

# AWS State, Local, and Education Learning Days

Chicago



# Building AI and ML powered applications without machine learning expertise

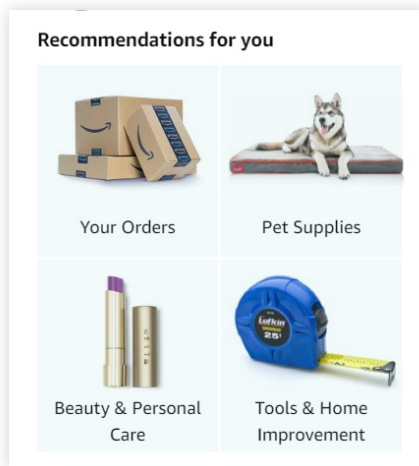
**Ashoo Shetty**(he/him)

Principal Solutions Architect  
AWS  
ashoo@amazon.com

**Drew Smith**(he/him)

Solutions Architect  
AWS  
asmithvp@amazon.com

# Amazon—Machine learning innovation at scale



**4,000 products  
per minute** sold  
on Amazon.com



**1.6M packages**  
every day



**Billions** of Alexa  
interactions  
each week



First Prime Air  
delivery on  
**December 7, 2016**



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**Enhance  
customer  
experience**



**Better and faster  
decision-making**



**Improve business  
operations**



**New products  
and services**

# The universe of artificial intelligence (AI)/machine learning (ML) is ever expanding

## AI/ML use cases

Forecasting	Anomaly detection	Contact center intelligence	Conversational AI
Intelligent document processing	Intelligent search	Workflow Automation	ML modernization
AI for DevOps	Personalization	Identity verification	Automated content creation
Autonomous systems	Fraud Detection	Content moderation	Credit decisioning and underwriting
Cybersecurity	Digital twin/advanced digital simulation	AI for health	HR automation
AI for IT operations	Predictive maintenance	Quality control	Process automation
Supply chain optimization	Visual inspection	Workplace safety	+ Other use cases



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A woman with dark hair tied back, wearing a black headset with a microphone, is seated at a desk in a call center. She is looking down and to the left. In the background, another person is visible, also wearing a headset, working at a desk. The scene is brightly lit, suggesting a modern office environment.

# Contact center intelligence & conversational AI

# Challenges in solving customer concerns



## Identify customer concern

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Ask qualifying questions



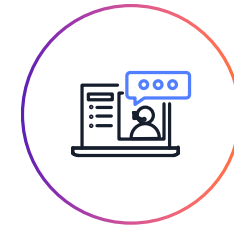
## Search for solution across disparate sources

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Knowledge management system

Customer-facing FAQ sites

Internal chats with colleagues



## Take additional steps to resolve concern

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End call without resolution

Transfer or escalate



# Conversational AI



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# Conversational AI use cases



**Self-service bots  
& voice assistants**



**Proactive help  
based on usage  
behavior**



**Transactional bots**

# Key differentiators chatbots and virtual assistants

## Chatbots

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### Technology

Chatbots use **natural language processing and machine learning** capabilities to provide answers to users.

### Channels

Chatbots are commonly deployed on **websites, apps, and messaging portals**.

### Interface

Chatbots have a **conversational user interface** and provide information based on large language models (LLMs) and specific data sources.

### Functionality

Chatbots assist users and businesses **improve customer access to information**.

## Virtual Assistants

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Virtual assistants use **natural language processing and machine learning** capabilities to perform tasks for a user.

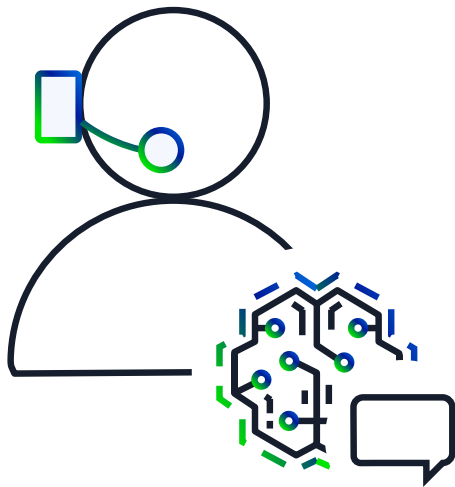
Virtual assistants can be deployed into **websites, apps and messaging portals as well as devices**, (e.g. Amazon Echo).

Virtual assistants **can function without an interface**, or extend the capability of a chatbot to perform a task.

Virtual assistants **integrate into systems** to access user specific data and implement changes.



# Amazon Q in Connect uses generative AI to assist agents with recommended responses and actions



Generate real-time solutions your agents can use based on context from the live conversation and relevant information from your company content (e.g., knowledge articles, FAQs, documents)



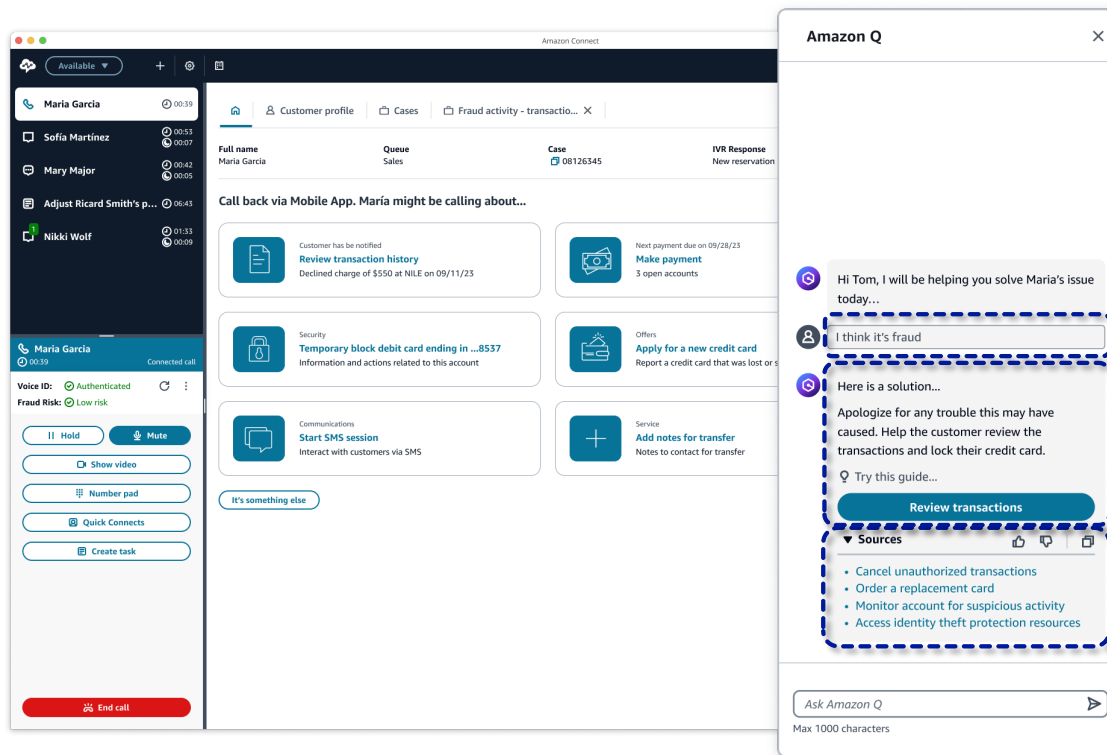
Agents can also chat with Amazon Q to receive specific recommendations, like actions to take



Source knowledge articles and documents are displayed so agents can access more detail if needed

# Generative AI-powered agent assist delivers suggested responses and actions

AMAZON Q IN CONNECT



Detected or provided issue

Generated solution

Articles and documents used to generate the response & solution

Agents can chat with Amazon Q for additional information



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# Contact Center Intelligence

Post call analytics



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# Using AI to improve agent efficiency

“During peak hours, previously you’re 45-50 minutes on hold, and now that’s has been reduced to about three and a half minutes. One of the other benefits we’ve gotten from Amazon Connect is sentiment analysis. On a call, we get real-time feedback on whether or not the customer was happy, frustrated, or angry...”

Benny Chacko, Deputy General  
LA County Internal Services Department



## 90%

Peak hold time reduction

## 60%

Cost Savings

## 17%

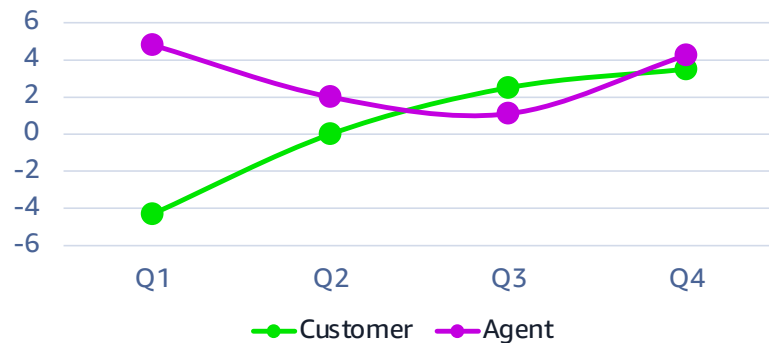
Volume reduction through automation



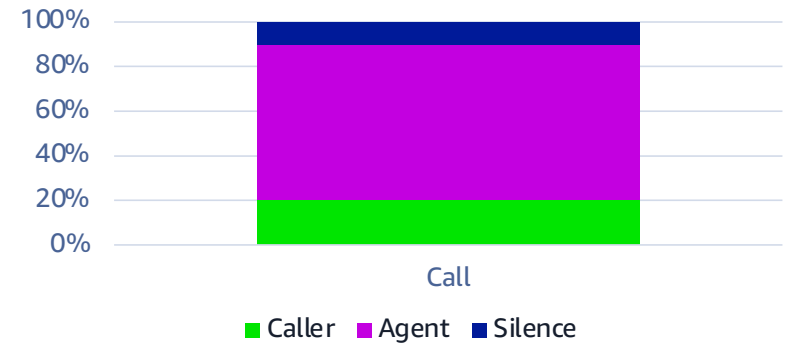
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# Sentiment Analysis

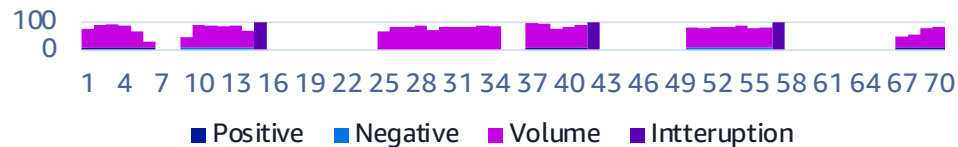
## Sentiment by Quarter



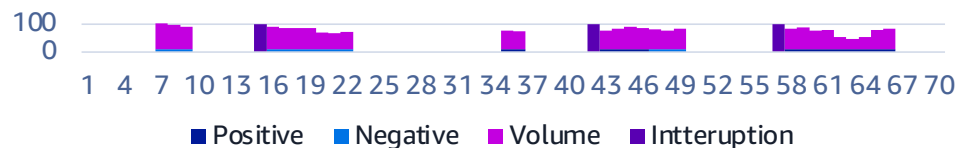
## Speaker Time



## Agent Volume and Sentiment



## Caller Volume and Sentiment



### Issue:

[Caller] I dropped my credit card into the water.

### Action Items:

[Agent] Ok, I'll have a new one sent to you.

### Outcomes:

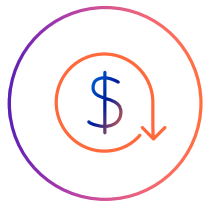
[Agent] Your card will arrive in 1-2 days.



A person in a light blue shirt is seated at a white desk, working. Their right hand is on a black calculator, and their left hand holds a pen over a document. To the right, a large stack of papers in blue folders is visible. In the foreground, a pair of glasses and a tablet are on the desk. The text "Intelligent document processing" is overlaid in white on a dark grey banner.

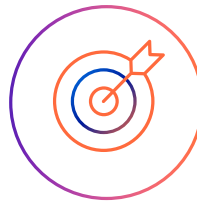
**Intelligent document processing**

**Faster document processing shortens decision cycles and drives material ROI by enabling enterprises to streamline business operations, boost employee productivity and enhance customer experiences.**



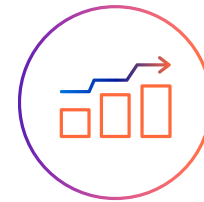
**Reduced  
cost**

[HealthFirst](#) automated medical chart extraction resulting in 10-20x revenue savings



**Improved  
accuracy**

[Paytm](#) extracts user data from documents with **97%** accuracy with Amazon Textract



**Improved  
productivity**

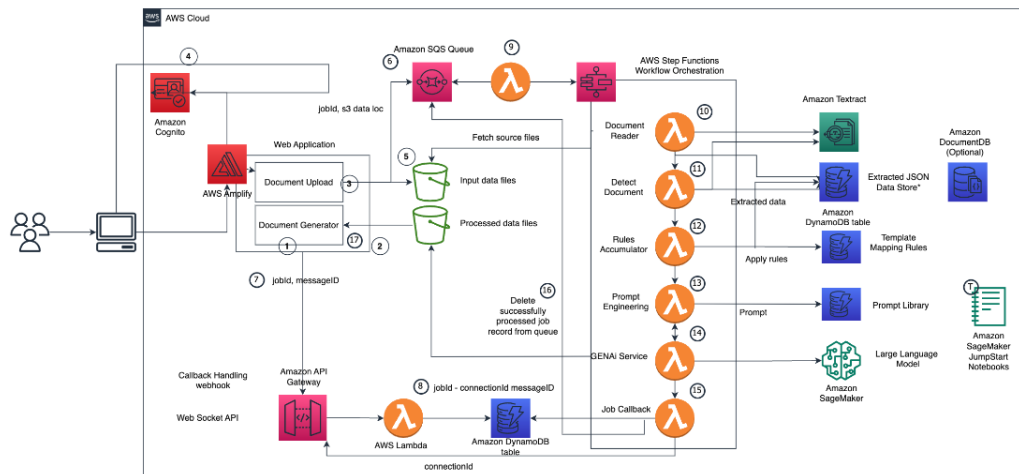
[Elevance Health](#) automated classification of attachments for claims process by **90%**



# IDP Powered by GenAI



Accenture's solution, using AWS generative AI services like SageMaker JumpStart and Amazon Textract, automates the creation of regulatory documents, notably reducing the production time for Common Technical Documents (CTDs) necessary for regulatory filings. This approach enhances efficiency, control, and security, making compliance easier.



## Reduced Authoring Time

Achieves a **40-45% reduction** in the time required to **author regulatory documents**.

## Enhanced Efficiency

Early testing shows a **60-65% decrease** in time needed for **authoring Common Technical Documents (CTDs)**.

## Improved Control and Security

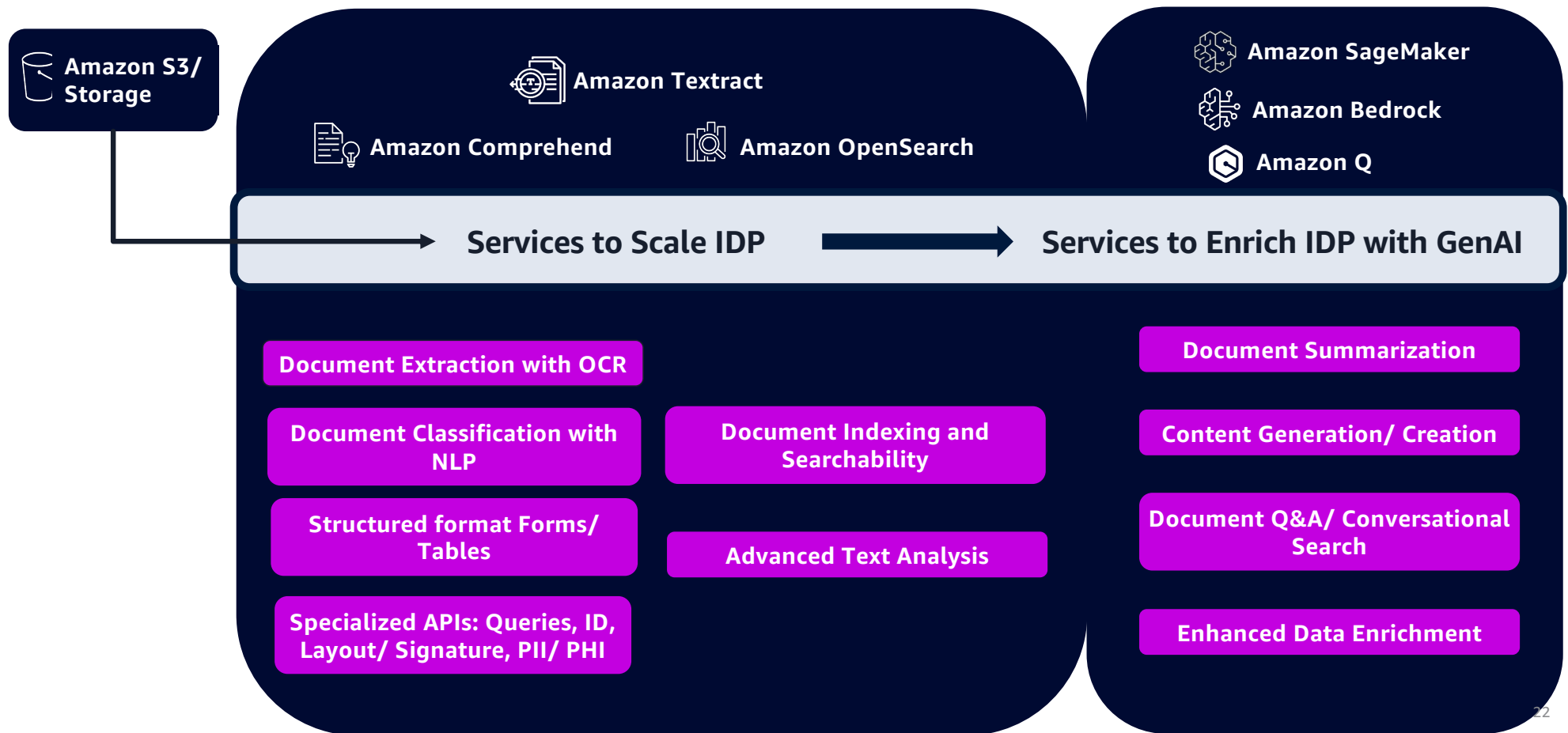
Offers **better control, security, and auditability** in document creation processes.

## Automation and Streamlining

Utilizes AWS's AI services to **automate and streamline** the document authoring process for regulatory compliance.



# Amazon offers a wide breadth of IDP Services



# Streamlining Exhibits for U.S. Court Systems



Leveraging their unique DRAW system, the ScaleCapacity team developed an innovative design which will transform Nebraska's exhibit process to be highly secure, efficient, and easy-to-use, saving the state both time and money with efficiencies gained via new technologies like Generative AI and Blockchain. The DRAW system is built using Amazon Web Services (AWS) and will be designed as a microservices architecture system. With its new electronic filing and management system for court documents and exhibits, Nebraska will be one of 10 states in the country benefiting from a cloud-based exhibits process.

## **Saving Time With Generative AI**

Generate document summary excerpts to facilitating intelligent searching and flagging duplicate content, AI turns hours-long manual tasks into mere minutes.

## **Intelligent Exhibit/Document Processing**

DRAW identifies duplicate and "near duplicate" documents, preventing document reviewers from reading duplicate content—and reducing their review time by 10–20%.

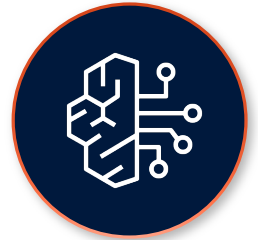
## **Built-in Security Access Control**

User access to sensitive data by enabling views and data inherent to the role of the requester



# IDP+GenAI: Amazon Bedrock

Enhance and extend the value of extracted data through advanced GenAI models.



- Choice of industry-leading FMs available via a single API
- Customize your models using your organization's data
- Enterprise-grade security and privacy

IDP + Amazon Bedrock can unlock further use cases:

- ✓ Content Summarization
- ✓ Content Generation
- ✓ Automate personalized Response Generation
- ✓ Error Correction & Validation

**AI21 Labs**

**Jurassic-2**

Contextual answers, summarization, paraphrasing

**ANTHROPIC**

**Claude x.0**

Summarization, complex reasoning, writing, coding

**cohere**

**Command & Embed**

**Meta**

**Llama 2**

**Mistral AI**

**Mistral XB**

**stability.ai**

**Stable Diffusion XL 1.0**

**amazon**

**Amazon Titan**

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



A person's hands are shown typing on a laptop keyboard. The image is overlaid with several semi-transparent, white-outlined icons of documents or files, some of which are slightly tilted and appear to be floating in the air. The background is a blurred office setting with warm lighting. A dark, semi-transparent banner is at the bottom of the image.

# Workflow Automation



# Workflow automation challenges



Knowledge workers stretched, need productivity tools



LLM's are powerful, but they can't take actions



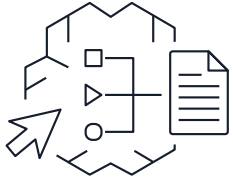
Integration of databases and systems is expensive and slow



Building production agents involves complex engineering



Need diverse set of programming languages and interfaces



# Amazon Bedrock Agents

Enable generative AI applications to execute multi-step business tasks using natural language

## Features

Uses power of LLM's to prompt and respond using natural language

Breaks down and orchestrates tasks

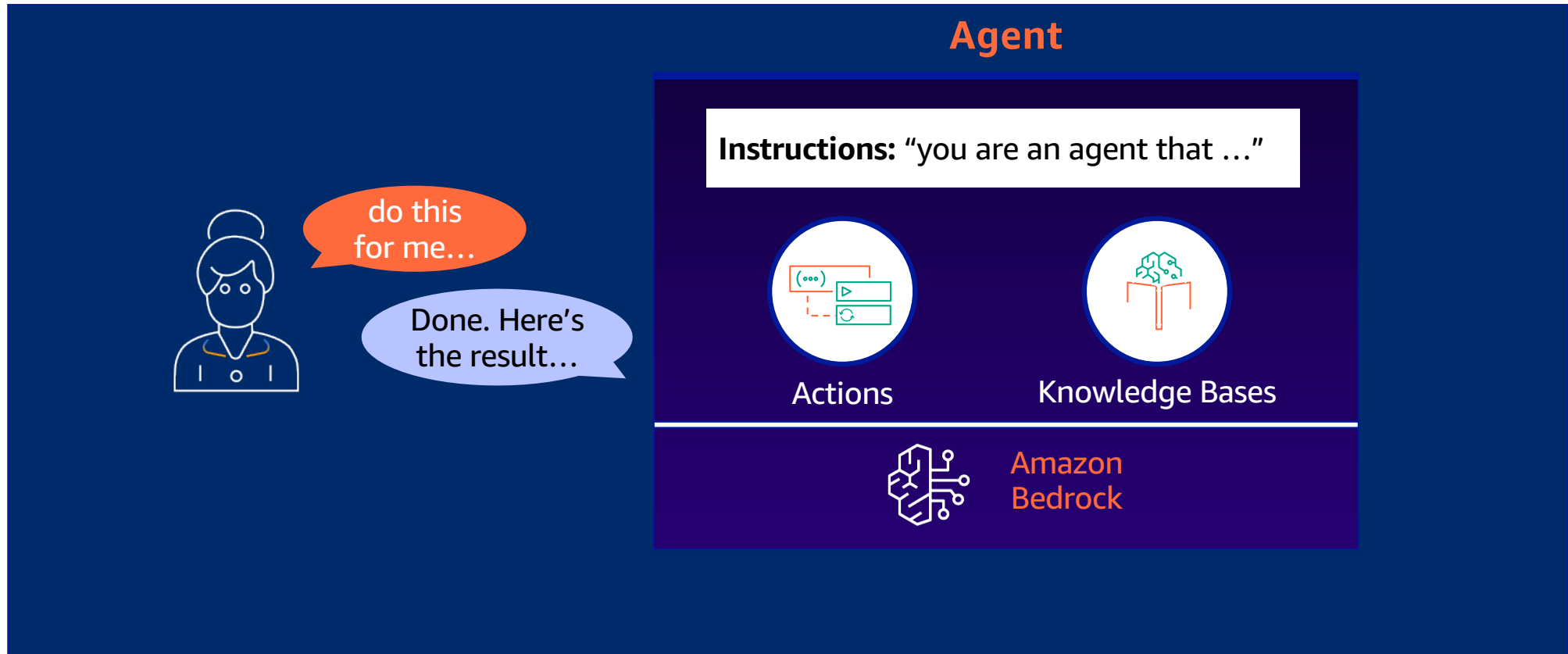
Completes tasks by dynamically invoking APIs

Securely and privately accesses company data

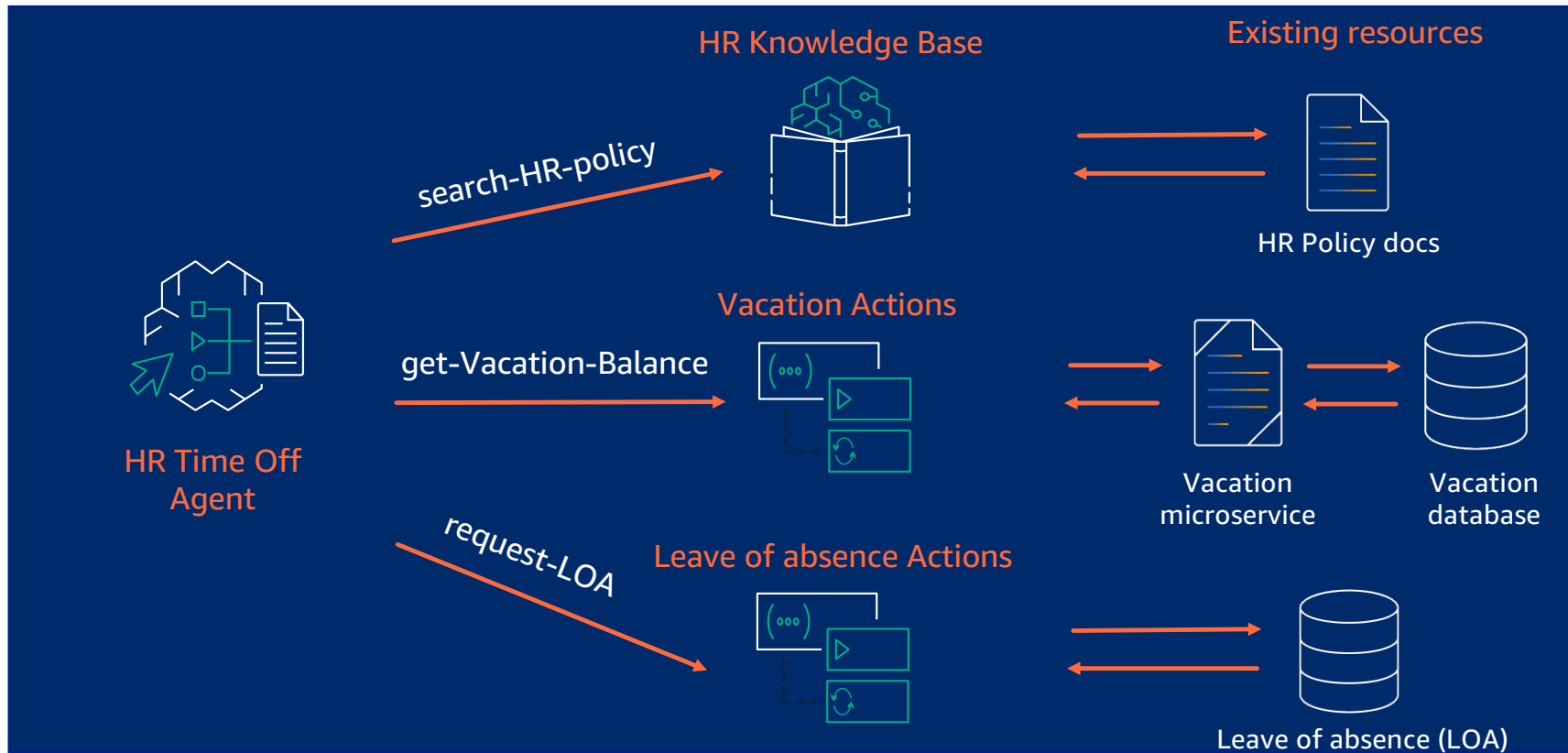
Surfaces chain-of-thought trace and underlying agent prompts



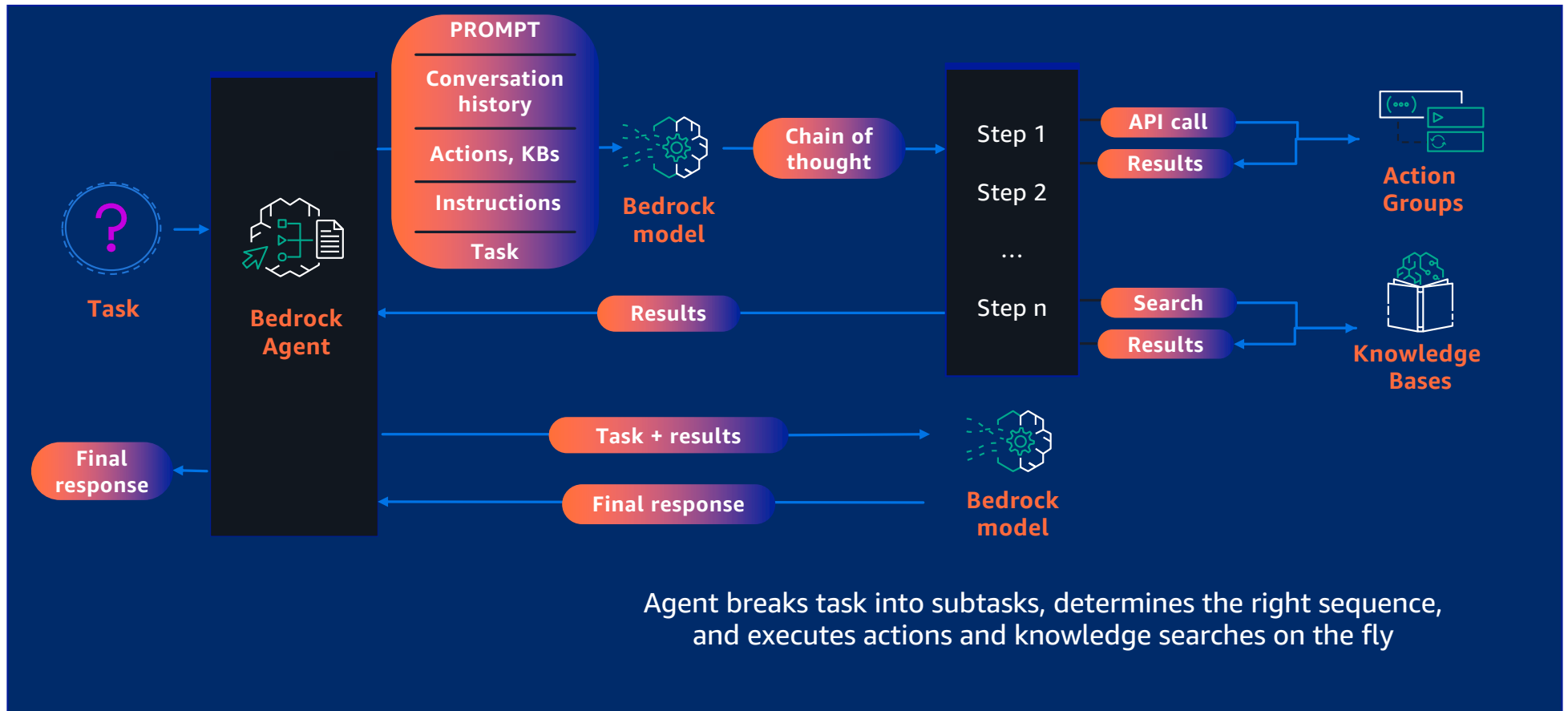
# Bedrock Agent basics



# Agents build on existing enterprise resources



# Agent orchestration – Detailed flow





# Agents can be deployed and invoked from any app

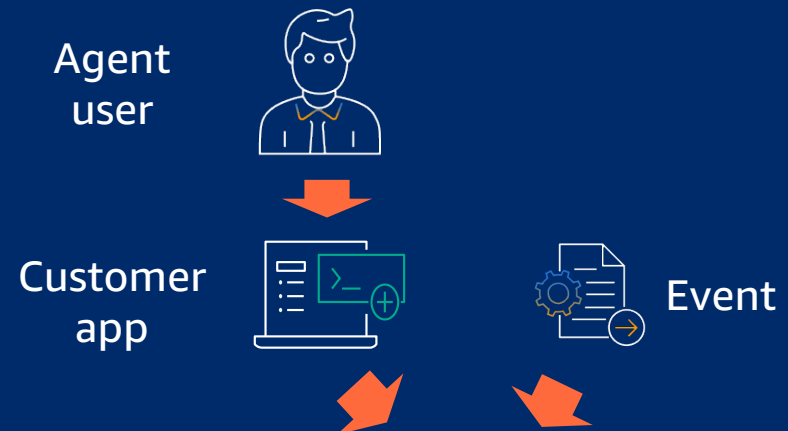
## Building and testing agents



Deployed Agent



## Using production agents



To **deploy** an agent, you create a new **Alias**, and optionally a new **Version**



# Student Financial Aid Request helper

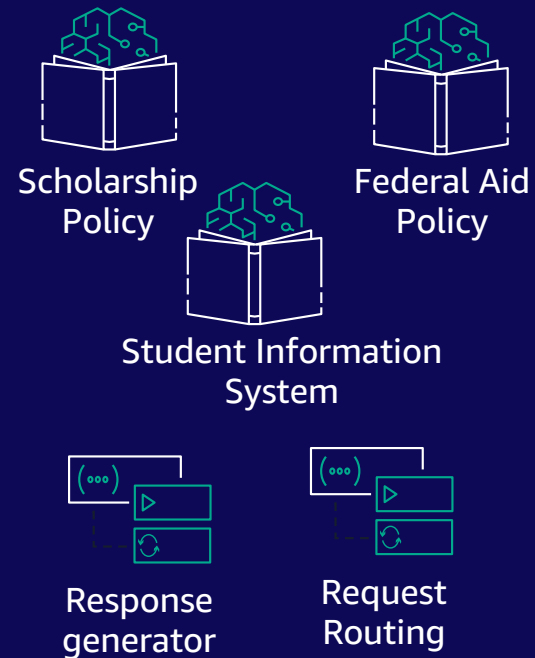


## Student Financial Aid Request

- Here is my Student Financial Aid request, process it
- What is the status of my Aid request



## Student Financial aid agent



# Getting started



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# 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 website. 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 content area has a header for 'AI Use Case Explorer' with a subtitle 'Explore the art of the possible in AI across industries and business functions'. Below the header are two buttons: 'Get started with generative AI' and 'Connect with a specialist'. The section 'Top generative AI use cases' lists 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', each with an unchecked checkbox. To the right of the dropdown menu are three small images showing people working on computers.

aws

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AI Overview Products Learn Customers Resources

## AI Use Case Explorer

Explore the art of the possible in AI across industries and business functions

Get started with generative AI Connect with a specialist

### Top generative AI use cases

Improve customer experiences	+
Boost employee productivity	+
Accelerate process optimization	+

#### Explore AI Use Cases

Clear all filters

Use Case Category

- ☐ Customer experience
- ☐ Employee productivity
- ☐ Process optimization



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# Thank you!

**Ashoo Shetty(he/him)**

Principal Solutions Architect  
AWS  
ashoo@amazon.com

**Drew Smith(he/him)**

Solutions Architect  
AWS  
asmithvp@amazon.com



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**Track : Artificial  
Intelligence/Machine  
Learning**

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

**aws Learning Days**  
State, Local, and Education