
AWS
re:Invent
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WPS202

Improve citizen services using intelligent document processing

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Agenda

Public sector challenges with document processing

Need for intelligent document processing (IDP)

IDP workshop overview/scenarios

Call to action/next steps

Document processing is critical for public sector mission

Transportation
Traffic, mass transit, parking, airports, ports

Finance and administration
Tax, revenue, regulatory/compliance, fraud, budget, purchasing/procurement

Healthcare and public health
Local hospitals and clinics, public health, child welfare, homelessness, seniors/youth, health/food, environmental

Smart cities and urban development
Internet of things, planning/zoning, assessment, land admin/recorder of deeds, mapping, watershed, housing

Economic development
Grants and benefits administration, workforce development, corporate relations, land clearance/redevelopment

Constituent engagement
Contact center, website, mobile

Public safety
Police, jails, courts, animal control

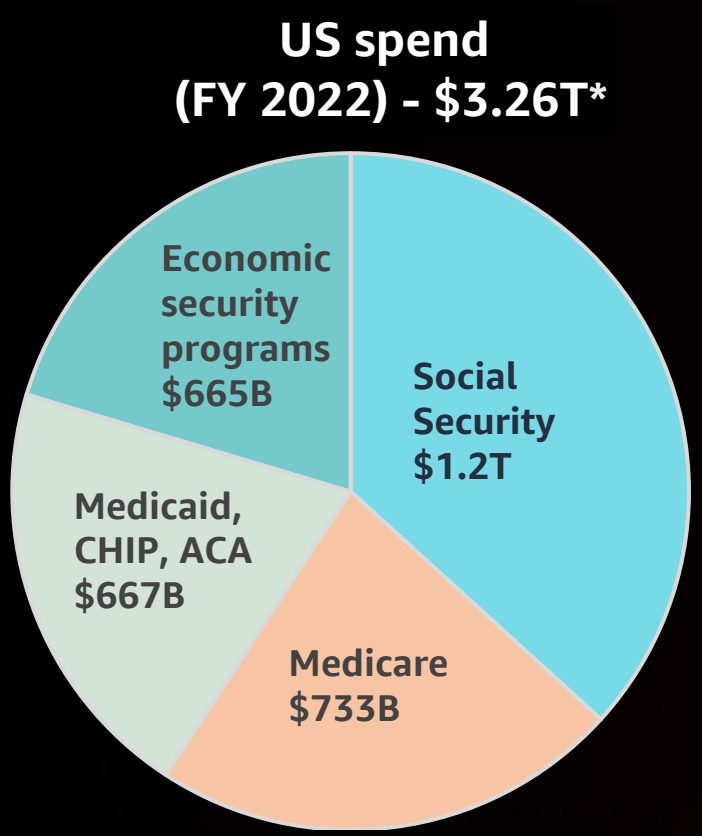
Elections
Registration, voter management, polling, voting management, candidate management

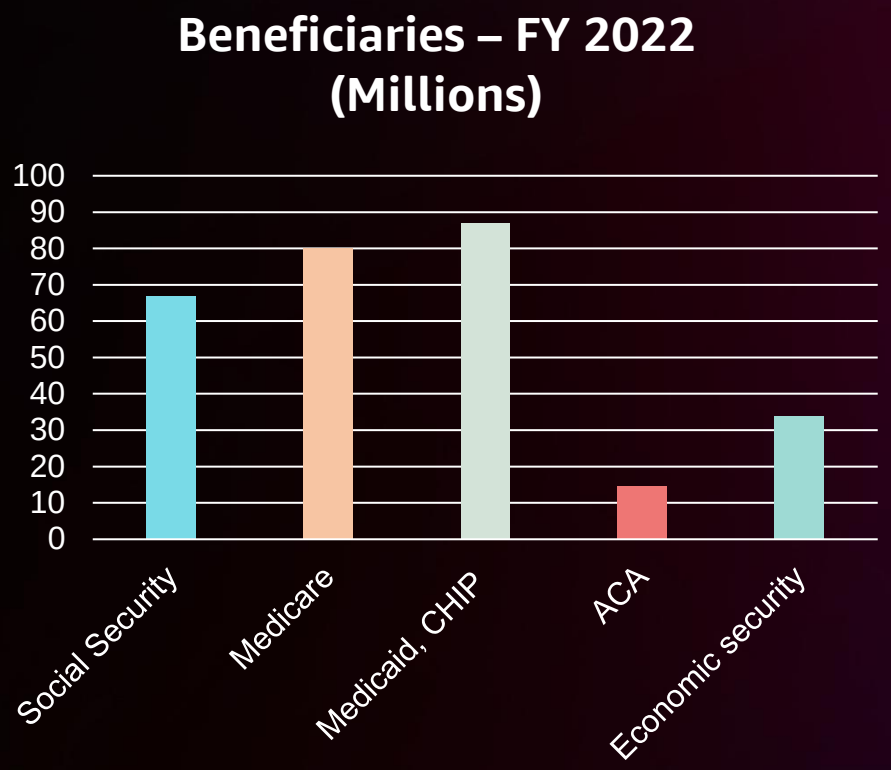
Energy
Electric/gas/water/sewer, waste management, generation/distribution

Education and research
K12 and early childhood, adult education, library

Emergency preparedness
Emergency management, emergency response

US spend – social/healthcare programs





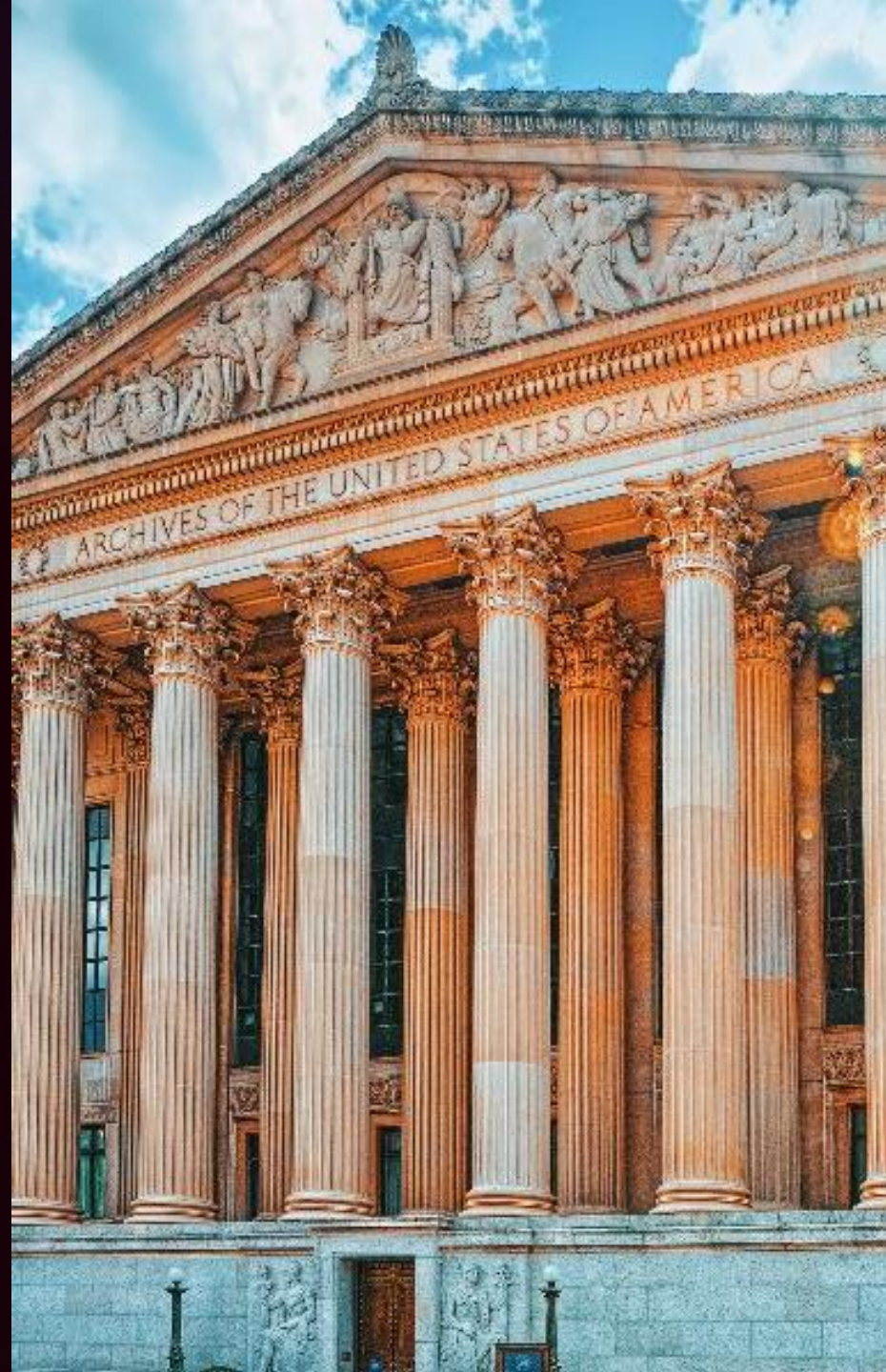
- Social security
- Medicare
- Medicaid
- Affordable Care Act (ACA)
- Unemployment insurance
- SNAP (food stamps)
- School meals
- Low income housing assistance (LIHEAP)
- Childcare assistance

***Estimated:** 56% of total ($5.8T) US spending in 2022
Source: Center on Budget and Policy Priorities – https://www.cbpp.org/research/federal-budget/where-do-our-federal-tax-dollars-go

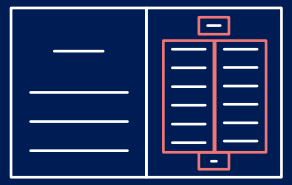
The need for intelligent document processing

The US federal government has more than 23,000 different forms that lead to more than 11.4B hours of paperwork annually*

*Source: American Action Forum – https://www.americanactionforum.org/press-release/aaf-analysis-finds-federal-government-imposes-23000-forms/



Legacy document processes do not meet today's needs

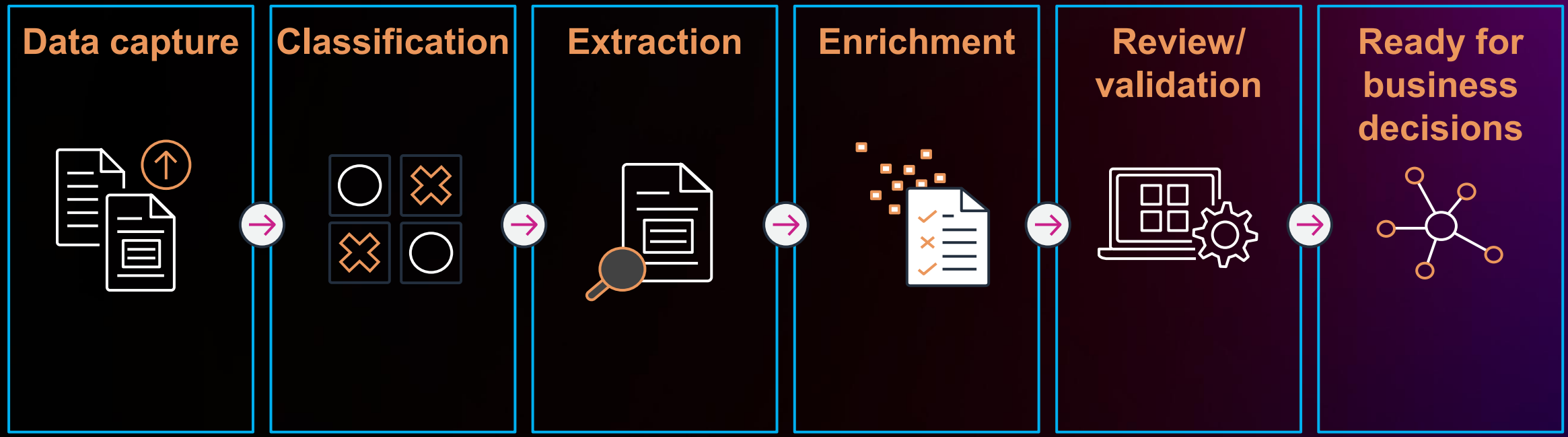


Legacy optical character recognition (OCR) and manual process are time-consuming, error-prone, and expensive

Manual processes do not scale easily with document volume

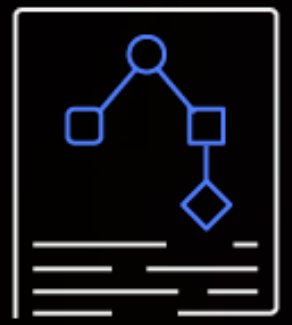
Challenging to find useful information needed for business decisions

Automate document processing workflows

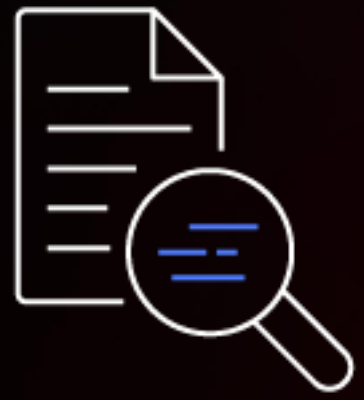


Faster document processing shortens decision cycles, which enables you to serve more constituents and have agency staff focus on higher value tasks

Summary: Primary use cases



Process automation



Search and discovery

Compliance and control

Customer case studies

Improving access to public records

Problem

The US National Archives and Records Administration (NARA) released the 1950 census data to the general public. Census data is released 72 years after a census is conducted, and it has been 10 years since the last census data for the 1940 Census was publicly released.

Solution

NARA is also leveraging machine learning (ML) to improve access to the records. Using Amazon Textract, NARA was able to extract and ingest approximately 130 million handwritten names from the 1950 census population schedules, enabling 1950 Census website visitors to search the schedules by name.

Impact

Cloud services, including AI and ML, are helping customers across the US government improve the ways they deliver their missions. AWS is proud to support NARA's mission as the Archives makes the 1950 census data available to the public.

NATIONAL ARCHIVES

Imperial College London

PanSurg

PROBLEM

Since the start of the COVID-19 pandemic, frontline healthcare workers are facing the impossible task **of cutting through a "global tidal wave" of information that might contain clues for the best possible treatments**

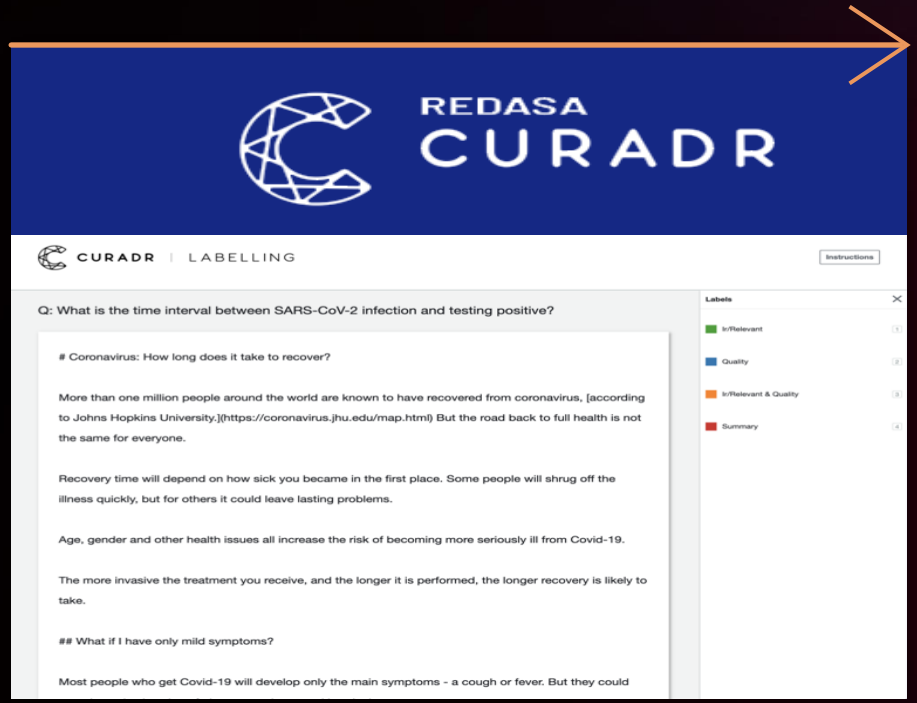
SOLUTION & IMPACT

Using a combination of Amazon ML services, including natural language search and data labeling built on Amazon Kendra and Amazon SageMaker Ground Truth, as well as human review, PanSurg REDASA (REaltime DAta Synthesis and Analysis) can analyze vast amounts of COVID-19 information in real time and quickly extract the most important insights

✓ 10,000s of hours of manual research saved

Implementing intelligent search

PANSURG REDASA (REAL-TIME DATA ANALYSIS AND SYNTHESIS)



- Document characterization
- Document summary
- Document relevance
- Topic-based curation package
- Document quality
- High impact COVID-19 natural language queries

Workshop overview and instructions

Workshop overview/structure

You will play the role of three users/personas

End user/constituent – applying for benefits

Case worker – leveraging AI/ML to evaluate submissions

Program leadership – evaluating program effectiveness

Workshop overview/structure

- Case study/scenario-based
- Prerequisites + four scenarios
- Focused on personas/mission outcomes

Improve beneficiary experience

- Reduce overall time to benefits disbursement
- Improve user experience with digital transformation

Enhance staff productivity

- Reduce manual work/ automate processes
- Enhance case review/ adjudication processes

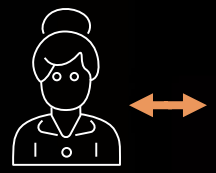
Enable program leadership

- Enable data-driven decision-making
- Enable accurate forecasting on enrollment, staffing, budgets, etc.

High-level workflow

Case workers

Program leaders/
agency staff



Constituent/
beneficiary

Application
& document
submission

Store documents
& metadata

Identify
document type

Omni-channel
notification

Extract & store
Information

Automated document
verification & scoring

Human-in-the-loop
review

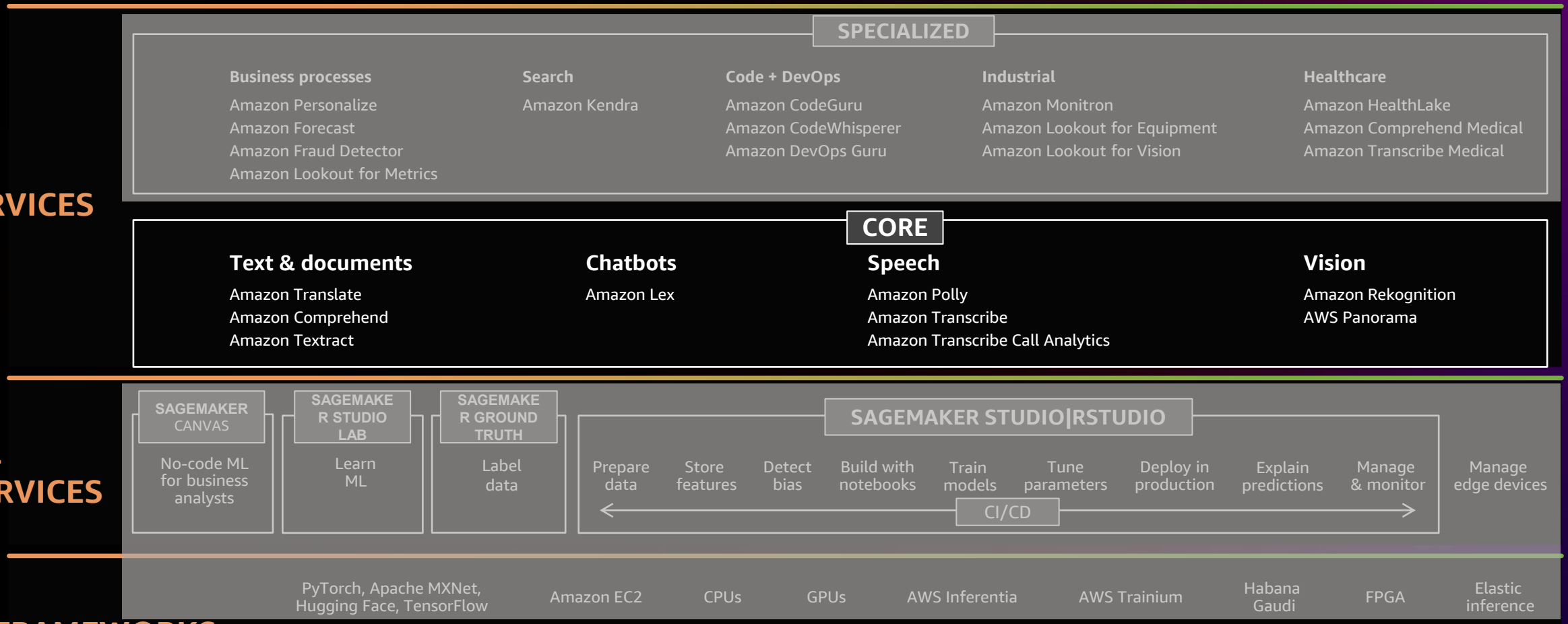
Operational dashboards
& visualization

ML driven data
analytics & insights

3rd party
verification

The AWS ML stack

BROADEST AND MOST COMPREHENSIVE SET OF MACHINE LEARNING CAPABILITIES



Workshop scenarios

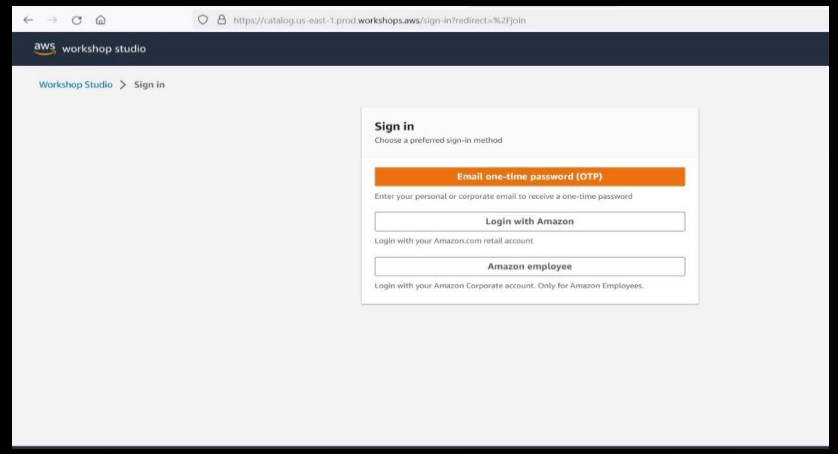
Scenario description	Outcomes
Prerequisites	• Sample documents and website URL for workshop • Familiarity with AWS AI services
Scenario 1: Standard application processing • User uploads eligibility documents (SSN, DL, passport, utility bill) • System automatically classifies the document • Text automatically extracted and stored in a database • Each document gets a score based on sample business rules • Auto-adjudication based on a specific application score threshold	• Application successfully processed • Case worker approves the case – adjudication can be automated as well, if needed
Scenario 2: Incomplete application submission • Document submission with missing fields • Document submission with face mismatch between DL and passport	• Low application score • Further review by case worker using human-in-the-loop process • Case worker denies the application due to potential failure to verify identity of applicant
Technical deep dive • Beneficiary information upload • Document upload • Document processing workflow	• Understanding of architecture for each flow • Understanding of AWS services used in he scenarios
Scenario 3: Automate interview transcription process	• Case worker is relieved of manual note taking tasks • Text transcript that is further analyzed for sentiment • Redacted version of the transcript as well to protect sensitive information
Scenario 4: Program leader/benefits administrator dashboard review	• Ability to track program-level metrics using natural language queries • Data-driven decision-making – forecast enrollment, budgets, and staffing

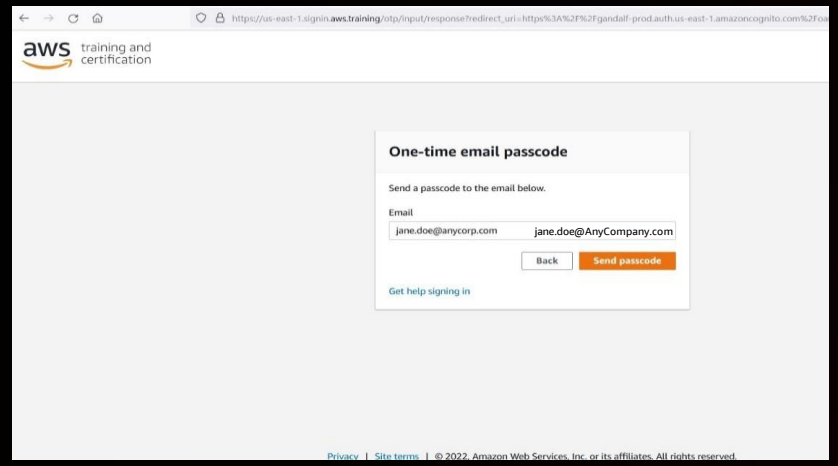
Schedule

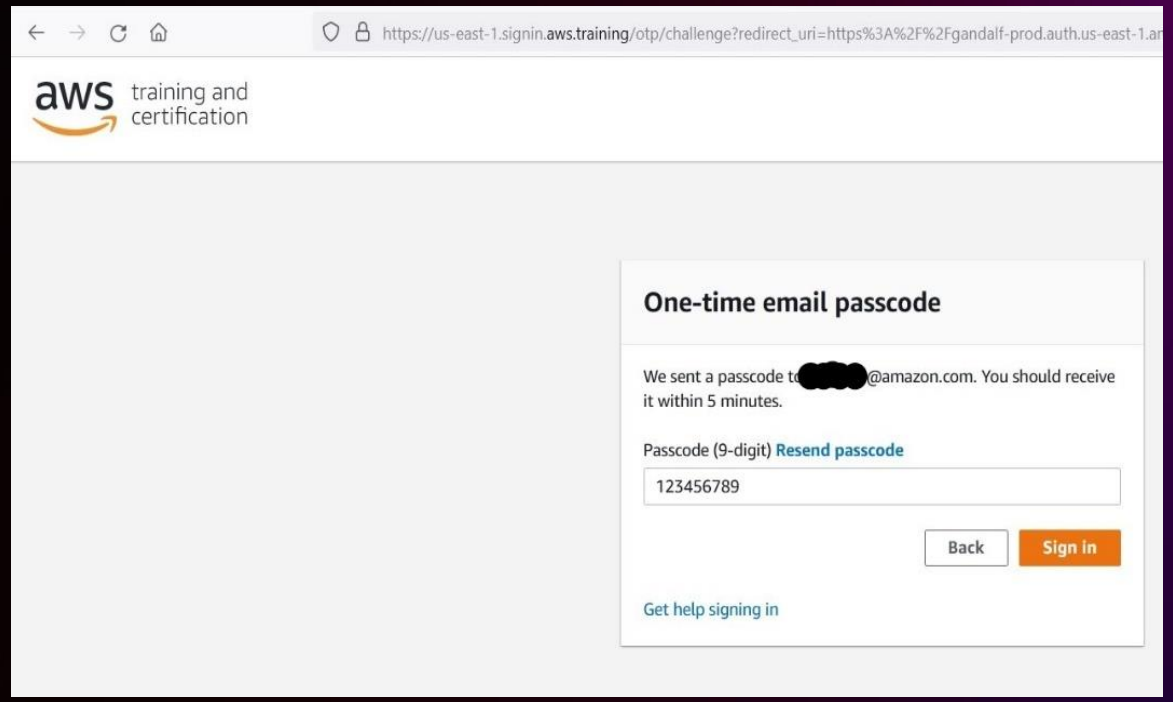
Agenda item	Time
Introduction/overview	20 minutes
Prerequisites	15 minutes
Scenario 1: Standard application processing	20 minutes
Scenario 2: Incomplete application submission	15 minutes
Technical deep dive	15 minutes
Scenario 3: Automate interview transcription process	10 minutes
Scenario 4: Program leader/benefits administrator dashboard review	15 minutes
Wrap up and next steps	10 minutes

Getting started – Step 1

- Go to https://bit.ly/3u8Btxq
- Use your email to sign in with one-time Password (OTP)



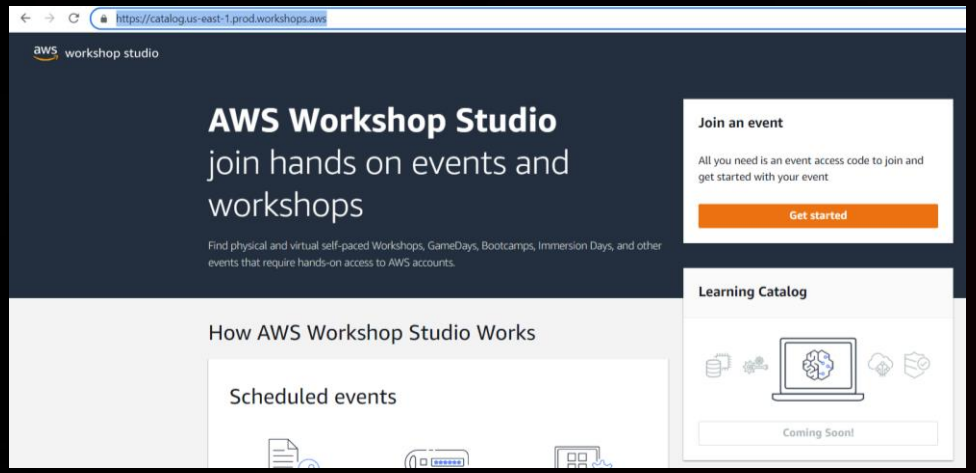


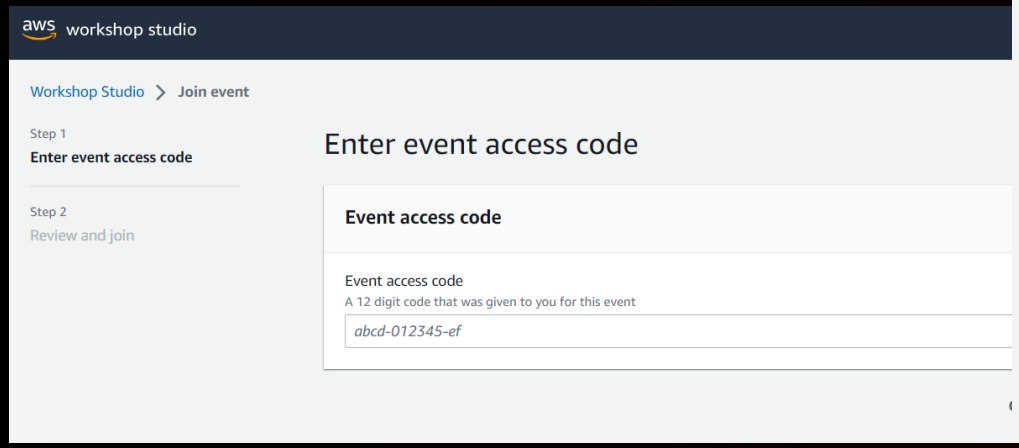


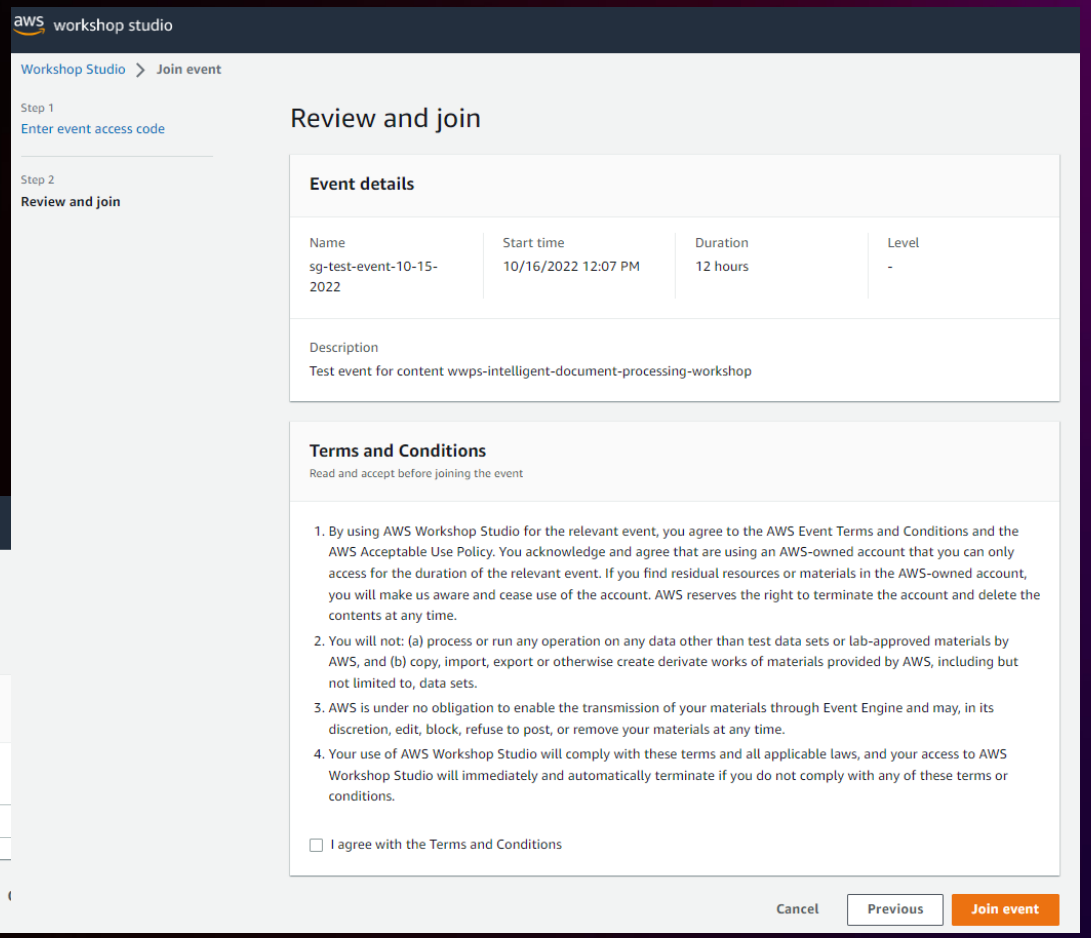
Getting started – Step 2

Use the event access code provided to you to join the workshop

Note that this is part of the bit.ly URL

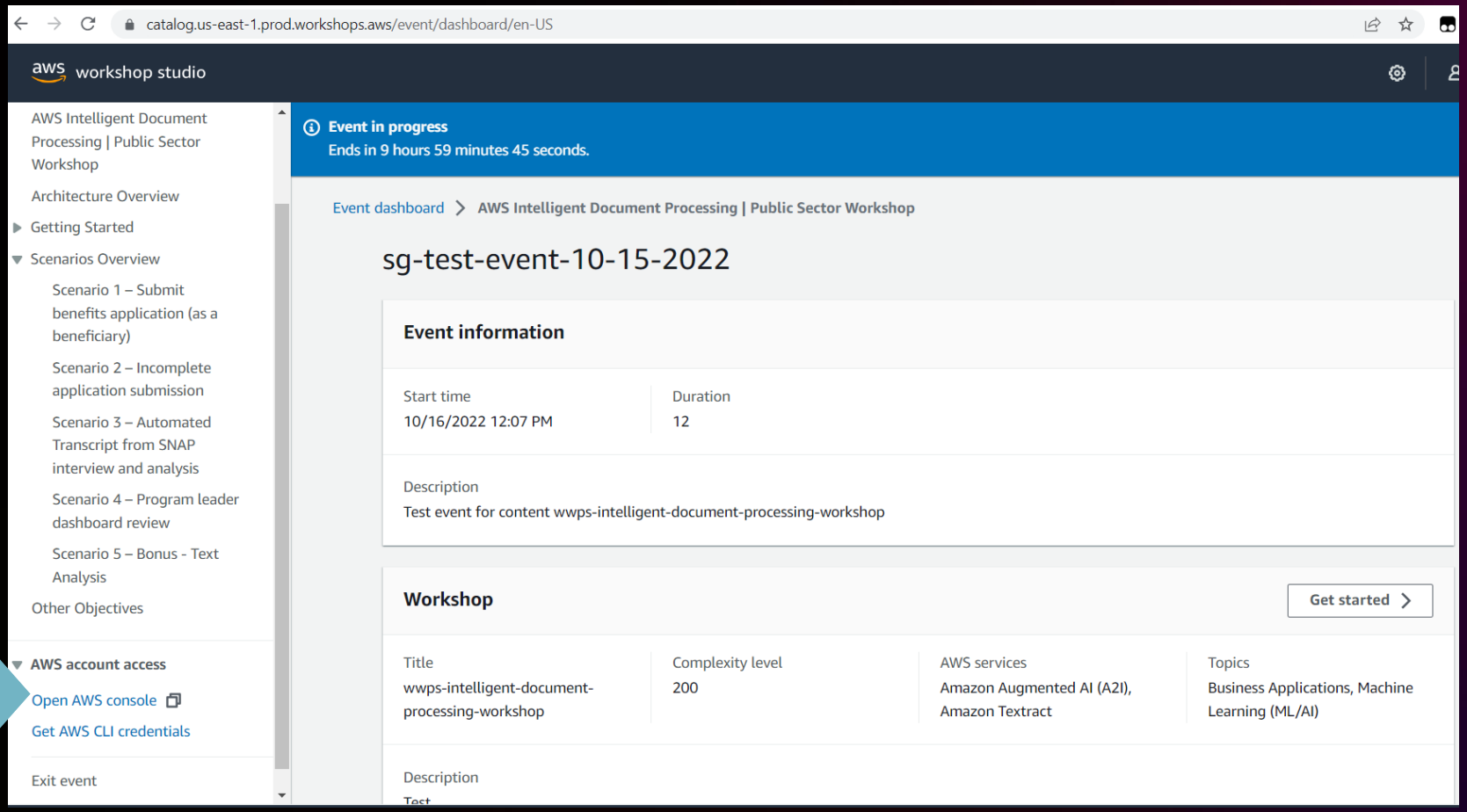






Getting started – Step 3

- Access the AWS Management Console in the left-hand panel



Scenario description

Prerequisites

Scenario 1: Standard application processing

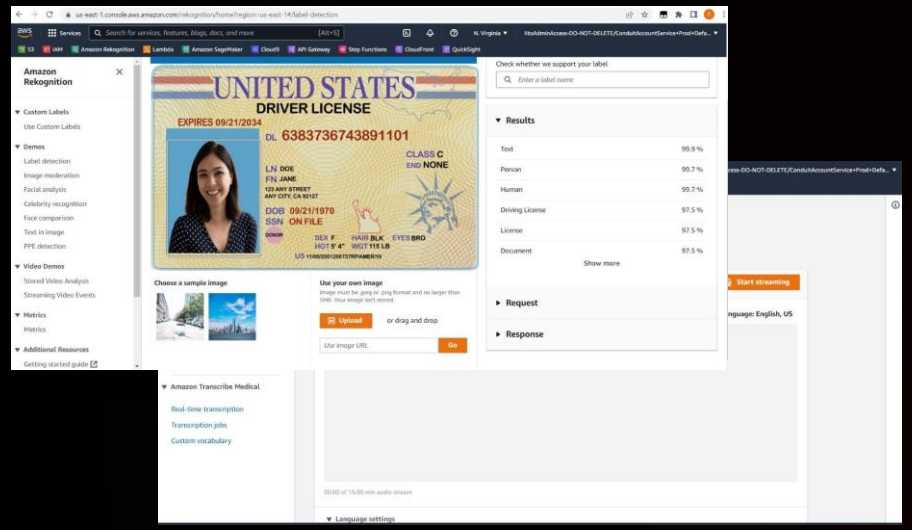
Scenario 2: Incomplete application submission

Scenario 3: Automate interview transcription process

Scenario 4: Program leader dashboard review

Prior to running the workshop scenarios, familiarize yourself with Amazon AI services used in this workshop by following the instructions. Use the AWS Management Console and sample documents.

IMPORTANT – Sample documents are already provided to you and are based on **synthetic data** with fictitious names, addresses, etc.; please don't use your own personal info on lab accounts



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Scenario description
Prerequisites
Scenario 1: Standard application processing
Scenario 2: Incomplete application submission
Scenario 3: Automate interview transcription process
Scenario 4: Program leader dashboard review

Objective

You are going to submit a benefits application (SNAP, Medicaid, or others) as a constituent. This application is processed by the state department of human services.

Core services used

- Amazon Textract
- Amazon Rekognition

OUTCOMES

- High application score (out of 100)
- Case worker approves the application/potential automation of this approval without any human intervention based on the program and agency policies.
- Applicant gets a notification of approval

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Scenario description
Prerequisites
Scenario 1: Standard application processing
Scenario 2: Incomplete application submission
Scenario 3: Automate interview transcription process
Scenario 4: Program leader dashboard review

Objective

Submit an application with incomplete documentation/mismatch between documents – say, different photos in identity verification documents

Core services used

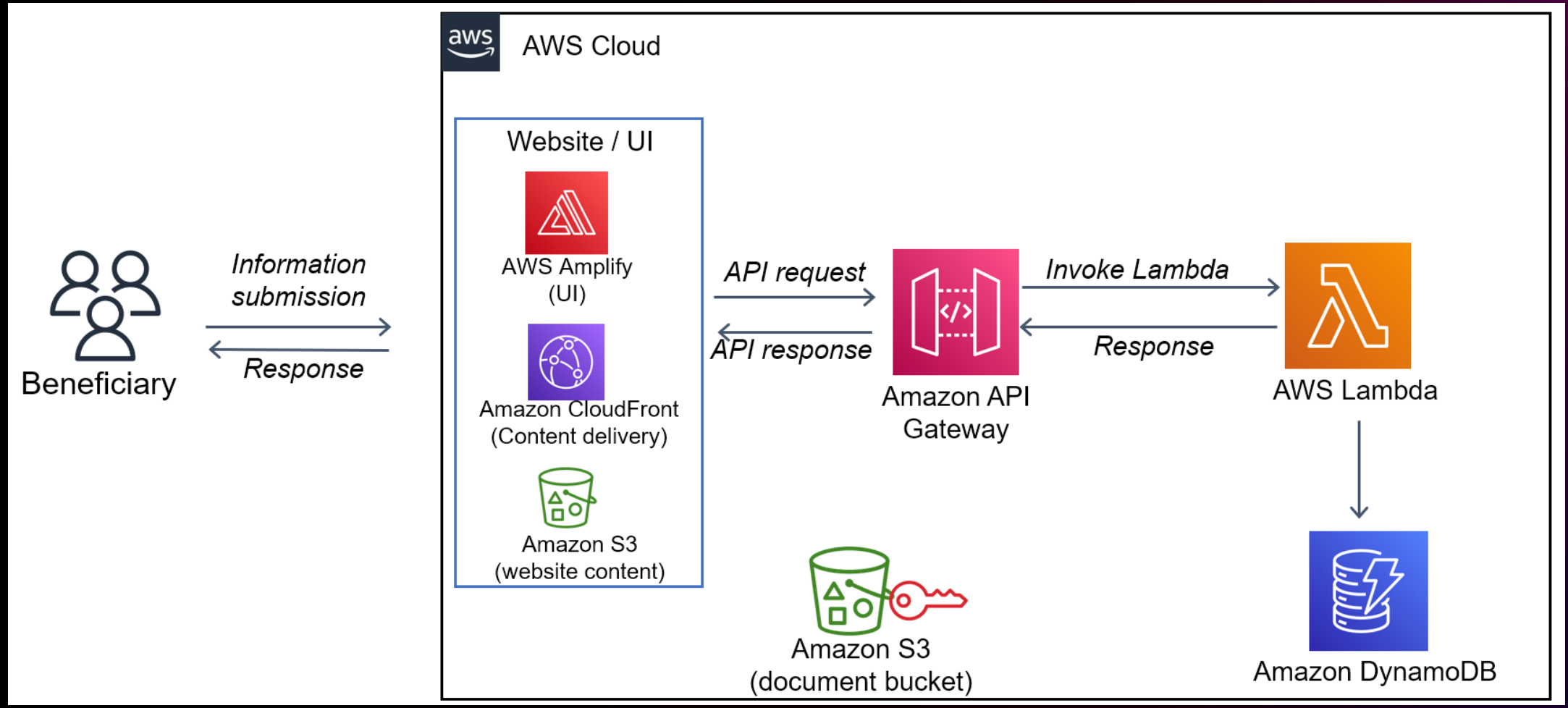
- Amazon Textract
- Amazon Rekognition
- Amazon Augmented AI (A2I)

OUTCOMES

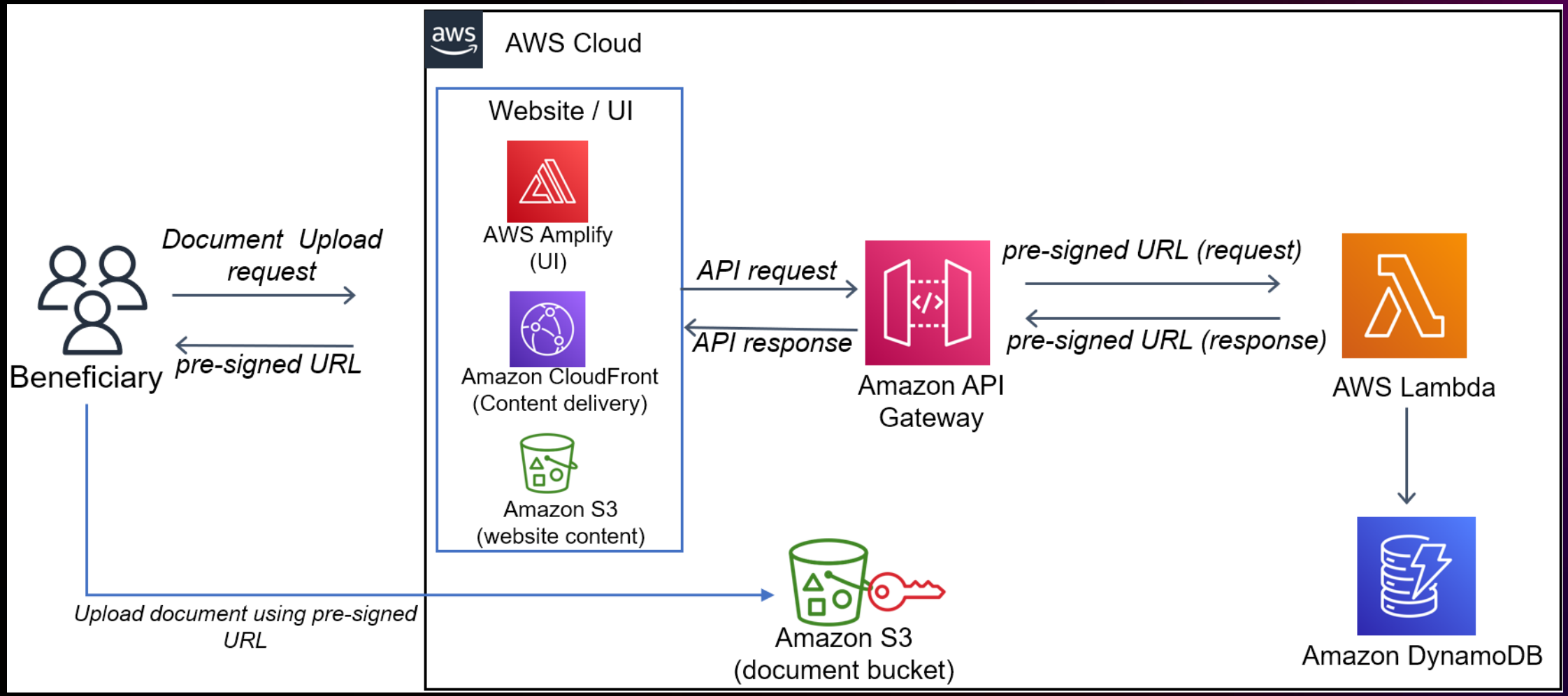
- Low application score
- Further review and potential corrections by case worker using human-in-the-loop (Amazon A2I process)
- Case worker denies the application due to potential failure to verify identity of applicant

https://catalog.us-east-1.prod.workshops.aws/

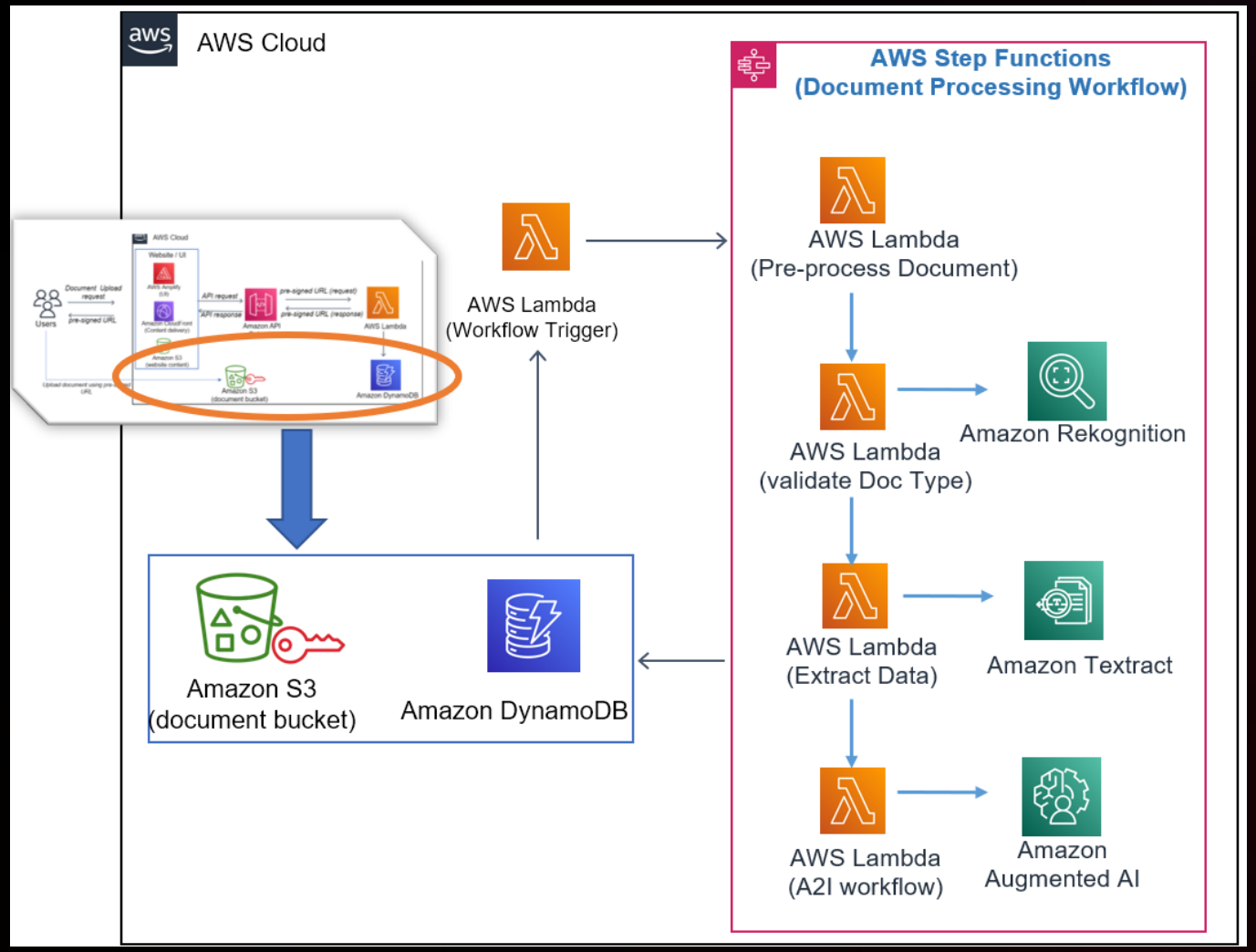
Technical Deep Dive – Beneficiary information upload



Technical Deep Dive – Document upload



Technical Deep Dive – Document processing workflow



Scenario description
Prerequisites
Scenario 1: Standard application processing
Scenario 2: Incomplete application submission
Scenario 3: Automate interview transcription process
Scenario 4: Program leader dashboard review

Objective

Automatically transcribe a short interview between the case worker and the constituent to confirm eligibility before benefits are approved

Core services used

- Amazon Textract
- Amazon Transcribe

OUTCOMES

- Interview transcript process is automated and the case worker is relieved of manual note taking tasks
- You get a text transcript that can be further analyzed for sentiment
- You get a redacted version of the transcript as well to protect sensitive information, such as SSN, address, etc. – only authorized people have access to the original transcript

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Scenario description

Prerequisites

Scenario 1: Standard application processing

Scenario 2: Incomplete application submission

Scenario 3: Automate interview transcription process

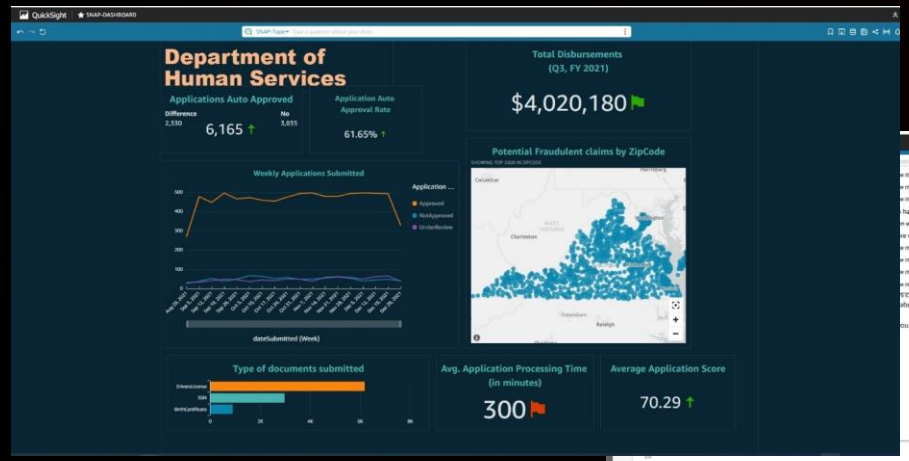
Scenario 4: Program leader dashboard review

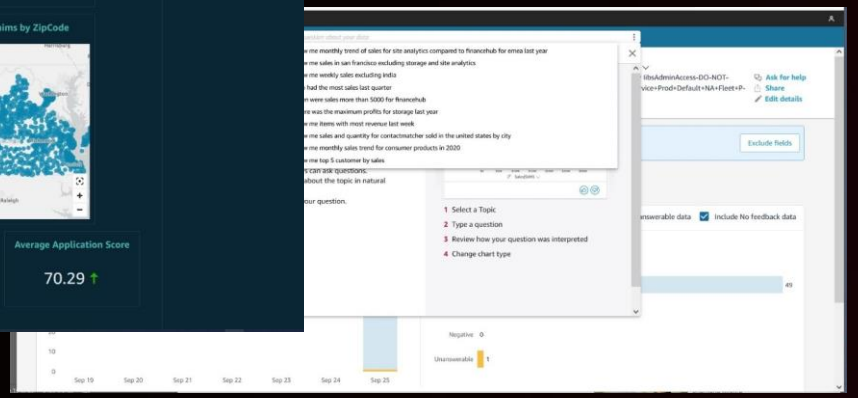
Objective

Enable the program leaders, benefits administrators and directors to track program level metrics; helps take program/policy decisions based on deep insights into data.
As an example, these decisions can include staff forecasting, budget or benefits enrollment forecasting

Core services used

- Amazon QuickSight/QuickSight Q





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Summary and next steps

We’re here to help you with your mission

AMAZON CUSTOMER RESOURCES

AWS Professional Services
Skills and experience from AWS experts to supplement your team

AWS Migration Acceleration Program (MAP)
Use AWS methodology and financial incentives* to accelerate contact center migrations to the cloud

AWS support
Go beyond reactive break-fix with proactive support programs

AWS Training and Certification
Advance your team’s skills and build cloud fluency by learning from AWS experts

Learn from Amazon customer service
Hear how Amazon’s culture of innovation drives our customer experience

AWS Partners
A global network of companies with deep AWS expertise

*Subject to qualification criteria

Call to action/next steps

DISCOVERY WORKSHOP to PROOF OF CONCEPT

- Identify relevant use cases for your mission
- Start a proof of concept

WHO CAN HELP ?

Work with AWS experts

- AWS Partners
- AWS ProServe
- ML Solution Labs

Thank you!

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