

The background features a dark blue gradient with abstract, overlapping shapes in shades of purple and magenta. Two thin, light blue lines intersect to form a large 'A' shape on the right side of the image.

# AWS re:Invent

DECEMBER 2 - 6, 2024 | LAS VEGAS, NV

AIM394

PREVIEW

# Transforming multimodal content with Amazon Bedrock Data Automation

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AWS





Learning about you...

# What's on deck

- 01 The multimodal content challenge
- 02 What is Amazon Bedrock Data Automation
- 03 How it works
- 04 BDA in practice
- 05 Q&A and Resources



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**80%** of data is unstructured in document, image, video, and audio formats, while...

**<20%** of organizations are able to take advantage of unstructured data at scale

# Why is multimodal content hard?



Unprecedented scale of content generation



Lack of standardized tooling



Diverse formats and variations in asset types



ML is promising but often requires specialized expertise



Hard to get the desired accuracy



Complex postprocessing to adapt and integrate ML output with downstream systems

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# Amazon Bedrock Data Automation



A generative AI-powered capability to transform multimodal unstructured content from documents, images, video, and audio into structured data easily, accurately, and at scale.

# Amazon Bedrock Data Automation

The easiest way to automate the generation of useful insights from documents, images, video, and audio quickly, accurately, and at scale



Accurate and trustworthy output helps reduce reliance on manual reviews with confidence



Integrate data automation in business workflows and get to production faster



Simpler development effort allows you to focus on building differentiated applications at a lower cost, no ML expertise necessary



Easily tailor output requirements to diverse business-specific needs and application types

# Key Features



Simple and intuitive interface to define output schemas and fine-grained business rules



Orchestration across state-of-the-art task-specific models and foundation models to generate highly accurate, consistent output



Built-in Responsible AI with visual grounding, confidence scores, and toxic content detection



Integration with Amazon Bedrock Knowledge Bases



Single inference API to handle production scale

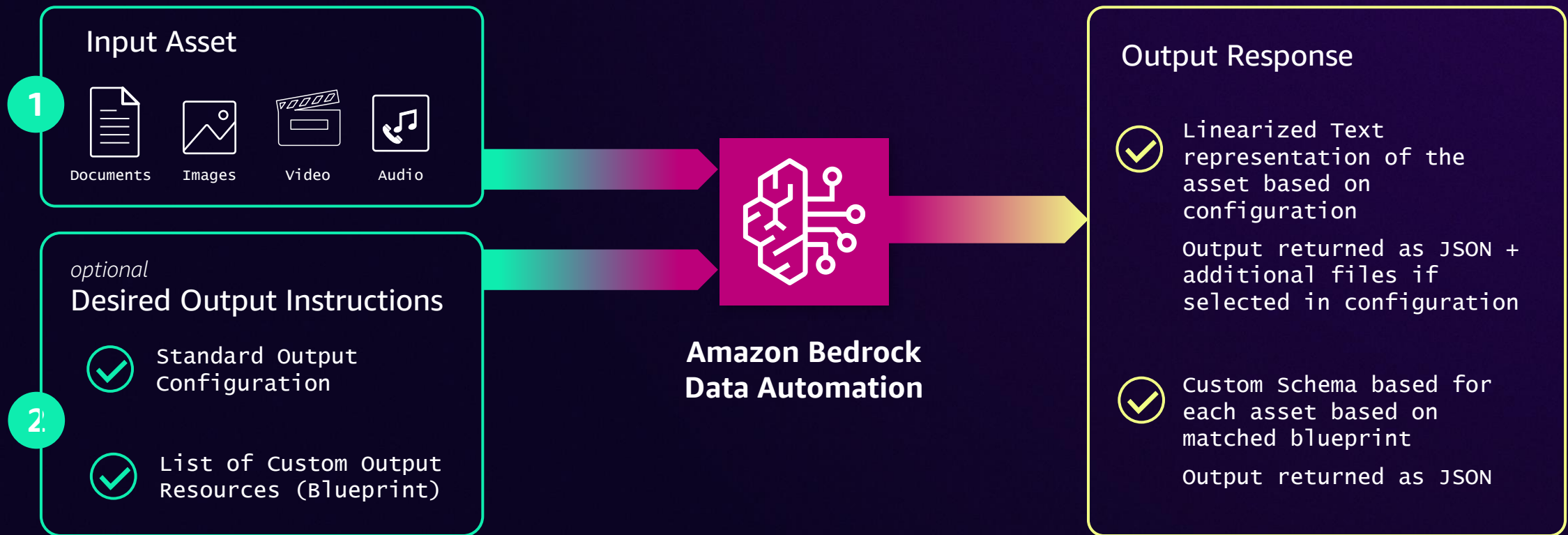
# What's on deck

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# Getting Started is Easy

INPUTS / OUTPUTS



# How it works

## TYPES OF OUTPUT THAT BDA CAN RETURN

### Standard Output

- ✓ Linearized text representation of asset
- ✓ Gen-AI optimized output: reading / viewing order, semantically related output groupings, etc.
- ✓ Controls to optimize output based on downstream systems with simple selection knobs
- ✓ Automatic modality routing based on semantic modality, *not just file type*

#### Supported Modalities for Standard Output



Documents



Images



Video



Audio

### Custom Output

- ✓ Developer supplied schema based on your downstream systems (Blueprint)
- ✓ Supports tasks such as extraction, key and value normalization, transformations, reasoning, splitting and classification
- ✓ Simple NL interface to define business rules and task logic for each field
- ✓ Console-based assistant to create bespoke blueprints in minutes with sample and desired output description

#### Supported Modalities for Custom Output



Documents



Images

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# BDA Use Cases and Applications



Intelligent  
Document Processing



RAG  
Applications



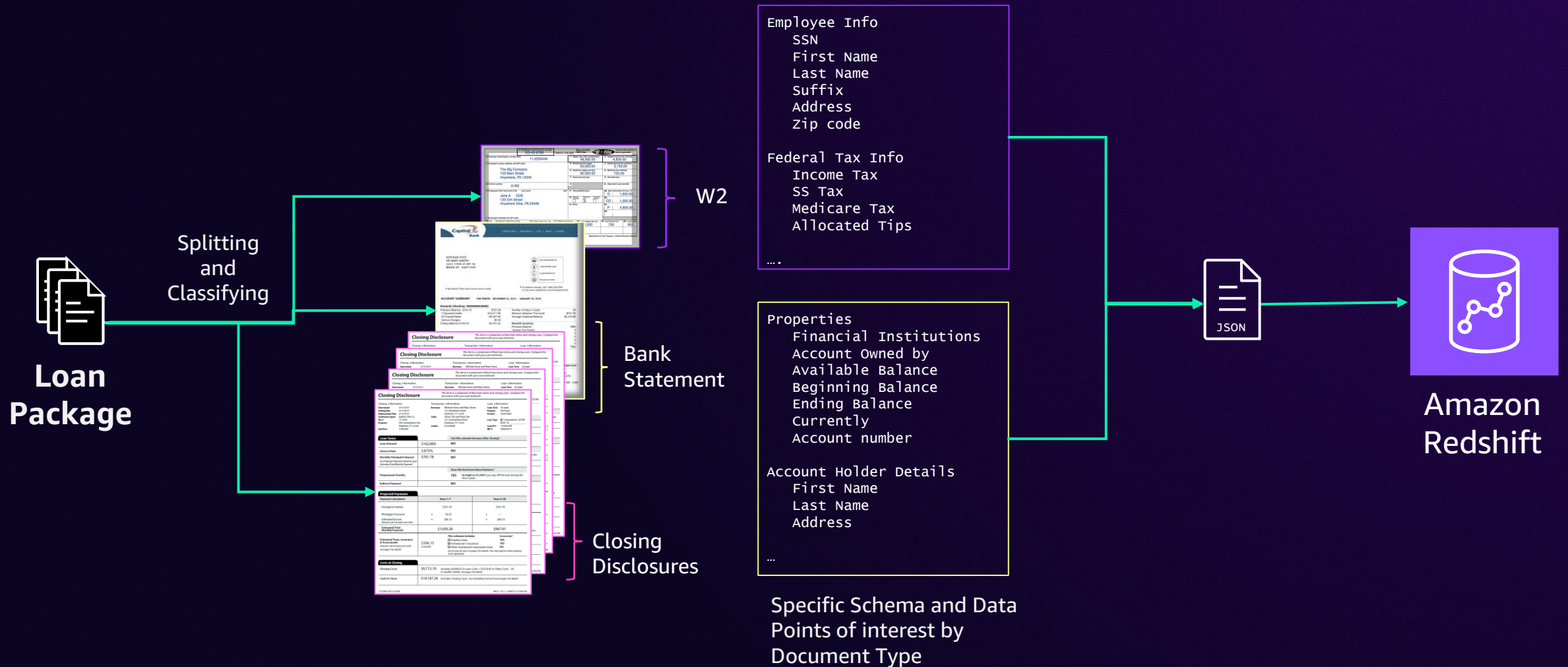
Media &  
Entertainment



# BDA for Intelligent Document Processing



# Use Case: IDP Loan Processing





# Example: W2

## 4 Data transformation:

Build and maintain rules based post processing scripts for each document type and variation

## 1 Classification:

Build and regularly update custom classifier models (in-house / Custom Comprehend)

Rules based classification using OCR text where possible

## 2 Key normalization:

Build and maintain rules based post processing scripts for each document type

Build expensive custom NLP models

## 3 Value normalization:

Rules based post processing scripts

## 5 Validation:

Build and maintain rules based post processing scripts for each document type

a Employee's social security number		1 Wages, tips, other compensation		2 Federal income tax withheld							
123-45-6789		48,500.00		6,835.00							
b Employer identification number (EIN)		3 Social security wages		4 Social security tax withheld							
11-2233445		50,000.00		3,100.00							
c Employer's name, address, and ZIP code		5 Medicare wages and tips		6 Medicare tax withheld							
The Big Company 123 Main Street Anywhere, PA 12345		50,000.00		725.00							
d Control number		7 Social security tips		8 Allocated tips							
A1B2		50,000.00									
e Employee's first name and initial Last name		9		10 Dependent care benefits							
Jane A DOE											
f Employee's address and ZIP code		11 Nonqualified plans		12a See instructions for box 12							
123 Elm Street Anywhere Else, PA 23456		Statutory employee <input type="checkbox"/> Retirement plan <input checked="" type="checkbox"/> Third-party sick pay <input type="checkbox"/>		D 1,500.00							
		14 Other		12b DD 1,000.00							
				12c P 4,800.00							
				12d							
15 State Employer's state ID number		16 State wages, tips, etc.		17 State income tax		18 Local wages, tips, etc.		19 Local income tax		20 Locality name	
PA 1235		50,000		125,000		50,000		750		MU	

Form **W-2** Wage and Tax Statement 2014  
Department of the Treasury—Internal Revenue Service  
Copy B—To Be Filed With Employee's FEDERAL Tax Return.  
This information is being furnished to the Internal Revenue Service.

Impact

Long development cycles of 5 months+

Heavy post-processing maintenance work

Significant learning curve (multiple service interfaces, custom models)



# W2 Demo

The screenshot shows the AWS Bedrock console interface. At the top, the browser address bar displays the URL: `https://us-west-2.console.aws.amazon.com/bedrock/home?region=us-west-2#/bda/explore-bda`. The AWS navigation bar includes the logo, a search bar, and the user profile 'Admin/rahgu-lsengard @ 1308-0739-8328'. The left sidebar contains a navigation menu with sections: 'Safeguards' (Guardrails, Watermark detection), 'Inference and Assessment' (Provisioned Throughput, Batch inference, Cross-region inference, Evaluations), 'Data Automation' (Demo, Custom output setup, Projects), 'User guide', 'Bedrock Service Terms', and 'Bedrock configurations' (Model access, Bedrock Studio, Settings). The main content area features a 'Get Started' section with the heading 'Select sample demo or upload a file to get started'. It includes three radio buttons: 'Use sample demo' (selected), 'Upload from Computer', and 'Import from S3'. Below this is a 'Select asset file type' dropdown menu currently set to 'Document'. Four sample document thumbnails are displayed: 'Bank Statement', 'Driver's License', 'Invoice', and 'W2 Tax Form'. A 'Generate result' button is located at the bottom of the main content area. The footer contains 'CloudShell', 'Feedback', and copyright information for Amazon Web Services, Inc. or its affiliates, along with links for 'Privacy', 'Terms', and 'Cookie preferences'.



# Example: Multi-page bank statements

## 1 Implied fields:

Account holder name  
Account holder address

## 2 Table header normalization:

Credits represented as  
"paid in"  
Debits represented as  
"paid out"

Impact

TemplateLAB

RBS Statement  
The Royal Bank of Scotland SELECT ACCOUNT

Account Number: 13214571  
Sort Code: 10-10-00  
BIC: RBSGB2L  
IBAN: GB11RBS0 1610 0011 1111 11

MR THOMAS TESTER  
CURRENT ACCOUNT

Branch Details	Your Details	Period	22 Oct 2014 to 21 Dec 2014	
RBS BRANCH 123 SCOTS STREET LONDON	MR THOMAS TESTER 1 TOAST STREET BRIGHTON	Previous Balance		£1803.90
AN1 TWN	TE5 7ER	Paid Out		£2,684.10
		Paid In		£2,180.40
		New Balance		£300.20

Date	Type	Description	Paid In	Paid Out	Balance
BROUGHT FORWARD					1803.90
22 Oct 2014	AUTOMATED PAY IN	650274051211-CHB		190.40	1803.9
22 Oct 2014	DIGITAL BANKING	CALL REF. NO. 3442, FROM A/C 22222222		140.00	1613.5
24 Oct 2014	Faster Payment	Amazon		132.30	1473.5
24 Oct 2014	BACS	Tebay Trading Co.		515.22	1341.2
25 Oct 2014	Faster Payment	Morrisons Petrol		80.00	825.98
25 Oct 2014	BACS	Business Loan	20,000.00		745.98
26 Oct 2014	BACS	James White Media		2,461.55	20745.98
27 Oct 2014	Faster Payment	ATM High Street		100.00	18284.43
01 Nov 2014	BACS	Acorn Advertising Studies		150.00	18184.43
01 Nov 2014	BACS	Marriott Hotel		177.00	18034.43
01 Nov 2014	Faster Payment	Abellio Scotrail Ltd		122.22	17857.43
01 Nov 2014	CHQ	Cheque 0000234		1,200.00	17735.21
01 Dec 2014	Int. Bank	Interest Paid	9.33		16535.21
01 Dec 2014	DD	OVO Energy		2470.00	16544.54

Long development cycles of 5 months+

Heavy post-processing maintenance work

Significant learning curve (multiple service interfaces, custom models)

## 3 Page breaks complicate Tables extraction

21 Dec 2014	BACS	Various Payment	10,526.40	14074.54
21 Dec 2014	BACS	HMRC	1,000.00	3548.14
21 Dec 2014	DD	DVLA	280.00	2548.14

Royal Bank of Scotland Plc, Registered Office, The Mound, Edinburgh EH1 1YZ. Registered in Scotland number SC227000. Authorized by the Prudential Regulation Authority and regulated by the Financial Conduct and the Prudential Regulation authority.

## 4 Value normalization

Ensure all amounts represented as £ X,XXX.YY

## 5 Validation:

Ensure sum of line item debits and credits matches sub totals and tallies with opening and closing balances

# Multi-page bank statement demo

aws [Search] [Alt+S] Oregon Admin/rahgu-lsengard @ 1308-0739-8328

**▼ Safeguards**  
Guardrails  
Watermark detection

**▼ Inference and Assessment**  
Provisioned Throughput  
Batch inference  
Cross-region inference  
Evaluations

**▼ Data Automation**  
**Demo**  
Custom output setup  
Projects

User guide [↗](#)  
Bedrock Service Terms [↗](#)

**▼ Bedrock configurations**  
Model access [5 new](#)  
Bedrock Studio [Preview](#)  
Settings

**Custom output:** A blueprint is the way you specify your custom output configuration for a specific asset type. Bedrock offers sample blueprints or can generate a blueprint based on your asset to help you get started.

**For custom output, you can create and save your blueprints, and then add them to your BDA Projects.**

**Get Started**

**Select sample demo or upload a file to get started**

- Use sample demo
- Upload from Computer
- Import from S3

**Select asset file type**

Document

Bank Statement   Driver's License   Invoice   W2 Tax Form

**Generate result**

CloudShell   Feedback   © 2024, Amazon Web Services, Inc. or its affiliates.   Privacy   Terms   Cookie preferences



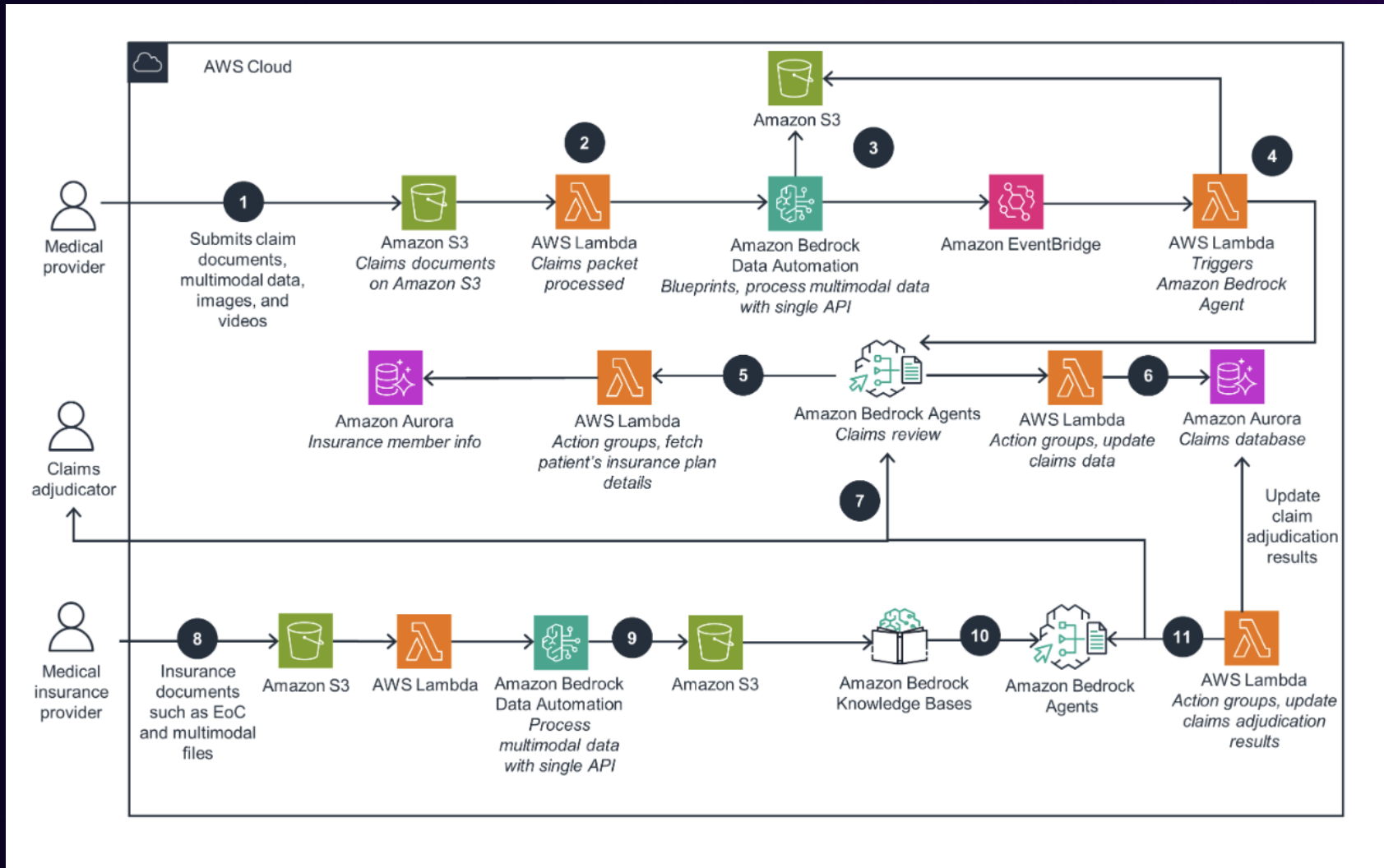
# Putting it together for IDP





# Powering Smart Workflows

AMAZON BEDROCK DATA AUTOMATION + AMAZON BEDROCK AGENTS



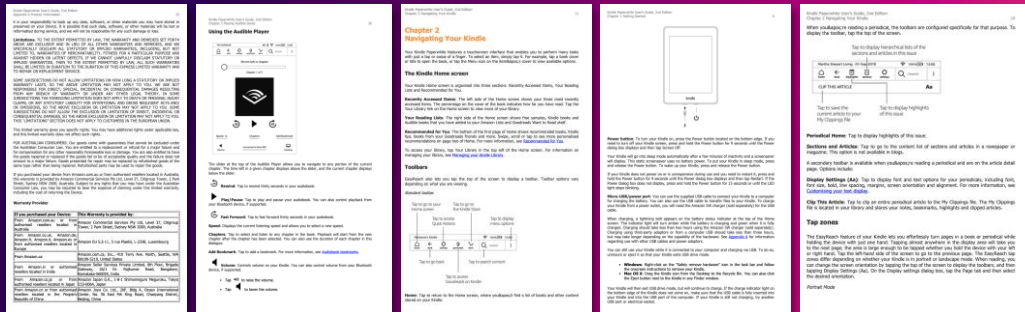
Solution Guidance



# Retrieval Augmented Generation (RAG) Applications

# Use Case: Gen-AI powered user guide w/RAG

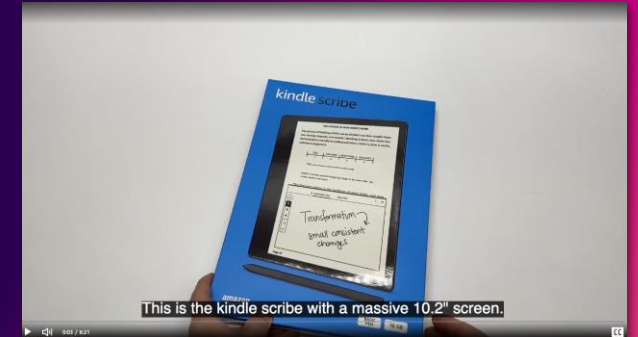
## User Guide - PDF



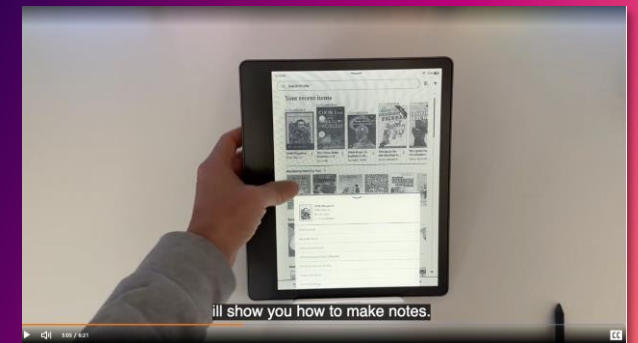
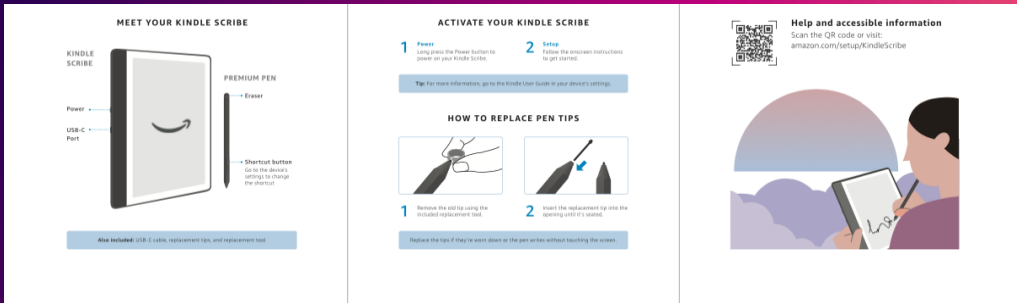
## Sustainability Fact Sheet - PDF



## Product Videos – Brand and UGC



## Quick Start Guide – PNG / JPEG



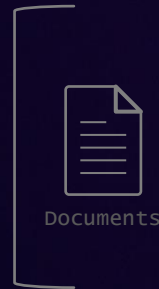
# Multimodal text linearization with BDA

Automatic modality routing based on semantic modality, *not just file type*

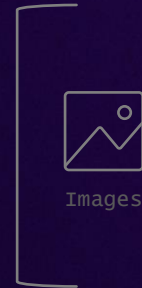
Default responses from BDA Inference API

Easily optimize settings based on your vector store or RAG system

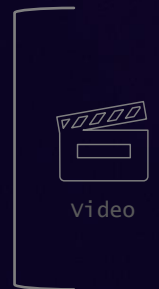
Settings saved directly in [BDA Project Resource](#)



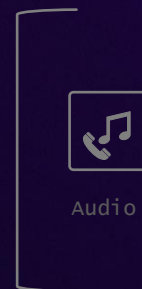
- ✓ Granularity
- ✓ Text Formatting
- ✓ Bounding Boxes
- ✓ Generative Outputs
- ✓ Output File Format



- ✓ Image text
- ✓ Explicit content detection
- ✓ Image summarization
- ✓ IAB classification



- ✓ Audio and text in video
- ✓ Explicit content detection
- ✓ Video summarization
- ✓ Scene summary
- ✓ IAB classification



- ✓ Audio transcript
- ✓ Toxic content detection
- ✓ Audio summarization
- ✓ Chapter summary
- ✓ IAB classification



# STANDARD OUTPUT DEMO – DOCUMENTS, IMAGE, AUDIO

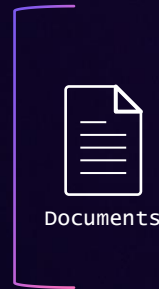
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Automatic modality routing based on semantic modality, *not just file type*

Default responses from BDA Inference API

Easily optimize settings based on your vector store or RAG system

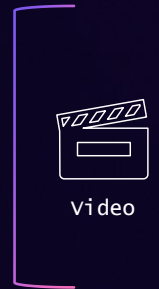
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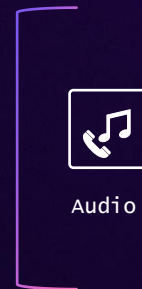
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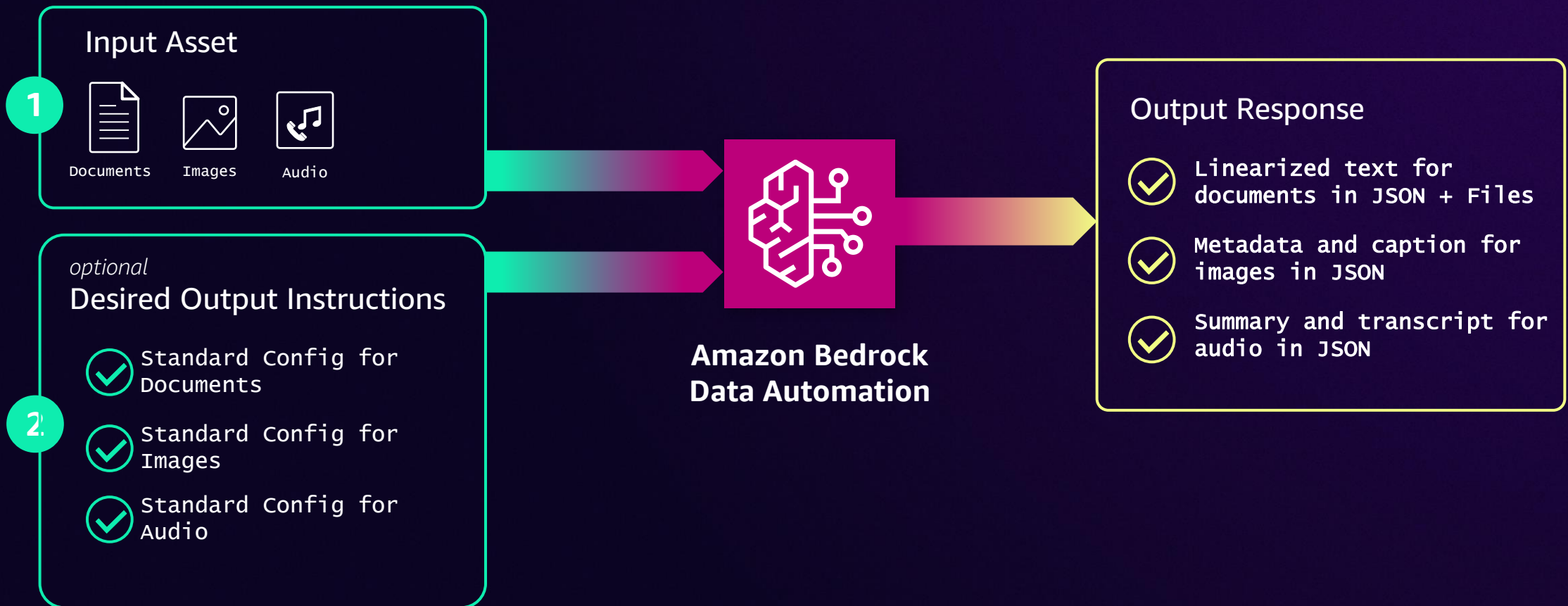


- ✓ Audio and text in video
- ✓ Explicit content detection
- ✓ Video summarization
- ✓ Scene summary
- ✓ IAB classification



- ✓ Audio transcript
- ✓ Toxic content detection
- ✓ Audio summarization
- ✓ Chapter summary
- ✓ IAB classification

# Putting it together for RAG



# Amazon Bedrock Data Automation + Knowledge Bases



**BDA + KB DEMO**

Simply select BDA as your parsing strategy directly in Knowledge Bases





# BDA for Media and Entertainment



# Media Use Cases



## Contextual Ad Placement

*Desired output: scene breaks, scene summary, scene transcript, explicit content, IAB taxonomy, sentiment of the scene, product placement in the ad, etc.*



## Archive and Search

*Desired output: full summary, scene breaks, scene summary, scene transcript, key events, key objects, etc.*



## Compliance and Content Moderation

*Desired output: full summary, explicit content, recognized celebrities, recognized logos, custom taxonomies for ratings (e.g., TV PG)*

# Media Use Cases



## Contextual Ad Placement

*Desired output: scene breaks, scene summary, scene transcript, explicit content, IAB taxonomy, sentiment of the scene, product placement in the ad, etc.*



## Archive and Search

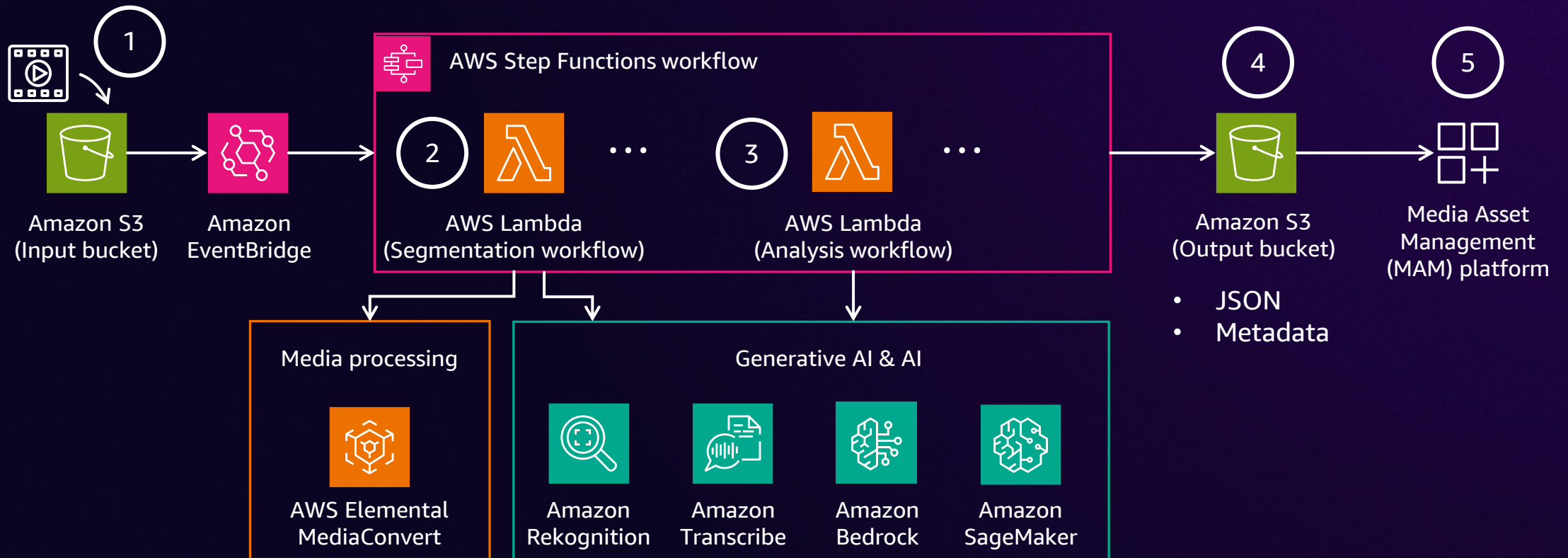
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## Compliance and Content Moderation

*Desired output: full summary, explicit content, recognized celebrities, recognized logos, custom taxonomies for ratings (e.g., TV PG)*

# Use case spotlight: Video Archival (Then)



# Use case spotlight: Video Archival (Now)



**Amazon Bedrock  
Data Automation**





# Video Archival Demo



# Video Archival Demo

The screenshot shows the AWS Bedrock console interface for the 'Data Automation Demo'. The browser address bar indicates the URL: `https://us-west-2.console.aws.amazon.com/bedrock/home?region=us-west-2#/bda/explore-bda`. The user is logged in as 'Admin/rahgu-lsengard @ 1308-0739-8328' in the 'Oregon' region.

The left sidebar contains the following navigation items:

- Flows
- Knowledge Bases
- Prompt Management
- ▼ Safeguards
  - Guardrails
  - Watermark detection
- ▼ Inference and Assessment
  - Provisioned Throughput
  - Batch inference
  - Cross-region inference
  - Evaluations
- ▼ Data Automation
  - Demo**
  - Custom output setup
  - Projects
- User guide [🔗](#)
- Bedrock Service Terms [🔗](#)
- ▼ Bedrock configurations
  - Model access [5 new](#)

The main content area features a 'Get Started' section with the following options:

**Get Started**

Select sample demo or upload a file to get started

- Use sample demo
- Upload from Computer
- Import from S3

Select asset file type

Document

Four sample asset thumbnails are displayed:

- Bank Statement
- Driver's License
- Invoice
- W2 Tax Form

A prominent orange button labeled 'Generate result' is located at the bottom of the main content area.





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# Thank you!



Please complete the session survey in the mobile app

Product Page



Documentation



Solution Guidance



Pricing

