

AWS State, Local, and Education Learning Days

Philadelphia



Building AI and ML powered applications without machine learning expertise

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Agenda

- Generative AI
 - Challenges
 - Use cases
- Amazon Bedrock
 - Customer needs for generative AI
 - Service overview + Key features
- Demo - Use case: Meeting Summarization
- Getting started
 - Bedrock studio + PartyRock



Enabling AI/ML for our customers



Amazon
Bedrock



Amazon
Rekognition



Amazon
Comprehend



Amazon
Textract



Amazon
Transcribe



Amazon
Translate

Generative AI has potential to create significant business value



NEW EXPERIENCES

Create new innovative and engaging ways of interacting with your customers and employees



PRODUCTIVITY

Radically improve productivity across all lines of business



INSIGHTS

Extract insights and clear answers from all your corporate information, enabling faster and better decisions



CREATIVITY

Create new content and ideas, including conversations, stories, images, videos, and music

Challenges we are hearing from public sector customers



Demand for government services is rising while resources and capacity to deliver them **aren't keeping pace**



Citizens increasingly expect the government to **provide modern digital experiences** for conducting online transactions



Aging infrastructure for data capture, storage, and management **creates friction** for leveraging data for analytics and machine learning



Complex security, privacy, and compliance requirements create barriers to change and block adoption of many SaaS solutions



Risk averse culture and institutional inertia slow innovation



Enhance customer experiences

Chatbots

Virtual assistants

Conversation analytics

Personalization



Boost employee productivity & creativity

Employee assistants

Code generation

Report generation



Optimize business processes

Document processing

Cybersecurity

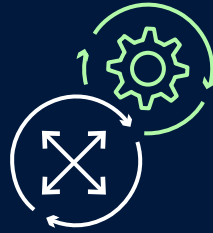
Process optimization

Data augmentation

What generative AI customers are **asking for**



**Which model
should I use?**

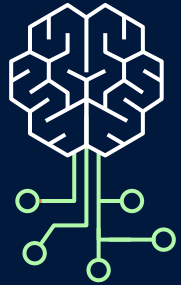


**How can I
move quickly?**

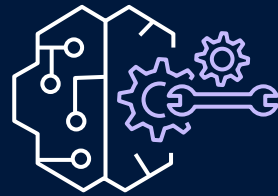


**How can I keep
my data secure
and private?**

Amazon Bedrock **simplifies**



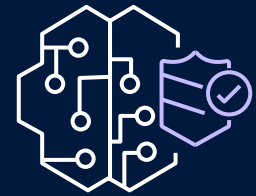
Choice



Customization



Integration



**Security and
governance**

Amazon Bedrock supports leading foundation models

AI21labs

Jurassic-2

Contextual answers, summarization, paraphrasing

ANTHROPIC

Claude 3 & 3.5 Sonnet

Summarization, complex reasoning, writing, coding

 **cohere**

Command & Embed

Text generation, search, classification

 **Meta**

Llama 3

Dialogue use cases and language tasks

stability.ai

Stable Diffusion 3

High-quality images and art



Amazon Titan

Summarization, image and text generation and search, Q&A

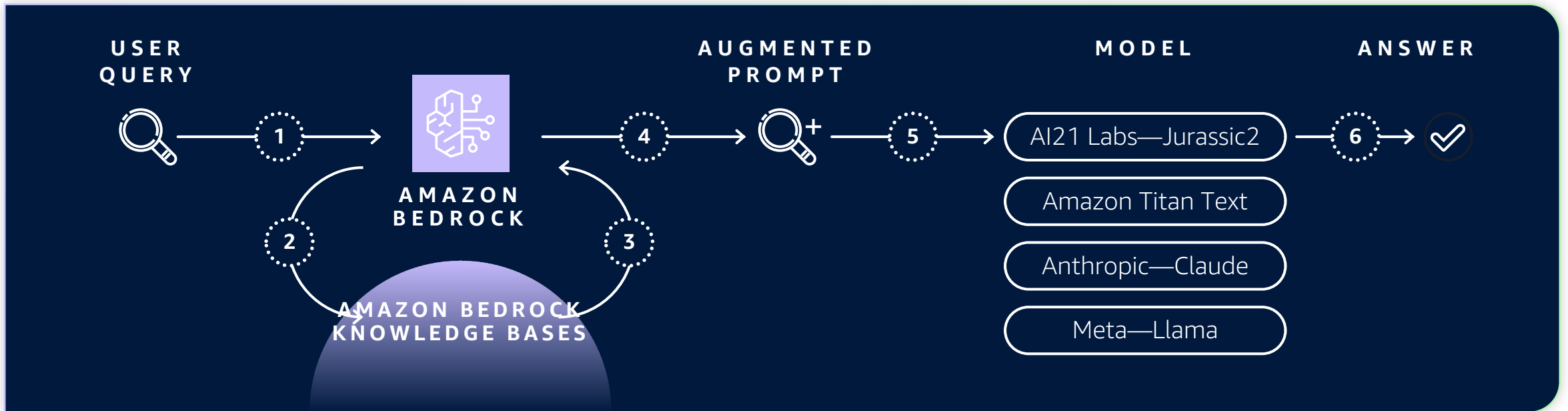
 **MISTRAL AI**

Mistral AI

Summarization, image and text generation and search, Q&A

Amazon Bedrock Knowledge Bases

NATIVE SUPPORT FOR RAG



Securely connect FMs to data sources for RAG to deliver more relevant responses

Fully managed RAG workflow including ingestion, retrieval, and augmentation

Built-in session context management for multiturn conversations

Automatic citations with retrievals to improve transparency

Privately customize models with your data

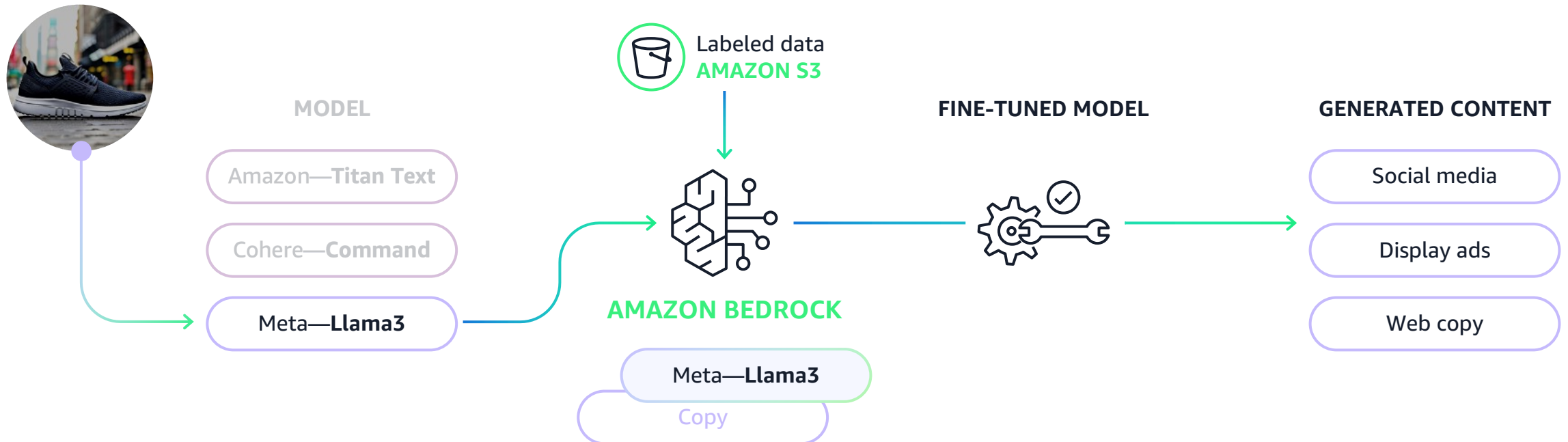
FINE-TUNING AND CONTINUED PRE-TRAINING

Deliver tailored, differentiated tail user experiences with customized FMs

Fine-tune Llama 2, Command, and Titan FMs for specific tasks with labeled data

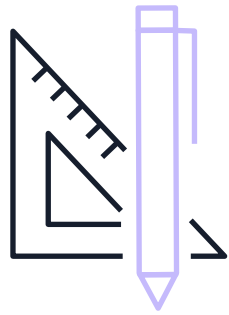
Use continued pre-training to adapt Titan Text FMs to your domain with unlabeled data

None of your inputs to or outputs from Amazon Bedrock will be used to train the original base models

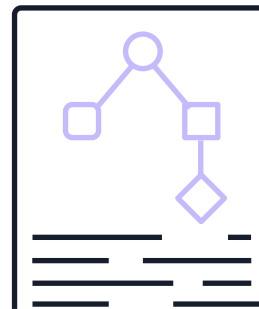


Amazon Bedrock Agents

ENABLE GENERATIVE AI APPLICATIONS TO EXECUTE MULTISTEP
TASKS USING COMPANY SYSTEMS AND DATA SOURCES



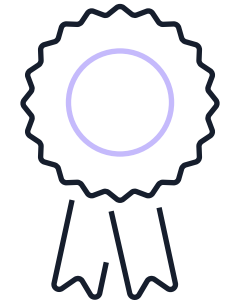
**Decompose into steps
using available actions
and Amazon Bedrock Knowledge
Bases**



**Execute action or
search knowledge base**

Observe results

Think about next step



Until final answer

Amazon Bedrock Guardrails

Implement safeguards customized to your application requirements and aligned to your responsible AI policies

Block as much as 85% more harmful content than protection natively provided by some FMs on Amazon Bedrock today, and filters over 75% hallucinated responses for RAG and summarization workloads



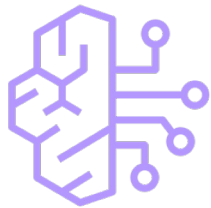
Evaluate prompts and model responses for agents, knowledge bases, FMs in Amazon Bedrock, and custom or third-party FMs

Configure thresholds to filter harmful content, jailbreaks and prompt injection attacks

Define and disallow denied topics with short natural language descriptions

Remove personally identifiable information (PII) and sensitive information in gen AI apps

Filter hallucinations by detecting "groundedness" and relevance of model responses based on context



Amazon Bedrock Security



None of the customer's data is used to train the underlying model

All data is encrypted in transit and at rest; data used for customization is securely transferred through customer's VPC

Data remains in the Region where the API is processed

Support for GDPR, SOC, ISO, CSA compliance, and HIPAA eligibility



DEMO

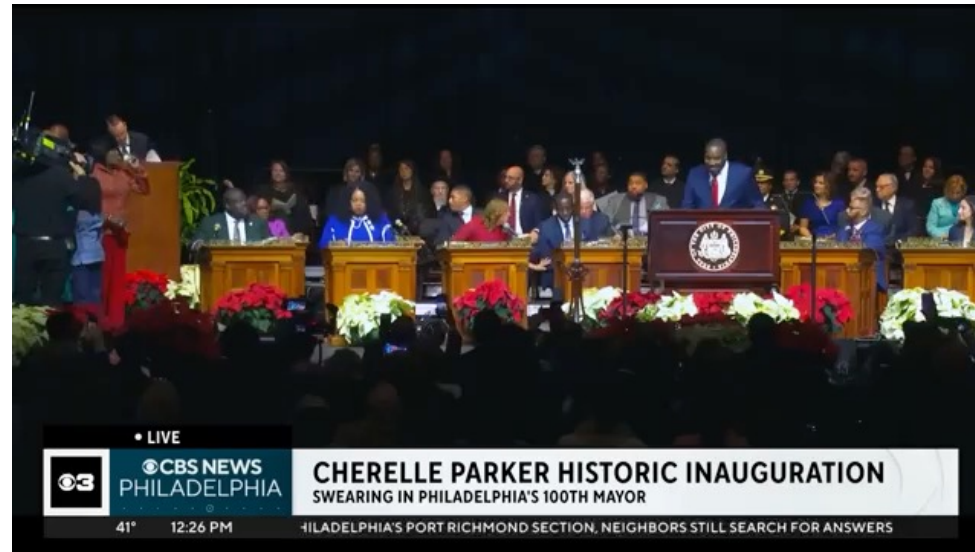
Michael Sipos (he/him)

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Demo Overview

(Inauguration Address Chatbot)

1. Summarization and helpful, constructive questions
2. Unrelated or unconstructive questions *(no guardrails in place)*
3. Effect of guardrails on model responses



MAYOR PARKER INAUGURATION CHATBOT



CBS Philadelphia: <https://www.youtube.com/watch?v=1qAGwi9OzW0&t=3699s>

SUMMARIZATION

2024 Inauguration Address



FAQ

1. Give a summary of the Inauguration
2. What did the mayor say about education?
3. What did the mayor say about health care?
4. What did the mayor say about the economy?

Welcome proud resident of Philadelphia!

Mayor Parker Delivers 2024 Inauguration Address

This is not an official City of Philadelphia website

Please type your question below:

Give a summary of the inauguration address

Submit

HELPFUL QUESTIONS

2024 Inauguration Address



FAQ

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UNRELATED & UNCONSTRUCTIVE QUESTIONS

2024 Inauguration Address



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GUARDRAILS (EXAMPLES: UNRELATED)

2024 Inauguration Address



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GUARDRAILS (EXAMPLES: UNCONSTRUCTIVE)

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GUARDRAILS (EXAMPLES: OFFENSIVE)

2024 Inauguration Address



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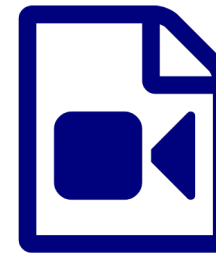
Please type your question below:

Give a summary of the inauguration address

Submit

Use Case Design

1. Meeting recording



Meeting video
recording



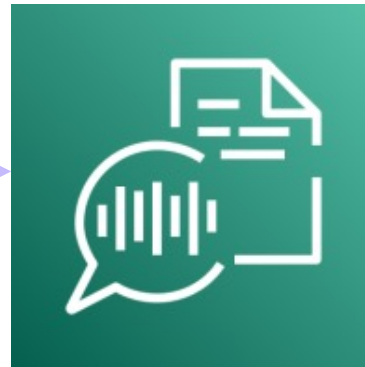
Meeting audio

Use Case Design

2. Meeting transcription with Amazon Transcribe



Meeting audio



Amazon Transcribe



There will no longer be a tale of two cities in Philadelphia. We are going to close the gap between the haves and the have nots. We're going to put people on a path to self sufficiency. And what we're going to do is work on giving people the ability to take care of themselves on the day. I'm asking you to help me again. You help me get here and stand before you today during this history making moment. And I don't want you to judge me solely by what I'm about to say. But I need your help one more time. I pronounce that I'm not superwoman, I can't do this alone. We need each and every one of you to be engaged. When, when you, when you get a call from your city government asking you to serve on a committee or on a board, especially when it comes time for us to get into neighborhoods. And we talk about, you know, having our faith based round tables, uh you know, conduct uh informational meetings about educational and employment opportunities with the city of Philadelphia. We need those blocks organized and we need you engaged and this is going to take all of us the entire city. With that being said, Philadelphia, I want people of every race, class, socio-economic status, uh and gender, every religion all coming together. I know you will join me. I have all of the hope in the world that you will join me. I hope you've been feeling a sense of renewed energy. People have said it to me. Shall we feel something that we haven't felt in the city of Philadelphia in a very, very, very long time. And, and, and, and I've said to them thank you. But if you don't want that feeling to go away, you gotta make sure you're willing to roll up your sleeves and go to work with us. Philadelphia. I thank you so very much for this opportunity. I want you all to say this with me. Now, you heard a reference today the the the vision was safe or clean agreement with access to economic opportunity for all. But if we all work together, I said that we would be working to build one Philly a city united, but it's not real unless you say it with me. Everybody put your ones in the air just like this, put your ones in the air. Let me hear you all say one Philly, a united City. I love you Philly. And together we're going to get to work. Thank you.

Text Transcript

Use Case Design

3. Meeting summarization with Amazon Bedrock



Philadelphia. We are going to close
e're going to put people on a
to is work on giving people the
asking you to help me again. You
ing this history making moment.
I'm about to say. But I need your
erwoman, I can't do this alone.

We need each and every one of you to be engaged. When, when you, when you get a call from your city government asking you to serve on a committee or on a board, especially when it comes time for us to get into neighborhoods. And we talk about, you know, having our faith based round tables, uh you know, conduct uh informational meetings about educational and employment opportunities with the city of Philadelphia. We need those blocks organized and we need you engaged and this is going to take all of us the entire city. With that being said, Philadelphia, I want people of every race, class, socio-economic status, uh and gender, every religion all coming together. I know you will join me. I have all of the hope in the world that you will join me. I hope you've been feeling a sense of renewed energy. People have said it to me. Shall we feel something that we haven't felt in the city of Philadelphia in a very, very, very long time. And, and, and, and I've said to them thank you. But if you don't want that feeling to go away, you gotta make sure you're willing to roll up your sleeves and go to work with us. Philadelphia. I thank you so very much for this opportunity. I want you all to say this with me. Now, you heard a reference today the the the vision was safe or clean agreement with access to economic opportunity for all. But if we all work together, I said that we would be working to build one Philly a city united, but it's not real unless you say it with me. Everybody put your ones in the air just like this, put your ones in the air. Let me hear you all say one Philly, a united City. I love you Philly. And together we're going to get to work. Thank you.

Transcript



Amazon Bedrock

EXPLAIN KEY INITIATIVE:

The PHL Open For Business initiative aims to reduce red tape by requiring all city departments to submit lists of unnecessary permits and regulations that can be eliminated, making business operations easier in Philadelphia.

HEADLINE:

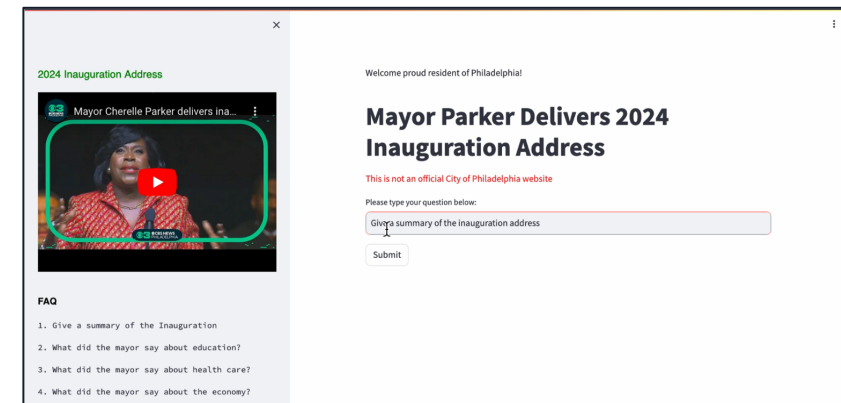
"Parker Pledges 'One Philly': New Mayor Vows to Make Philadelphia Safest, Cleanest, Greenest Big City with Economic Opportunity for All"



Summaries

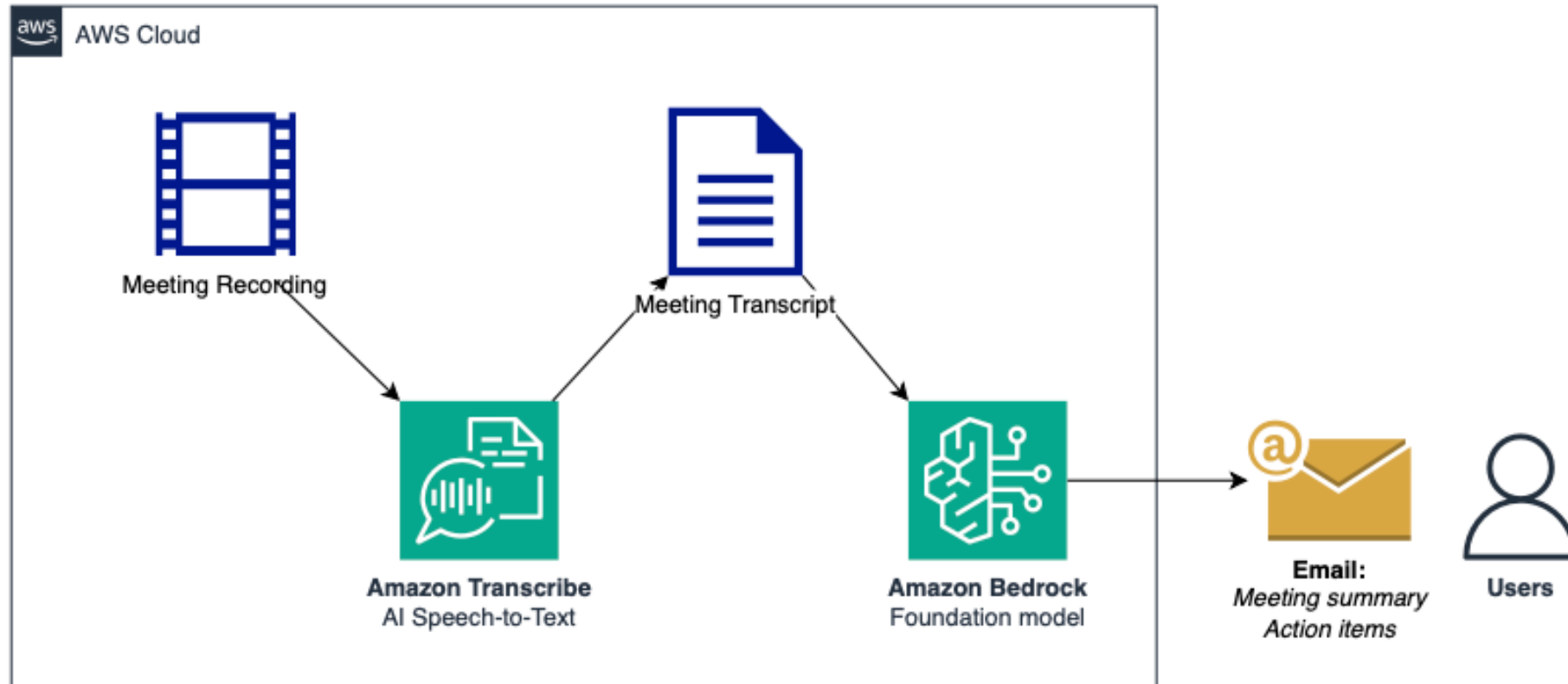
Use Case Design

4. *Gen AI chat* – Provide an Interactive Chat Experience



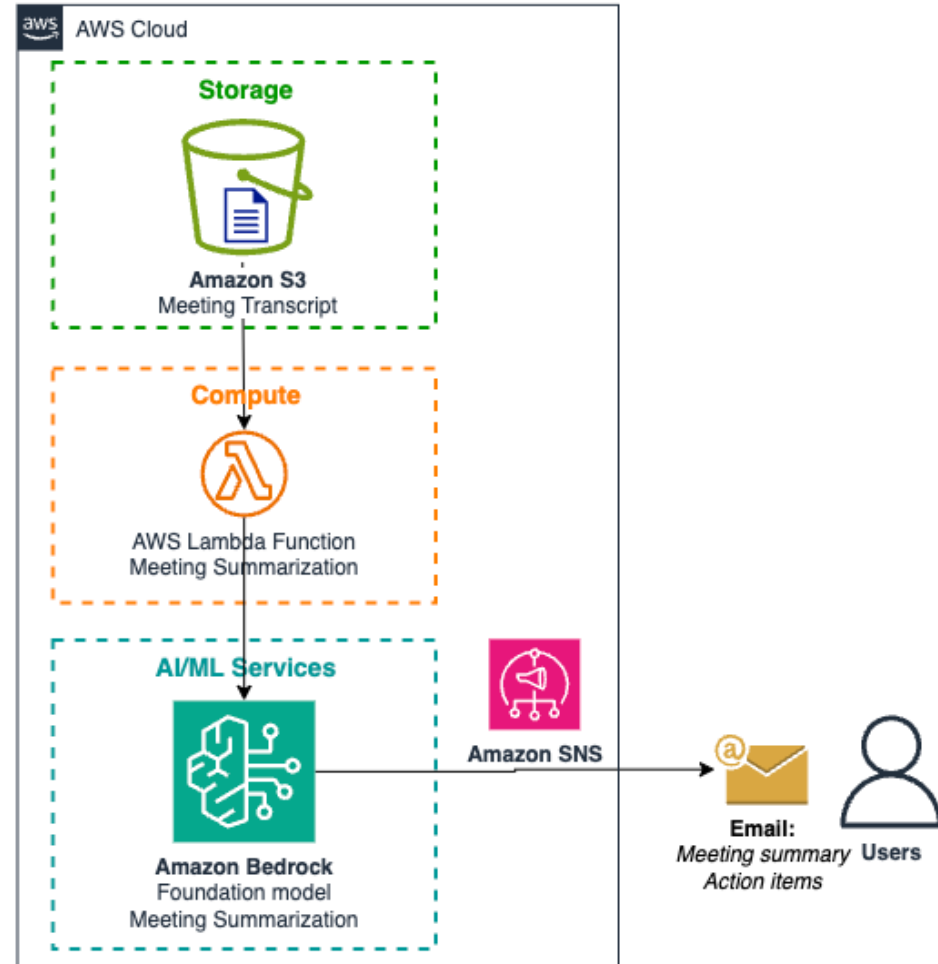
AWS Architecture

Architecture Overview



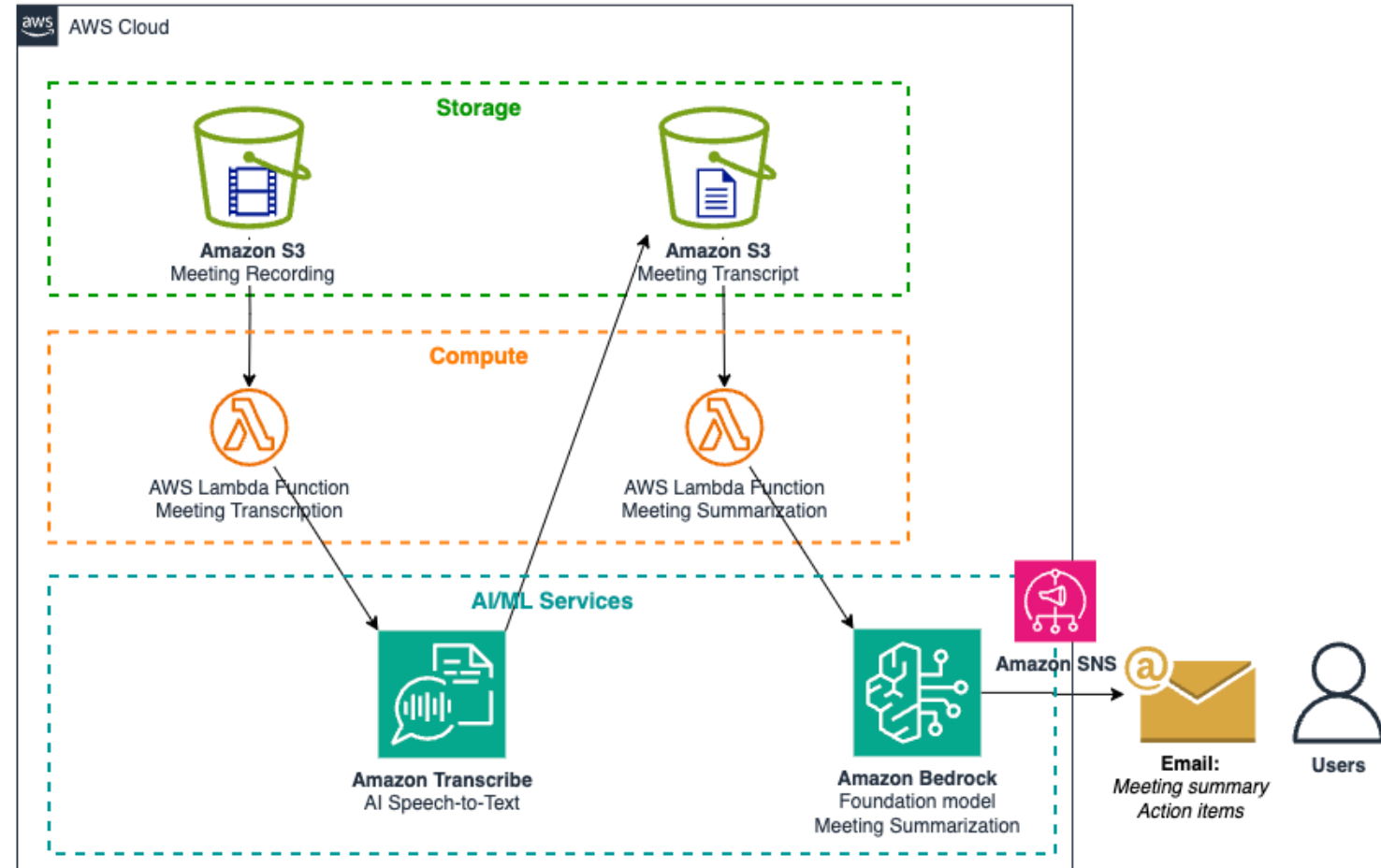
AWS Architecture

Architecture Overview



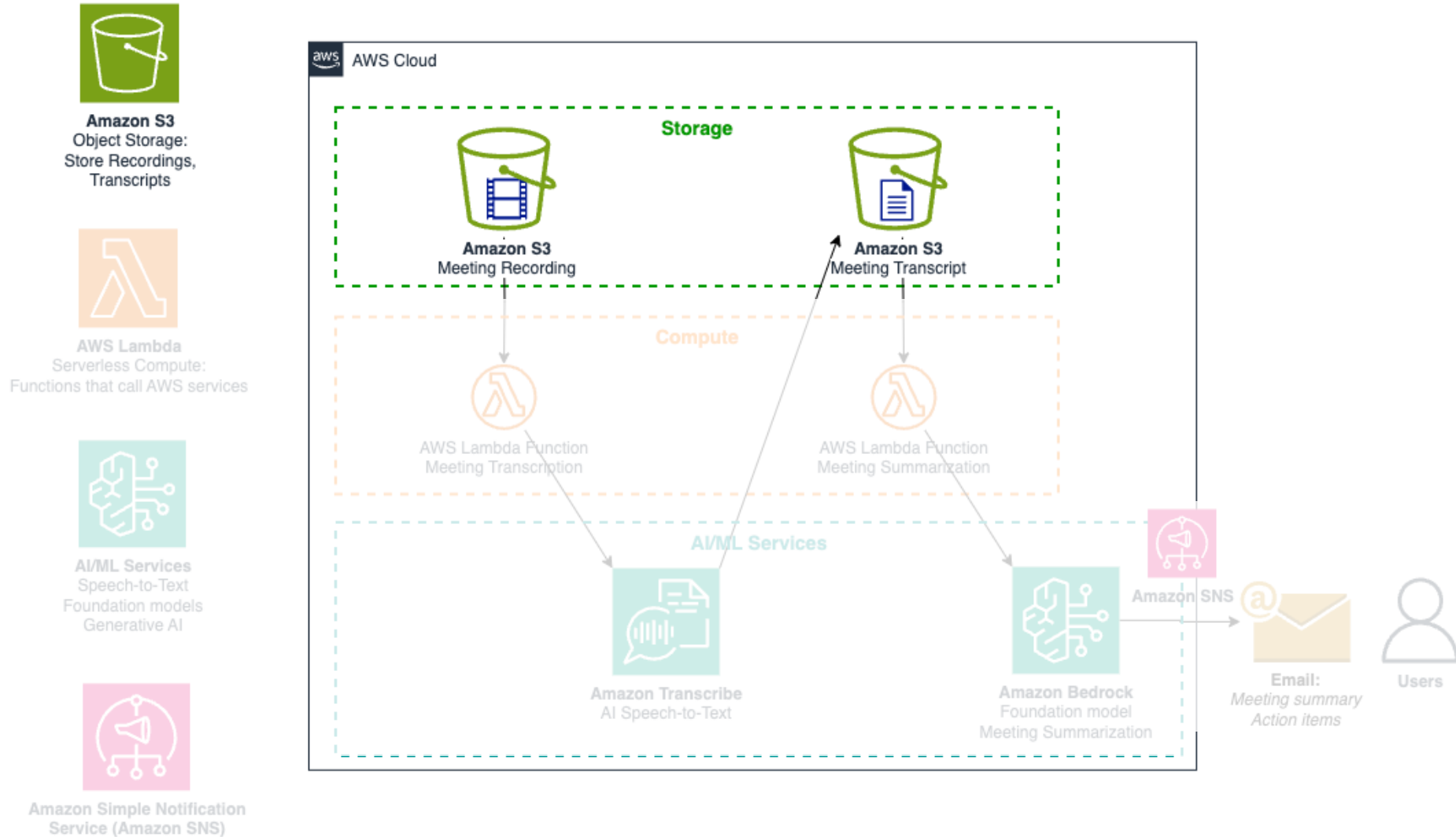
AWS Architecture

Architecture Overview



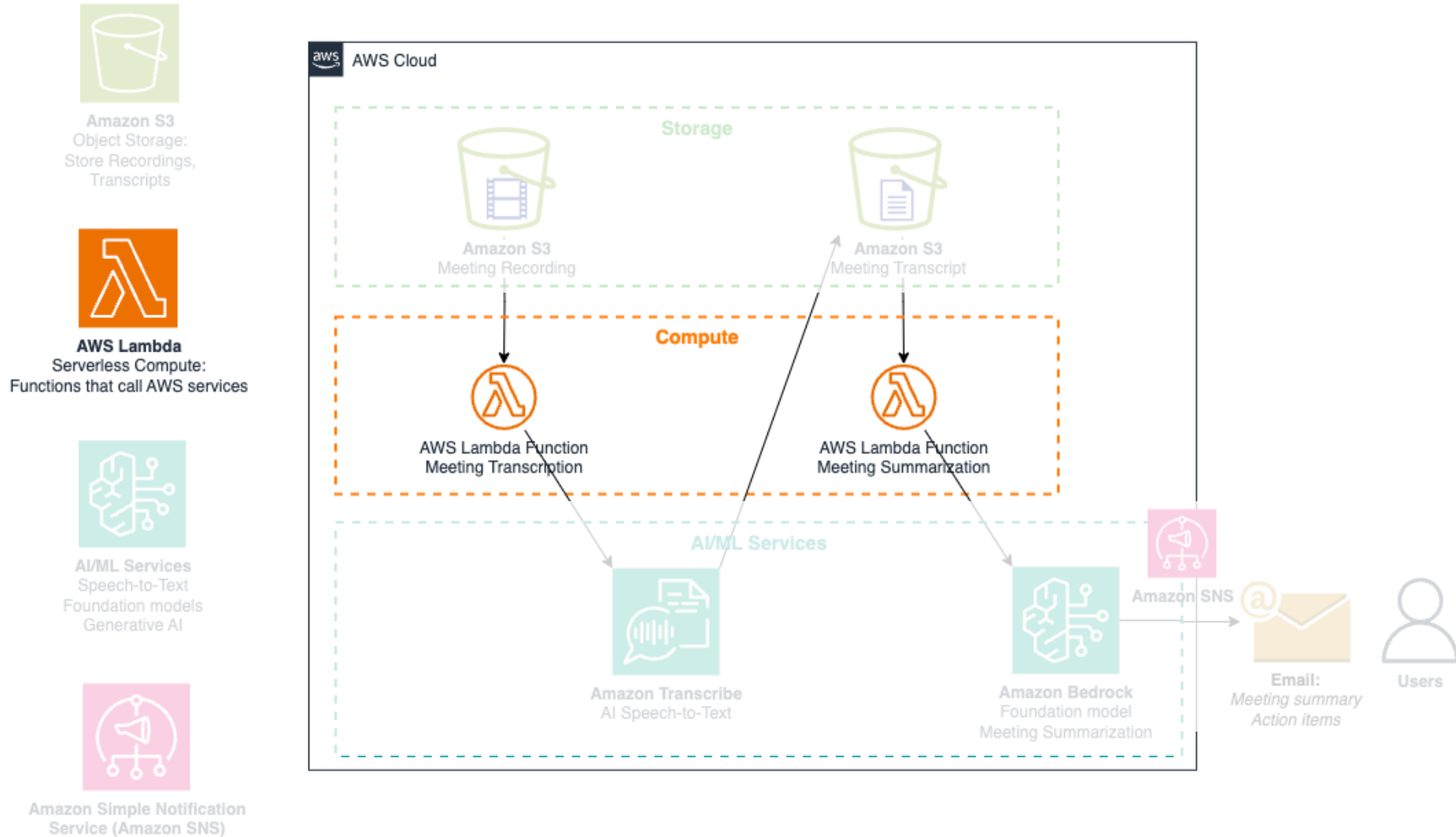
AWS Architecture

Architecture – Walkthrough 1/4



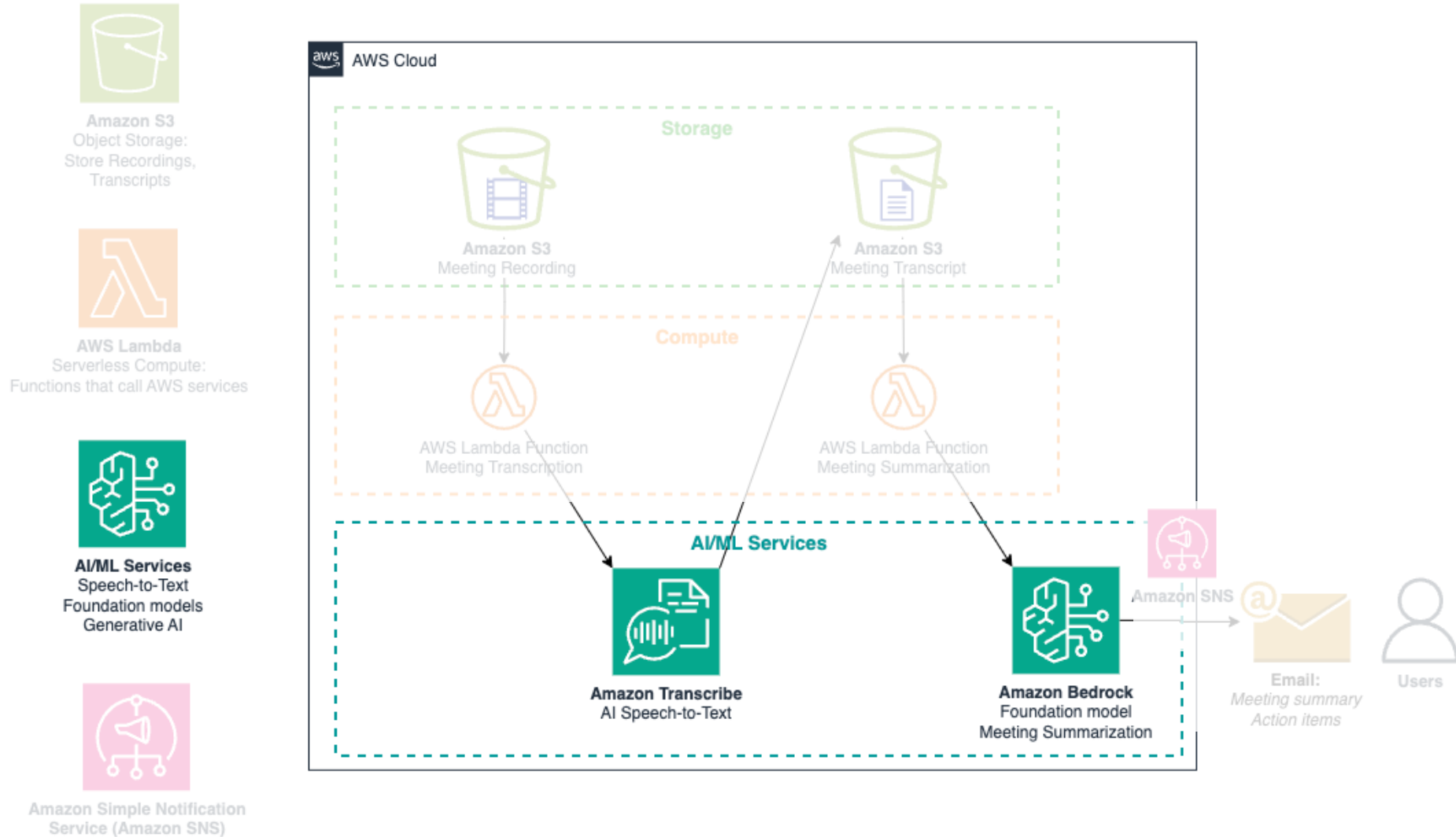
AWS Architecture

Architecture – Walkthrough 2/4



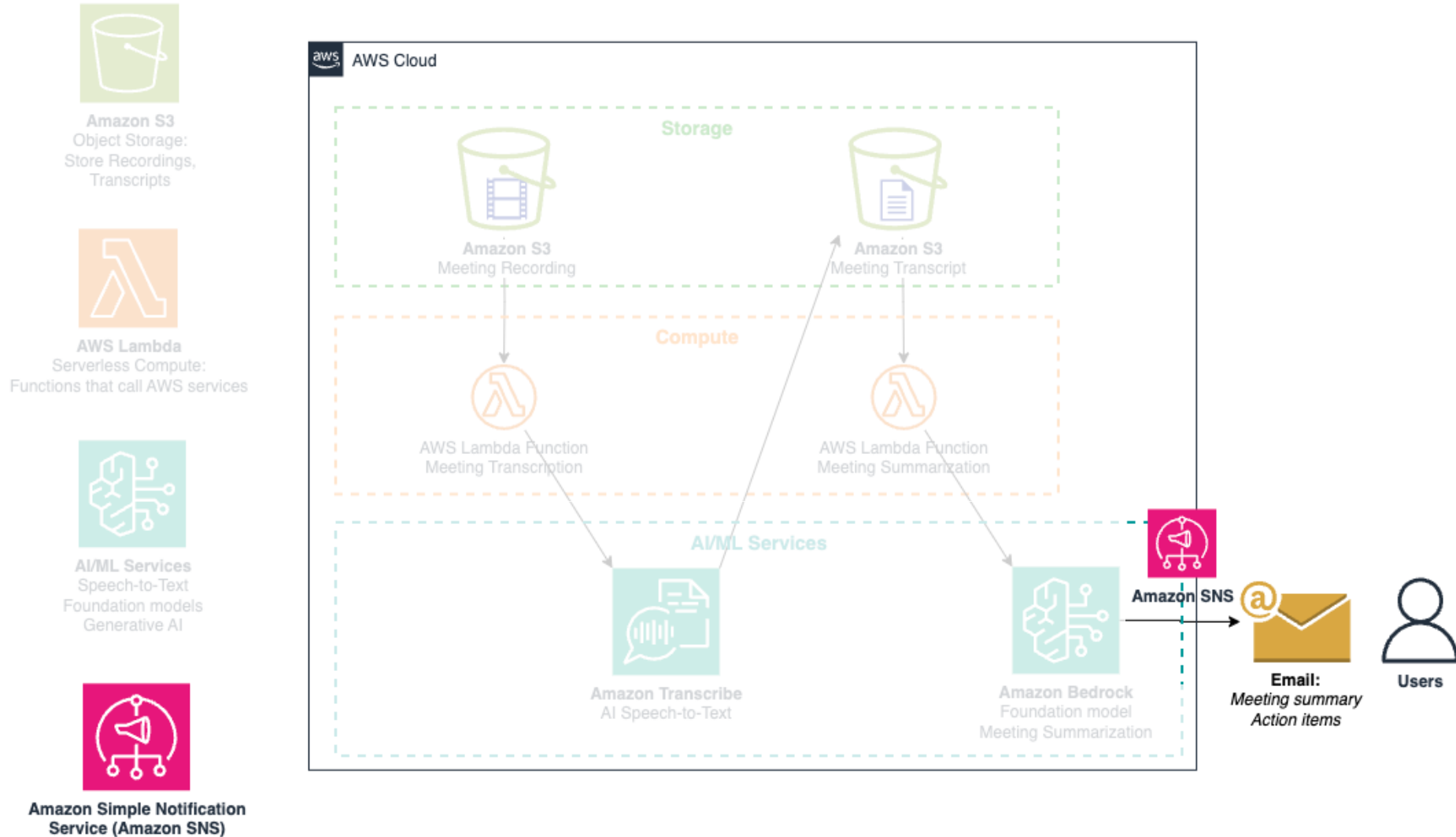
AWS Architecture

Architecture – Walkthrough 3/4



AWS Architecture

Architecture – Walkthrough 4/4



AWS Architecture

Architecture Review



Amazon S3
Object Storage:
Store Recordings,
Transcripts



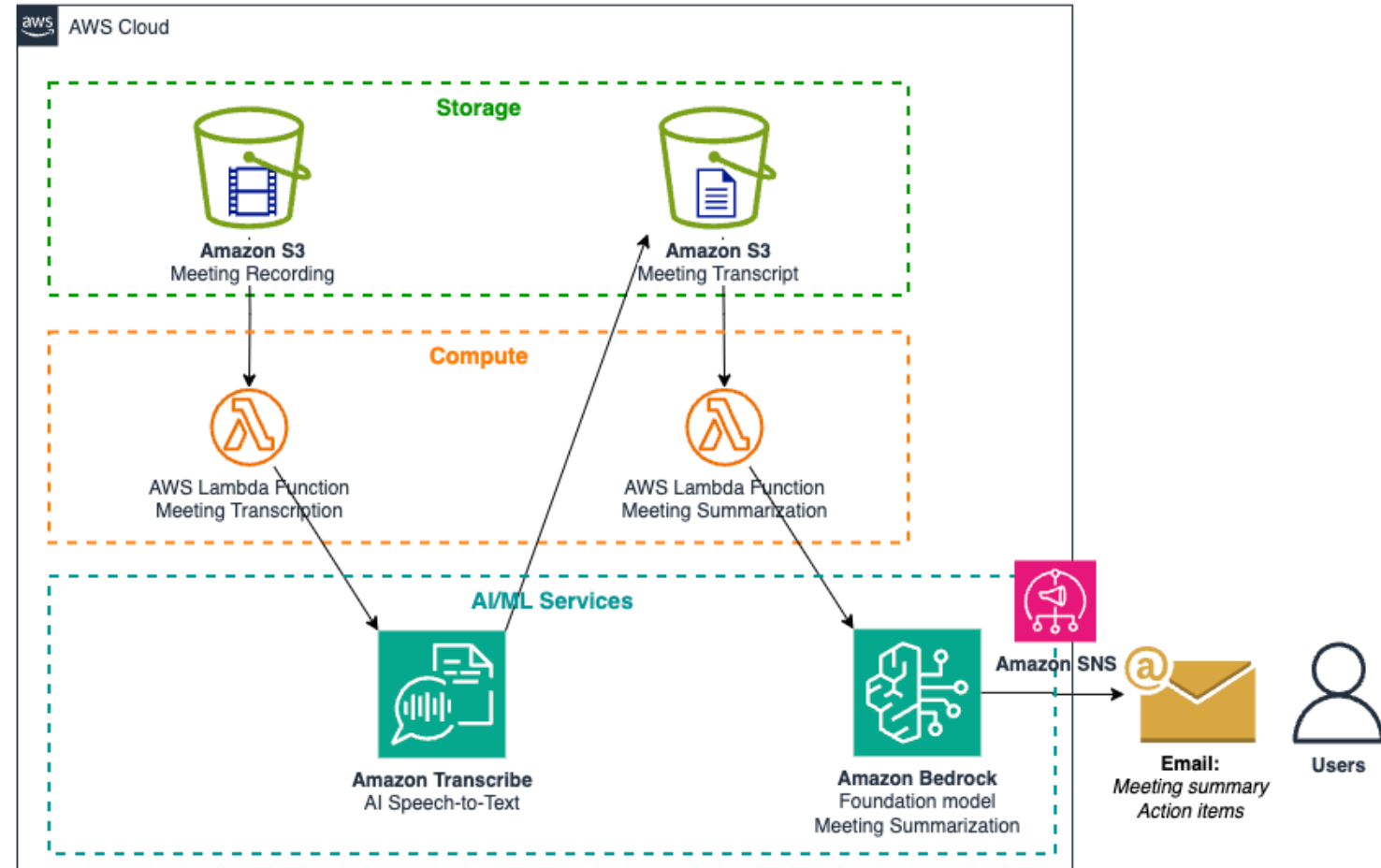
AWS Lambda
Serverless Compute:
Functions that call AWS services



AI/ML Services
Speech-to-Text
Foundation models
Generative AI



**Amazon Simple Notification
Service (Amazon SNS)**



How to get started?





AI Use Case Explorer

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

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

**400+ customer
success stories**

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

aiexplorer.aws.amazon.com

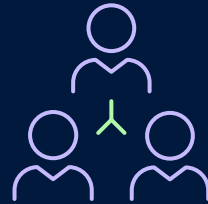
The screenshot shows the AWS AI Use Case Explorer interface. At the top is the AWS navigation bar with links for About AWS, Contact Us, Support, English, My Account, Sign In, and a Create an AWS Account button. Below this is a secondary navigation bar with links for Products, Solutions, Pricing, Documentation, Learn, Partner Network, AWS Marketplace, Customer Enablement, Events, and Explore More. The main header area is yellow and contains the title 'AI Use Case Explorer' and a subtitle 'Explore the art of the possible in AI across industries and business functions'. Two buttons are present: 'Get started with generative AI' and 'Connect with a specialist'. Below this is a section titled 'Top generative AI use cases' with a list of three items: 'Improve customer experiences', 'Boost employee productivity', and 'Accelerate process optimization', each with a plus sign to its right. At the bottom, there is a section titled 'Explore AI Use Cases' with a 'Clear all filters' link and a 'Use Case Category' dropdown menu. The dropdown menu is open, showing three options: 'Customer experience', 'Employee productivity', and 'Process optimization'. To the right of the dropdown menu are three small images: a man and a woman in a meeting, a woman working on a laptop, and a man working on a laptop.

Bedrock Studio

BUILD GENAI APPLICATIONS FASTER AND MORE SECURELY



**Easy to use
playground**

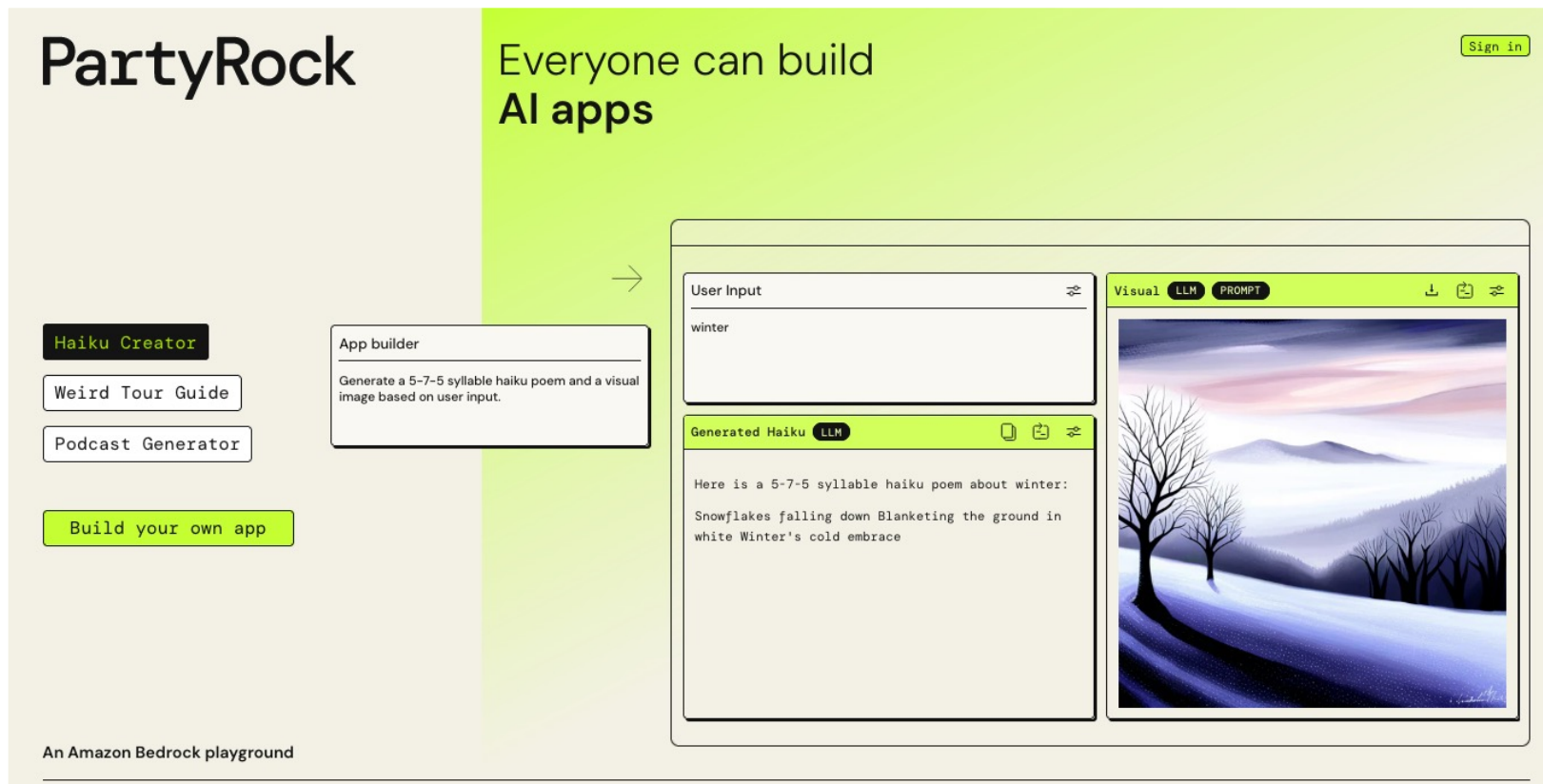


**Projects based
collaboration**



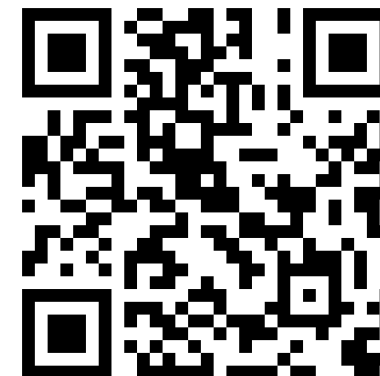
**Easy access with
corporate SSO**

PartyRock: An Amazon Bedrock Playground



NO ML engineering experience needed

NO Coding experience needed



<https://partyrock.aws>



Thank you!

Chris Truong (he/him)

Solutions Architect
AWS
chtruong@amazon.com

Michael Sipos (he/him)

Sr. Solutions Architect
AWS
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**Please complete the survey
for this session**



**Track : Artificial
Intelligence/Machine
Learning**

Session : Building AI and ML
powered applications without machine
learning expertise

