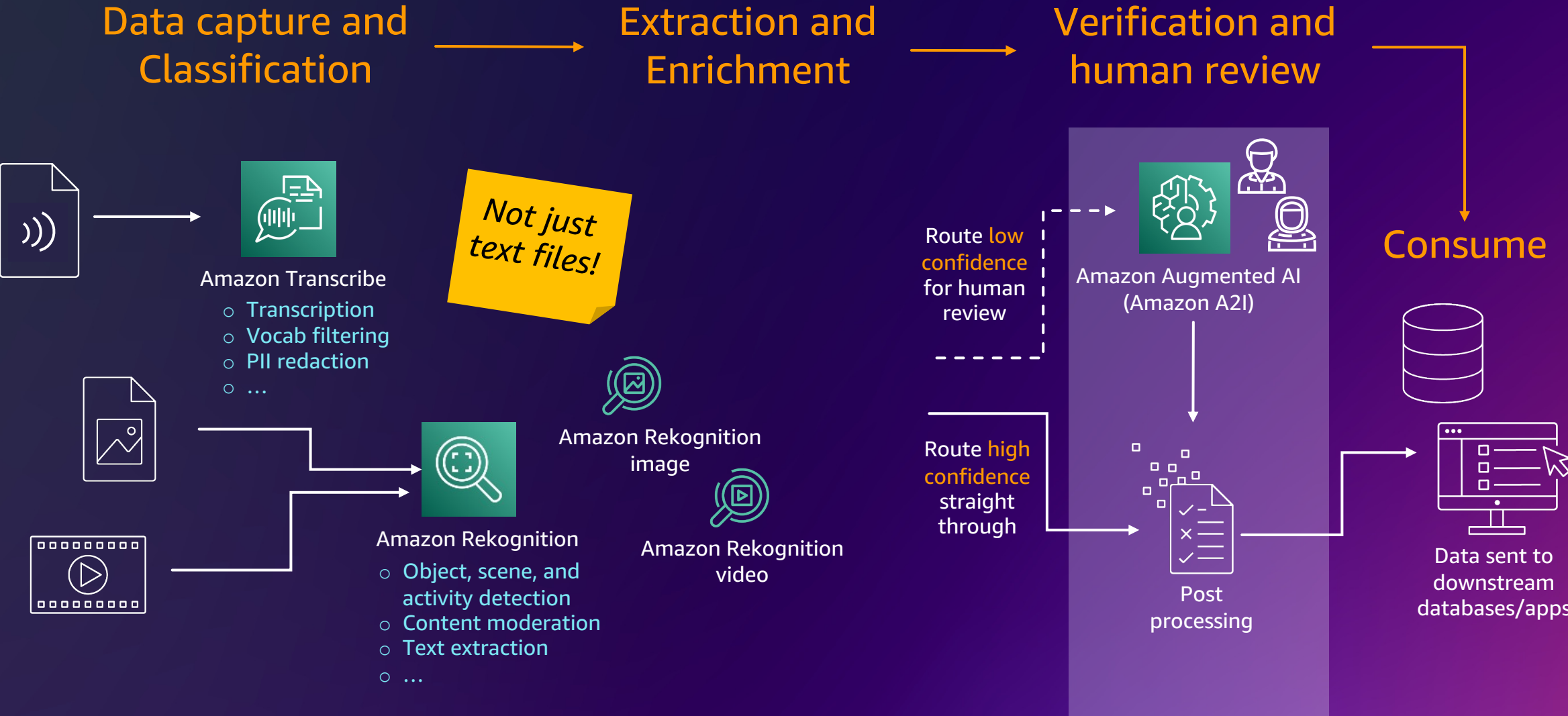
Extraction and Enrichment



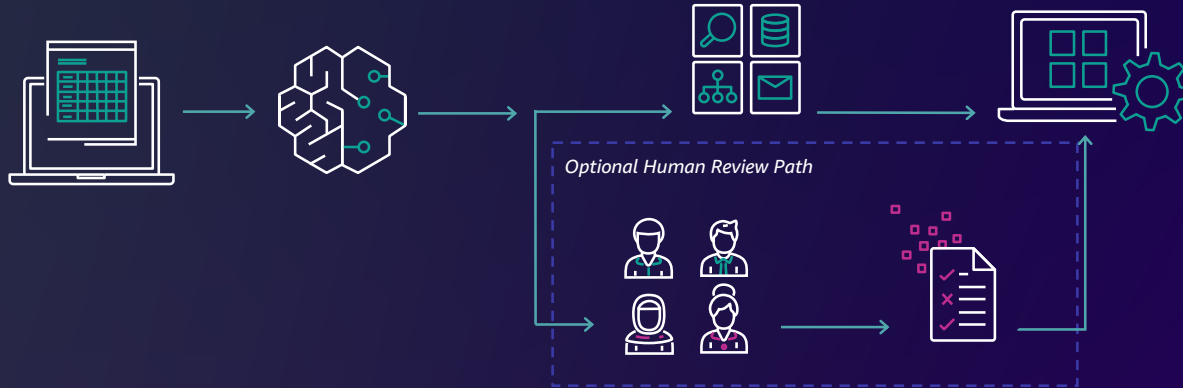
Verification and human review



Typical Intelligent Document Processing workflow



Intelligent document processing – workshop



AWS Workshop Studio Hands-On Workshop

1. Document classification
2. Document extraction
3. Document extraction and enrichment
4. Document review and verification



IDP Workshop

<https://catalog.workshops.aws/intelligent-document-processing>

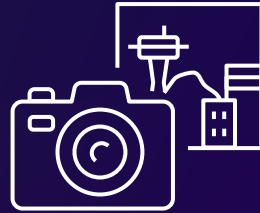
Use-case **Content Moderation**



Customers expect inclusion and safety



50% of people create content at least once daily¹



40% of consumers disengage after one exposure to toxic UGC²



70% of consumers agree that brands are responsible to moderate UGC²

¹ Nosto, Customer Survey (bit.ly/3i7jLHL)

² BusinessWire, Customer Survey (bwnews.pr/3AB33GT)

Moderation scale, speed, and accuracy at a lower cost

Needs

Moderate high volumes of UGC

Keep online communities safe and inclusive

Better allocate human skill

Meet compliance and guidelines

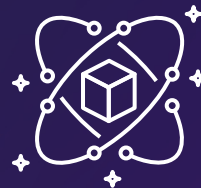
Reduce moderation costs



Artificial intelligence (AI)



Machine learning (ML)



Deep learning

Benefits



Improve brand, information, and user safety



Scale coverage



Reduce human moderators' workload



Save time and costs

Content moderation with AWS

Automate **image, video, text, and audio** moderation workflows with fully automated AI services to moderate unwanted content and protect sensitive information

Amazon
Rekognition



Image and
video analysis

Amazon
Transcribe



Speech to text

Amazon
Translate



Translation

Amazon
Comprehend



Natural language
processing (NLP)

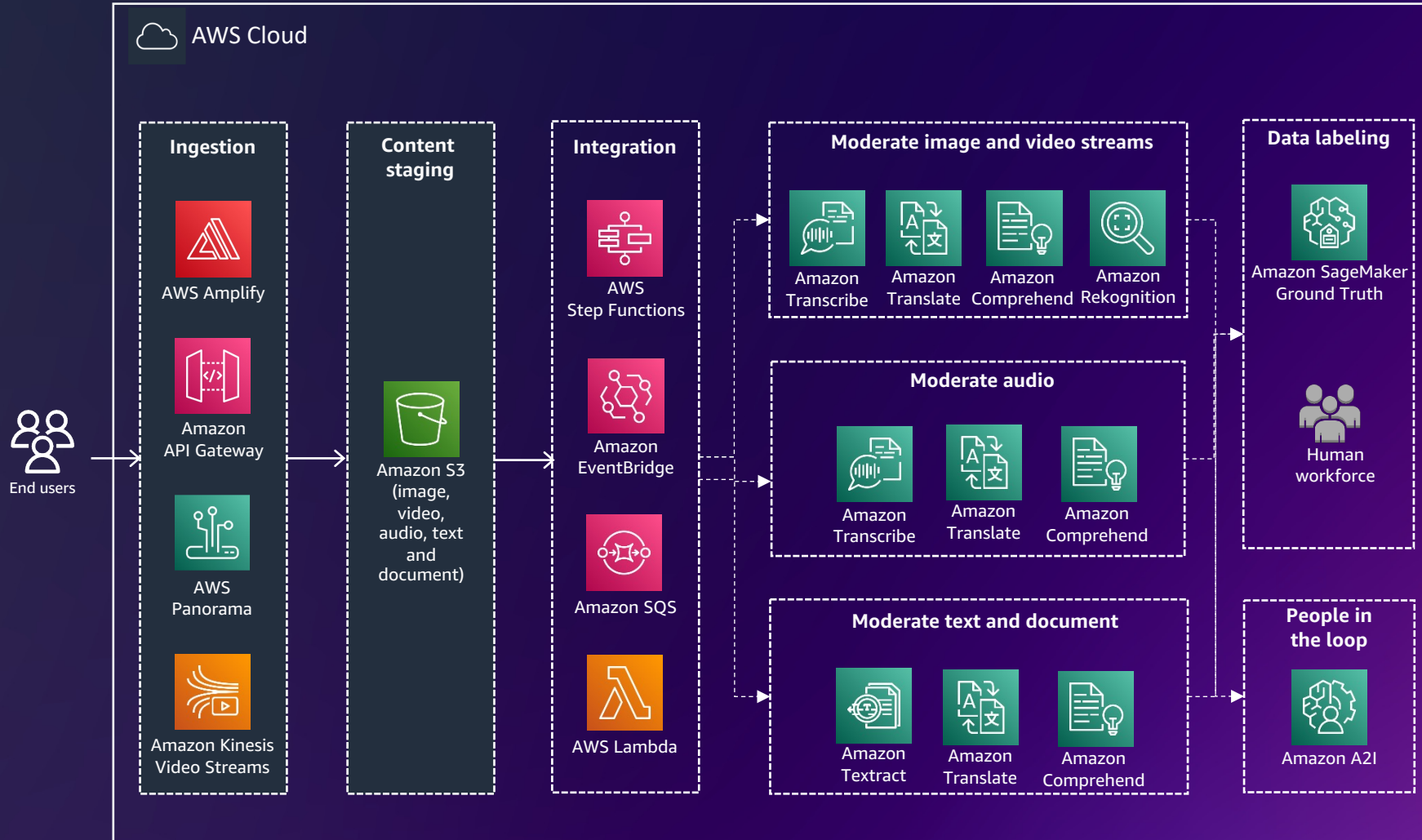
Amazon
Augmented AI



Human reviews

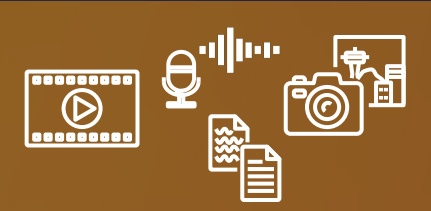
Bringing all AWS AI services together

AWS CONTENT MODERATION AND COMPLIANCE ARCHITECTURE



AWS content moderation and compliance workflow

Ingestion

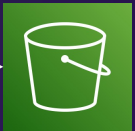


User-generated content

A grid of four AWS service icons: AWS Amplify (red), Amazon API Gateway (pink), AWS Panorama (teal), and Amazon Kinesis Video Streams (orange).

AWS Amplify Amazon API Gateway

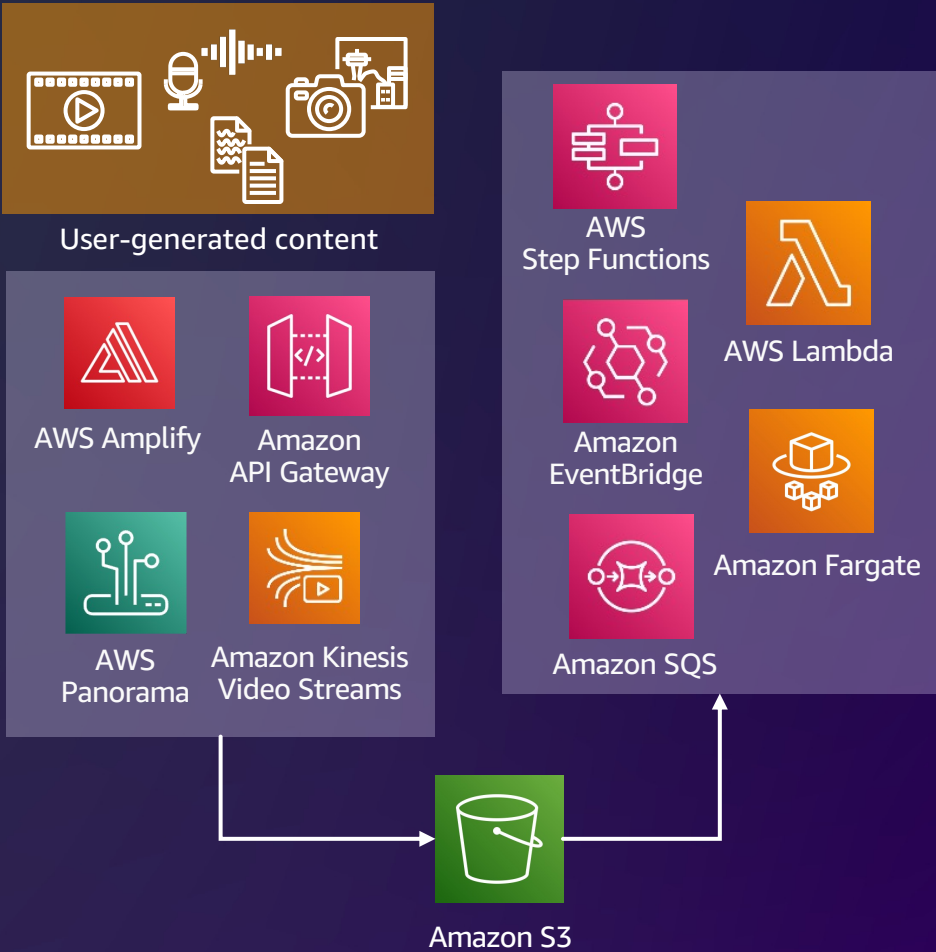
AWS Panorama Amazon Kinesis Video Streams



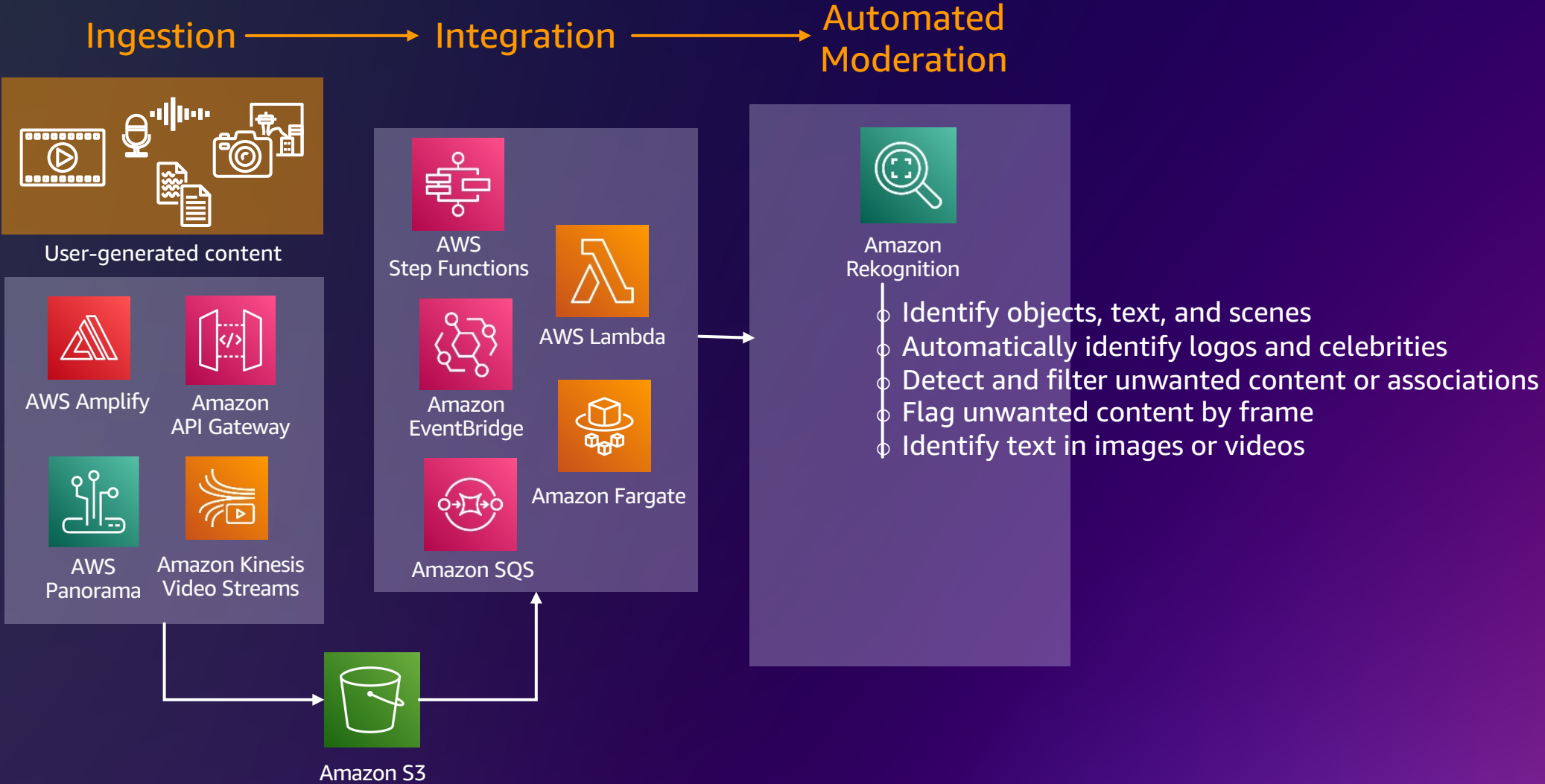
Amazon S3

AWS content moderation and compliance workflow

Ingestion → Integration



AWS content moderation and compliance workflow



AWS content moderation and compliance workflow

Ingestion → Integration → **Automated Moderation**

Amazon Rekognition



Automated Moderation



Amazon Rekognition

- Identify objects, text, and scenes
- Automatically identify logos and celebrities
- Detect and filter unwanted content or associations
- Flag unwanted content by frame
- Identify text in images or videos



Amazon S3

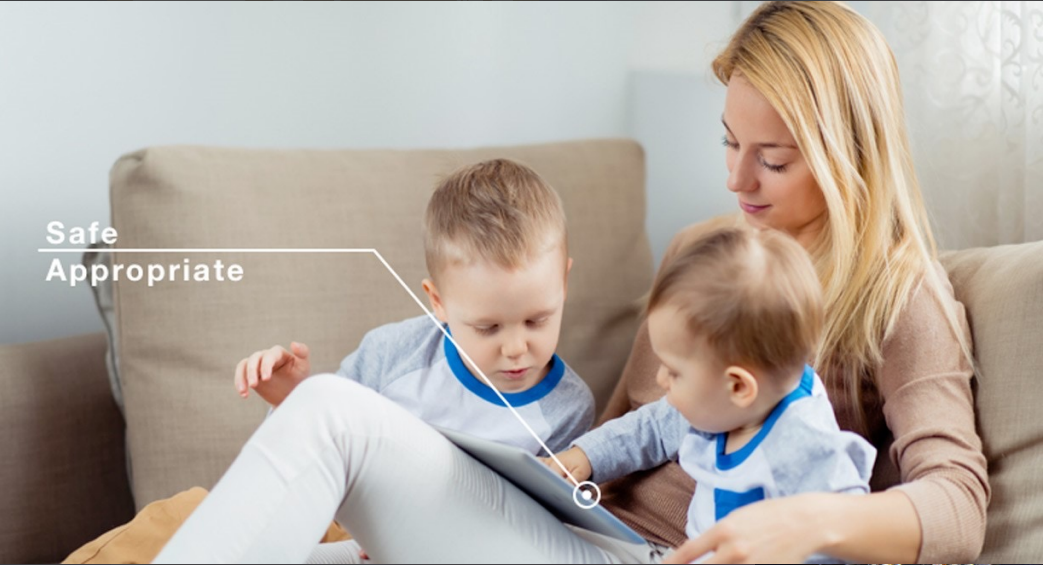
AWS content moderation and compliance workflow

Ingestion

Integration

Automated
Moderation

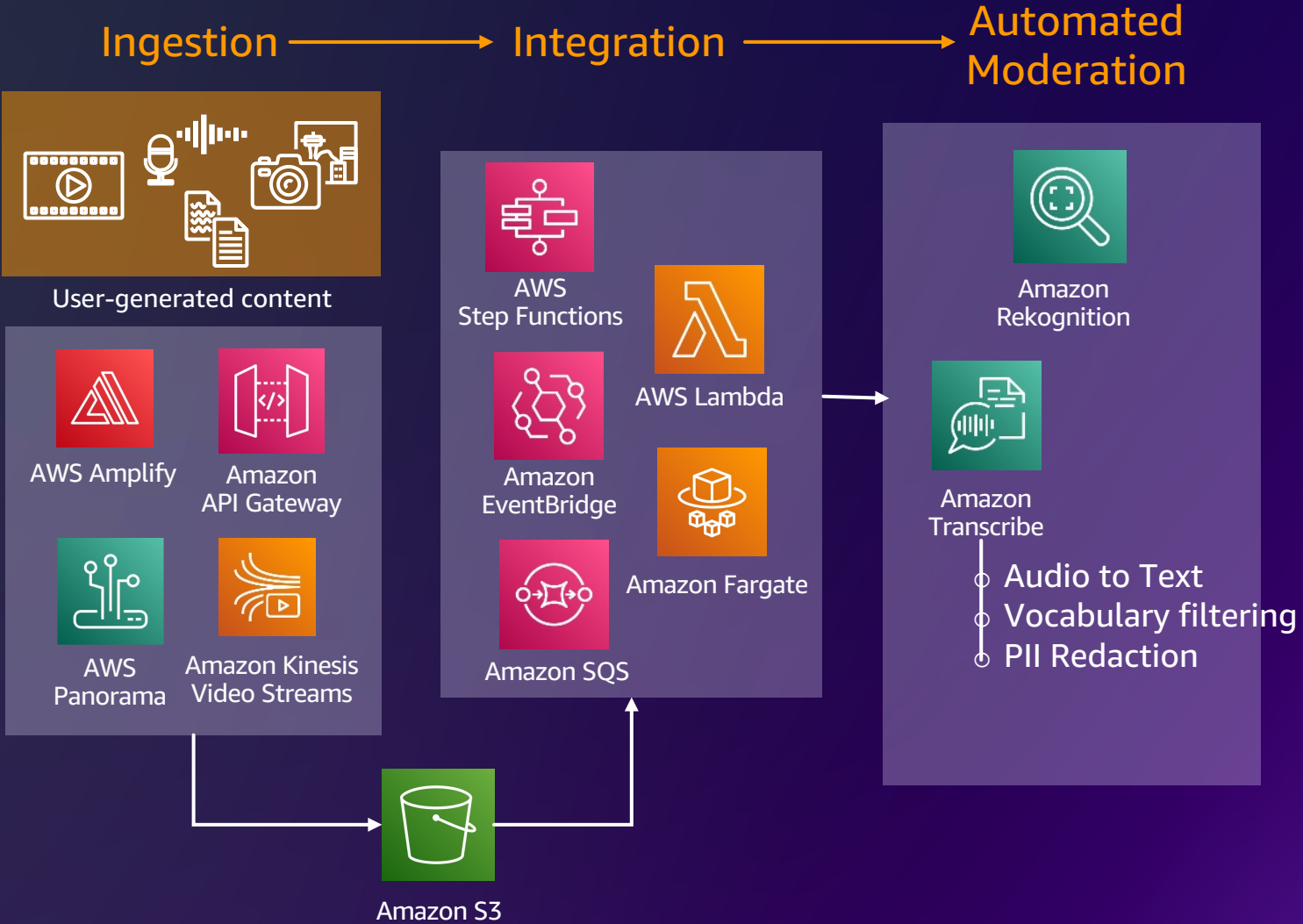
Amazon Rekognition



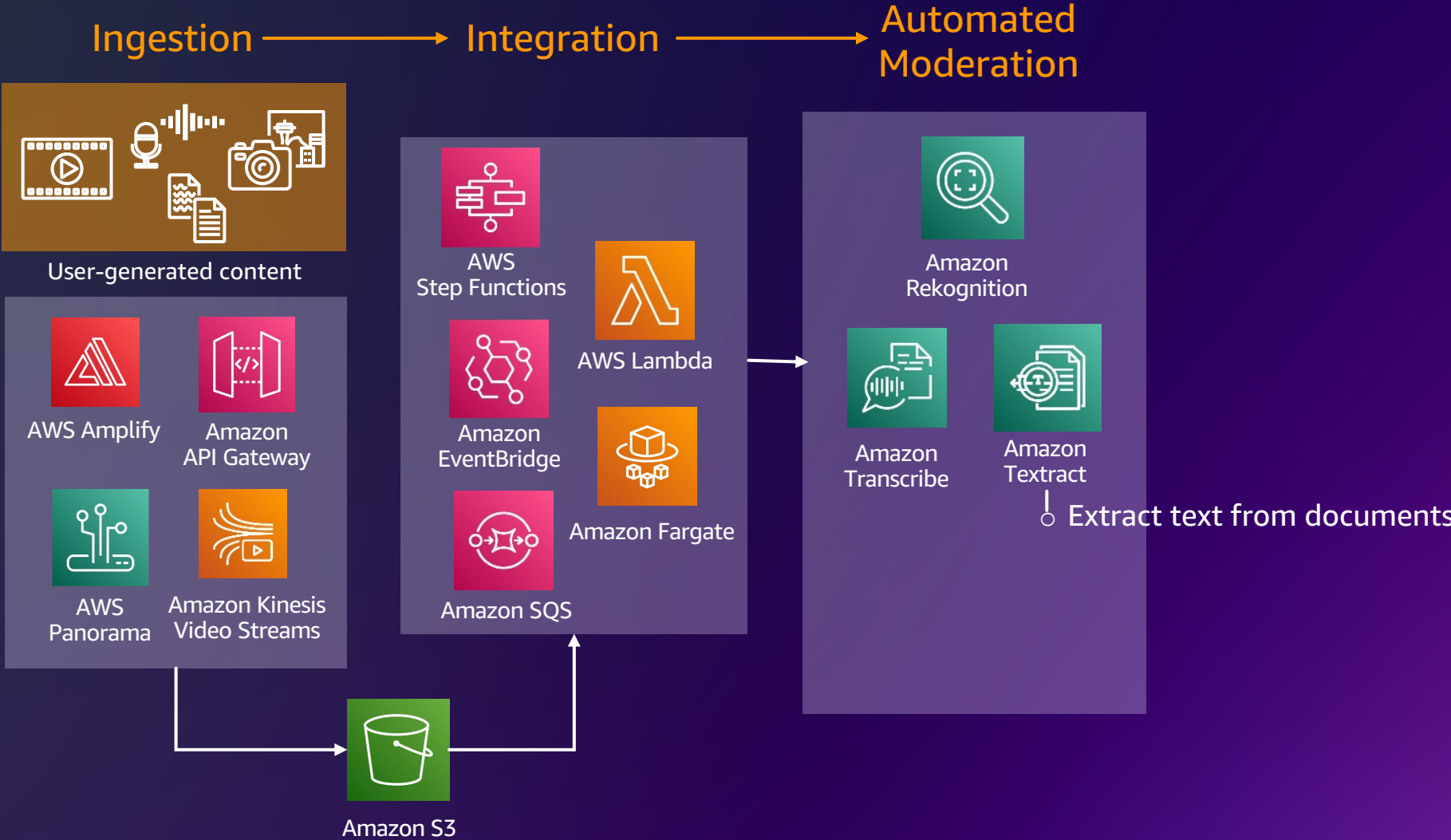
Amazon
Rekognition



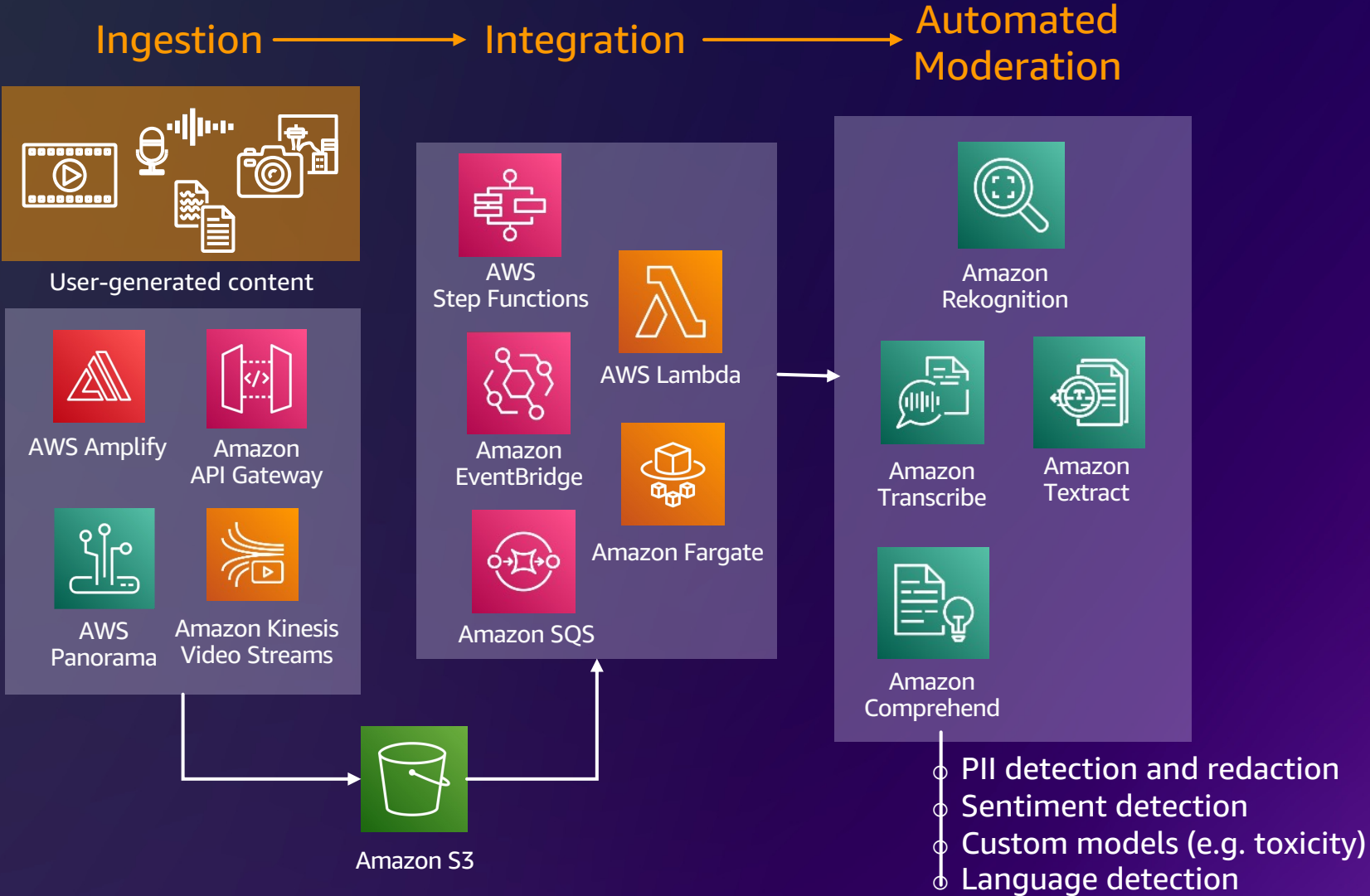
AWS content moderation and compliance workflow



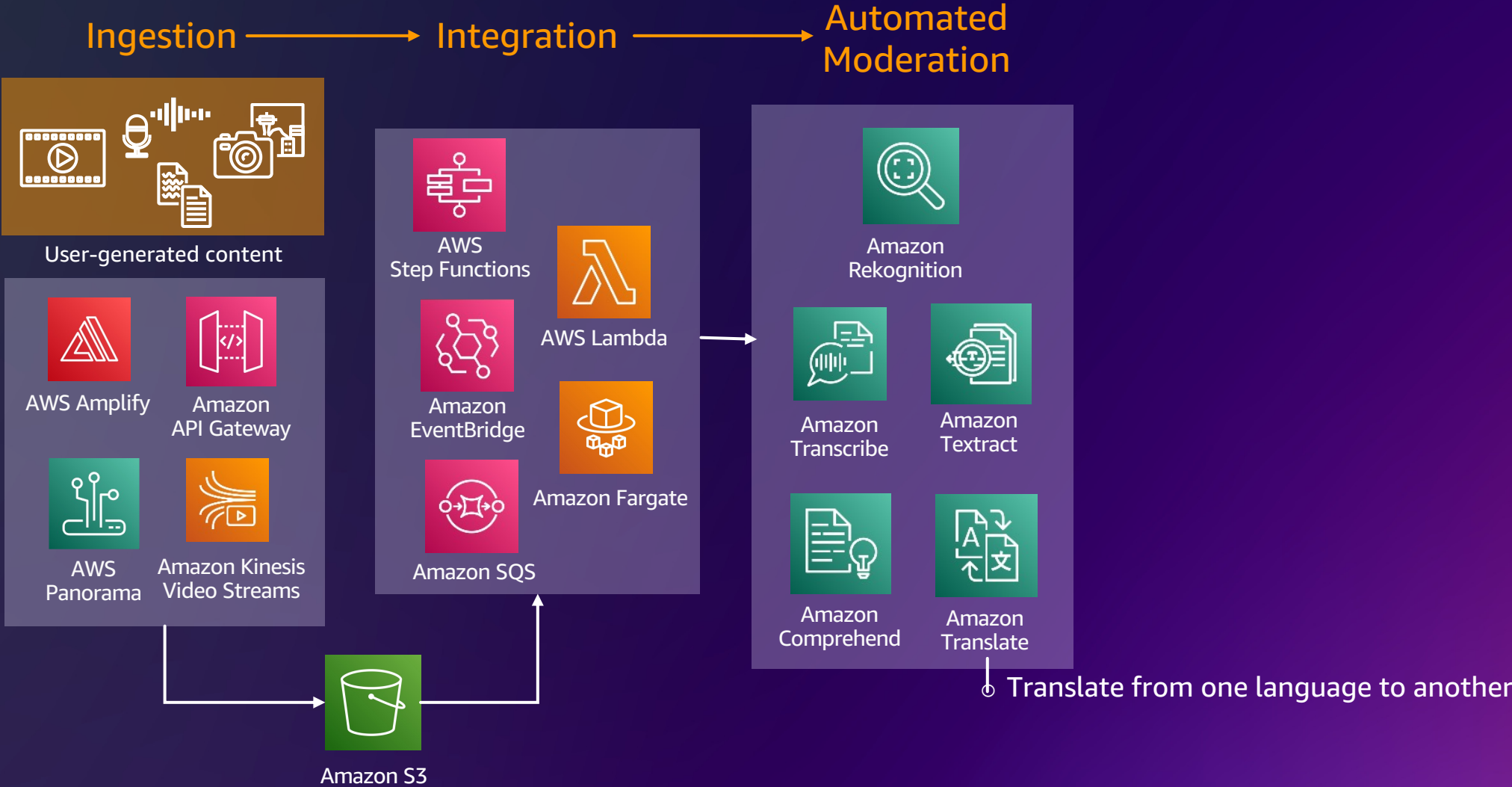
AWS content moderation and compliance workflow



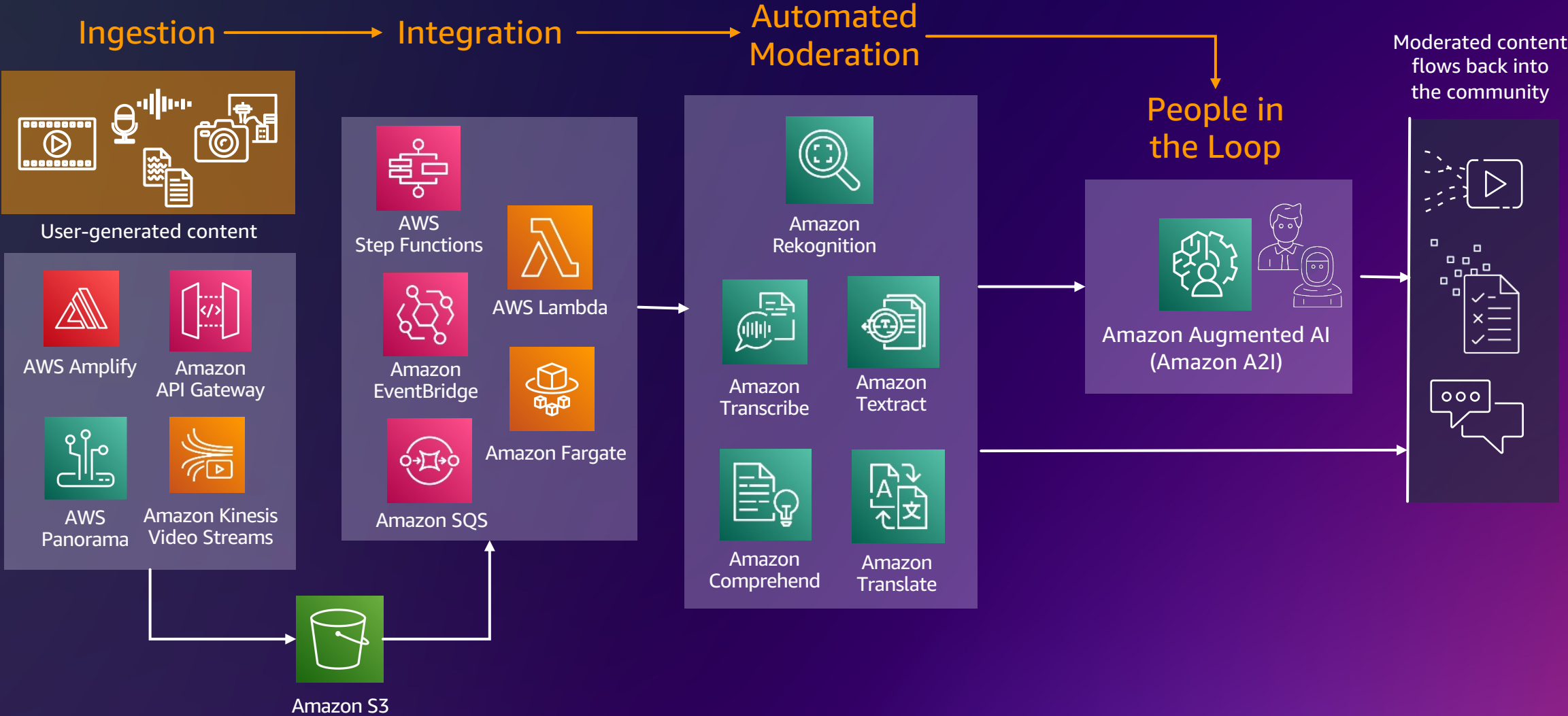
AWS content moderation and compliance workflow



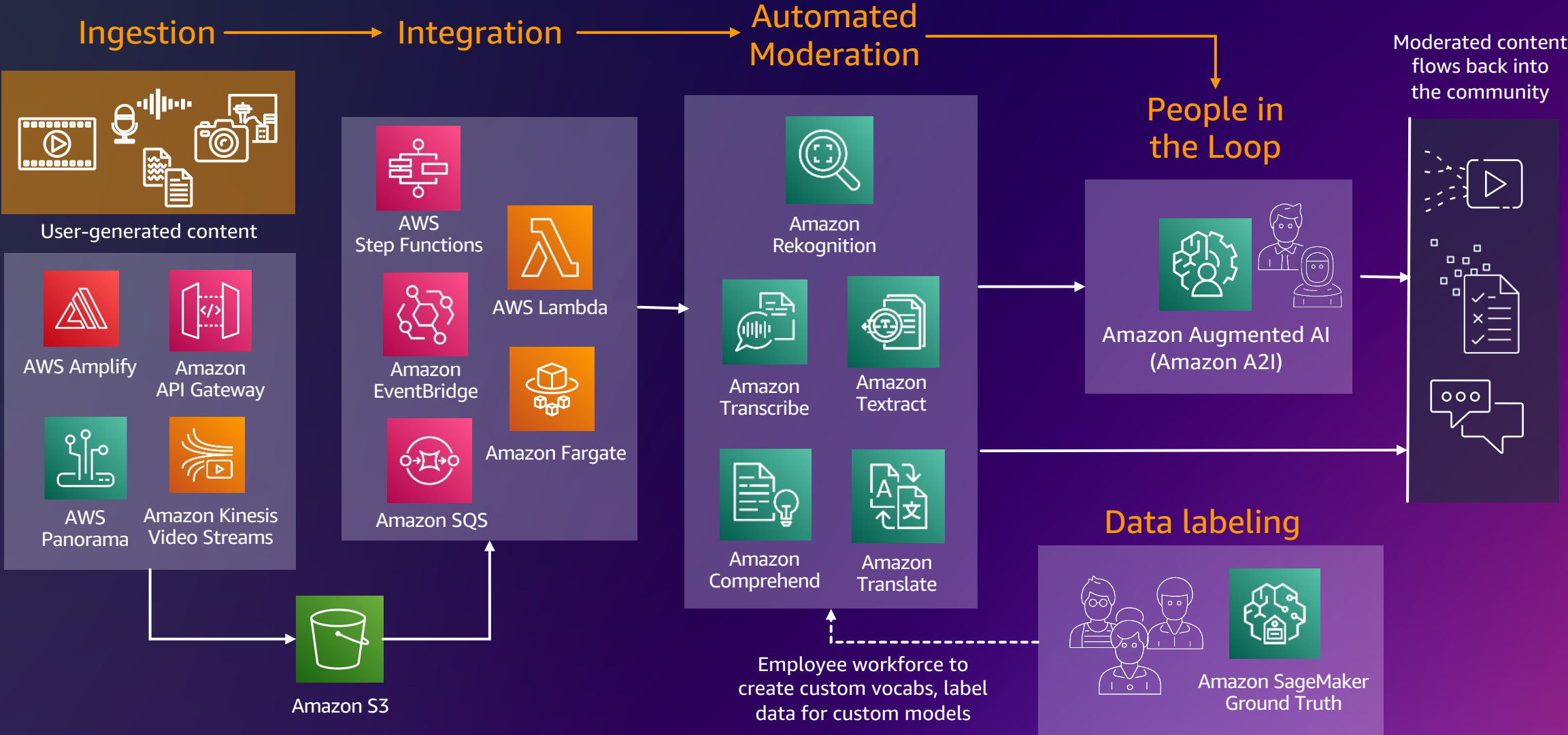
AWS content moderation and compliance workflow



AWS content moderation and compliance workflow

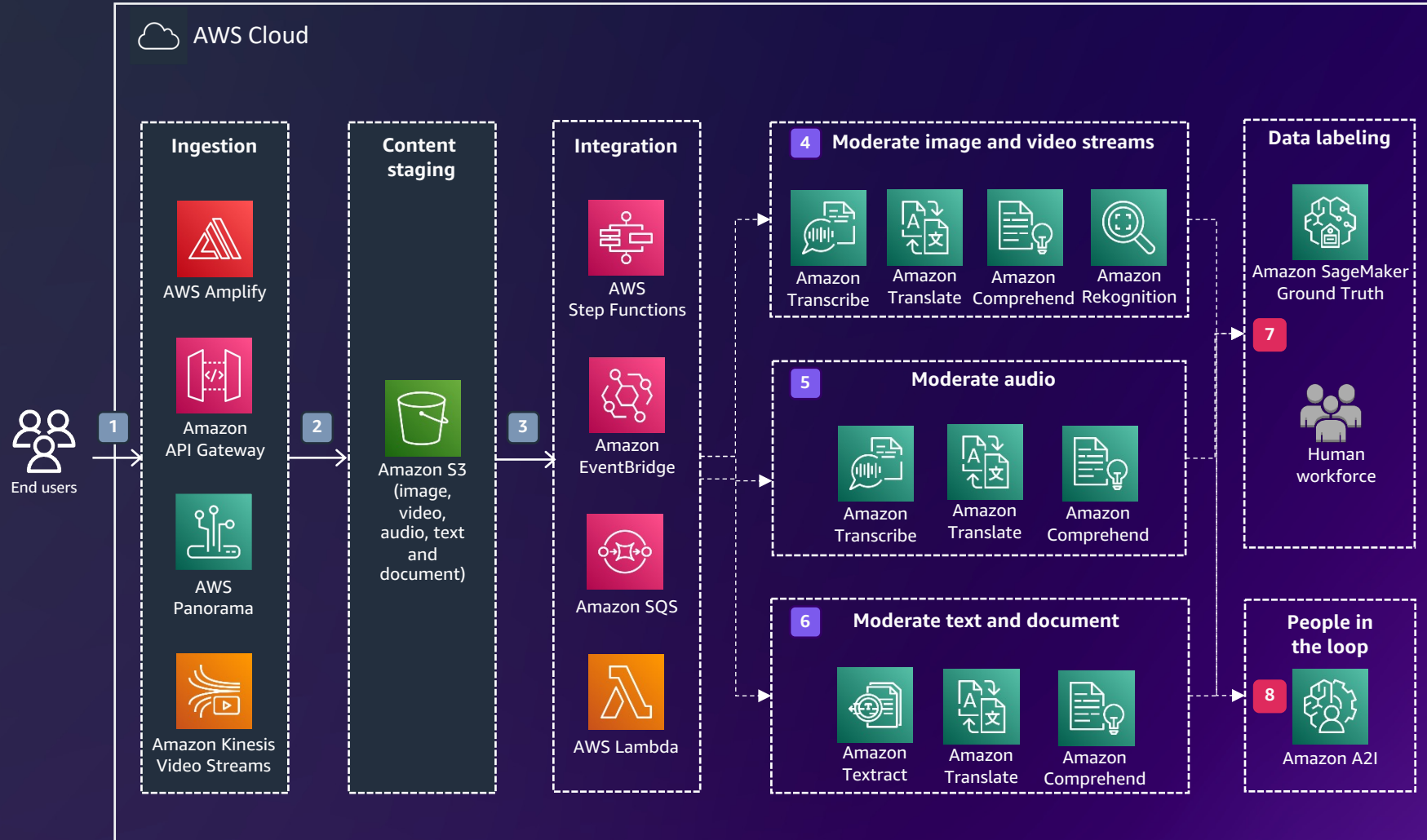


AWS content moderation and compliance workflow



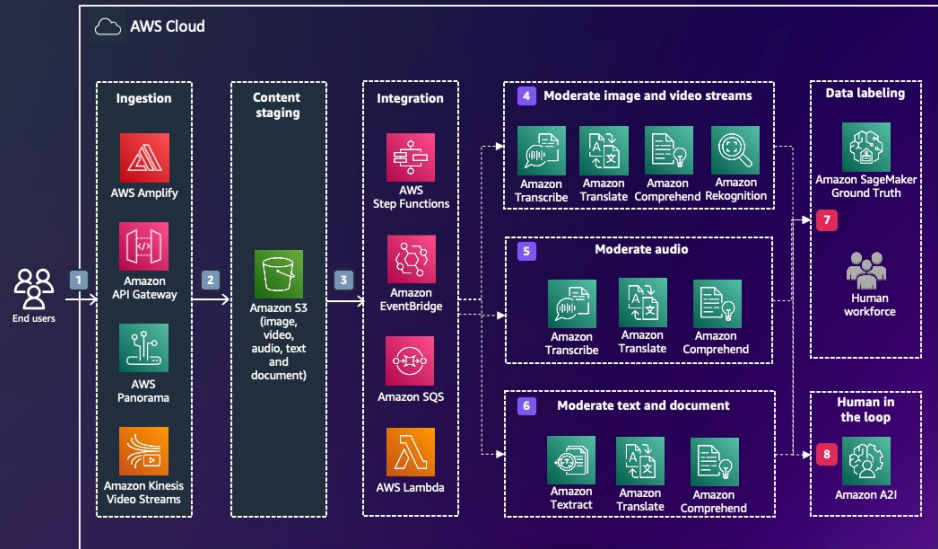
Bringing all AWS AI services together

AWS CONTENT MODERATION AND COMPLIANCE ARCHITECTURE



- 1 Customers upload their content into the AWS Cloud.
- 2 Content moves securely into an Amazon Simple Storage Service (Amazon S3) bucket or another data store.
- 3 Workflows, publisher/subscription patterns, and custom code are used to moderate the content.
- 4 The audio streams within video streams are processed using Amazon Transcribe and Amazon Rekognition, and content moderation categories are extracted using simple APIs.
- 5 Amazon Transcribe is used to convert audio into text, alongside natural language processing (NLP) with Comprehend.
- 6 Amazon Textract is used to extract content, with Amazon Comprehend natural language processing then used to moderate content.
- 7 Employee input helps customize model vocabularies and image labels using Amazon SageMaker Ground Truth.
- 8 Bring people into the loop for scenarios that aren't fully automatable using Amazon Augmented AI (Amazon A2I).

Content moderation on AWS - guidance



Guidance for Content Moderation on AWS

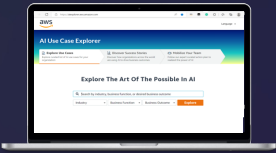
1. Architecture Examples
2. Well-Architected Pillars
3. Related Content (blogs, e-book)

<https://aws.amazon.com/solutions/guidance/content-moderation-on-aws/>

What will you build?



AI Use Case Explorer online tool



**Explore
use cases**

Explore curated list
of AI use cases for
your organization

**100+ use cases
and sub use cases**



**Discover
success stories**

Discover how organizations
across the world are using AI
to drive business outcomes

**400+ customer
success stories**



**Mobilize
your team**

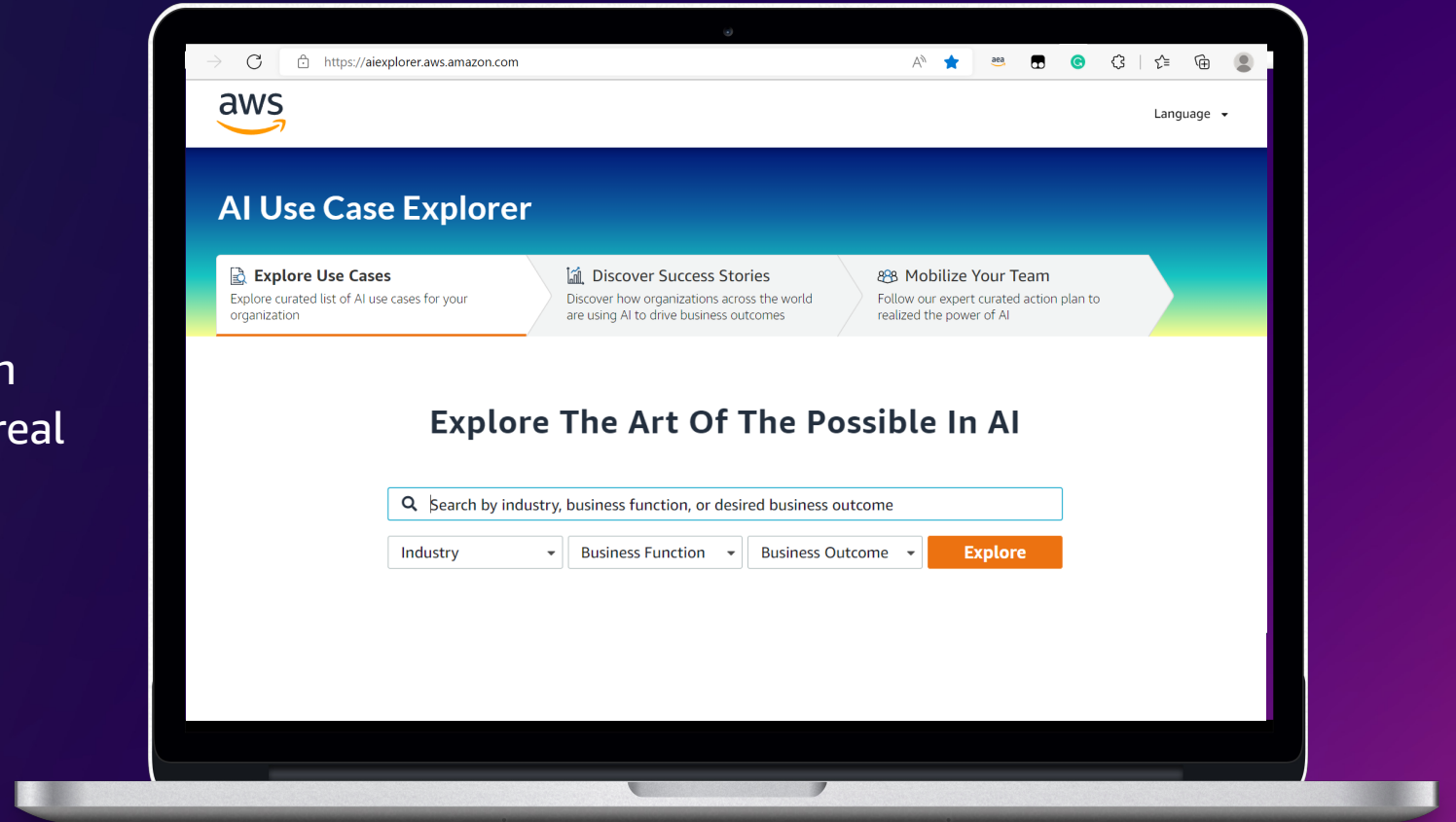
Follow our expert-curated
action plan to realize the
power of AI

**50+ resources
(eBooks, videos, demos)**



AI Use Case Explorer

Easily find the most relevant AI use cases with related content and guidance to make them real



aiexplorer.aws.amazon.com



Thank you!

Gillian Armstrong

✉ gillianq@amazon.co.uk

🐦 [@virtualgill](https://twitter.com/virtualgill)

🌐 [gillian-armstrong](https://www.linkedin.com/in/gillian-armstrong)





Please complete
the session survey