

AWS SUMMIT



© 2025, Amazon Web Services, Inc. or its affiliates. All rights reserved.

Using multiple agents for scalable generative AI applications

Pavan Kumar Rao Navule

Solutions Architect

AWS India





Amazon Bedrock

The easiest way to build and scale generative AI applications with foundation models

Choice of leading FMs through a single API

Model import, distillation and fine-tuning

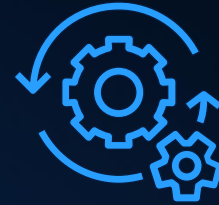
Gen AI Tools – Knowledge Bases (RAG), Guardrails, Flows, and Agents

Security, privacy, and data governance

What is a **Gen AI Agent?**



*Intelligent,
autonomous
systems*



*Plan,
reason,
and act*



*Access to
enterprise
data*



*Ability to
use tools*

Momentum Behind Amazon Bedrock Agents



*Investment
& medical
research*



*Insurance
claims
processing*



*Root cause
analysis*



*Marketing
assistants*



*Customer
experience*

Amplify productivity for businesses and knowledge workers through the use of agents

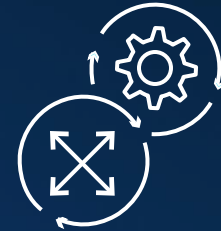
What generative AI customers are asking for



*Help me automate
complex workflows*



*Help me move
faster*



*Help me find
more robust and
scalable solutions*

Amazon Bedrock Agents

Agentic building blocks



Choice of foundational models



Memory, Knowledge Bases, Guardrails



Tools and action groups



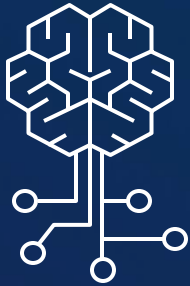
Trace, debug, and observability



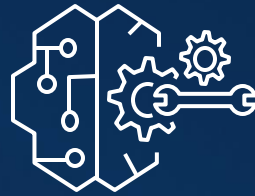
Multi-agent collaboration

new

Amazon Bedrock *multi-agent collaboration*



**Enable complex
problem solving**



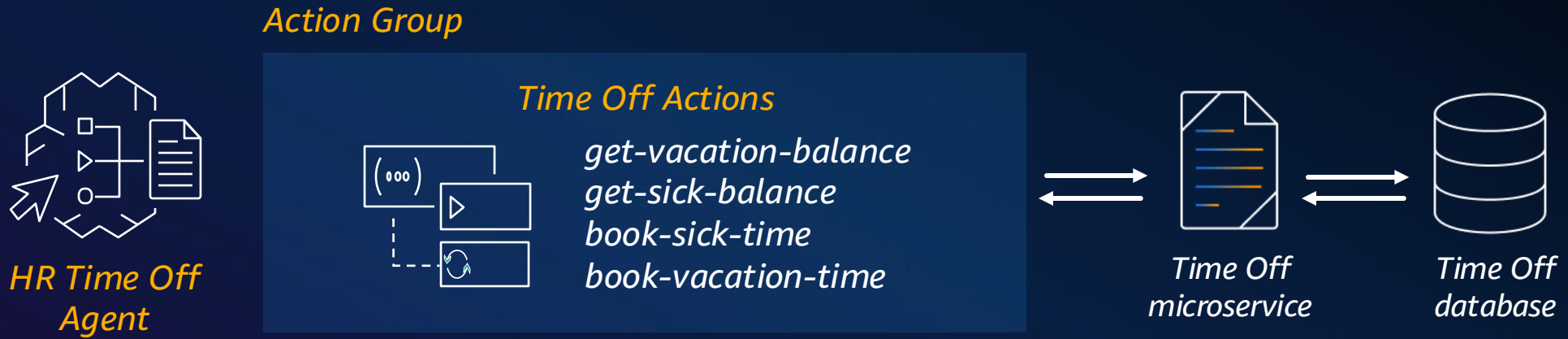
**Increase developer
velocity**



**Deliver trust and
security**

Amazon Bedrock multi-agent collaboration deep dive

Agents start small and focused . . .



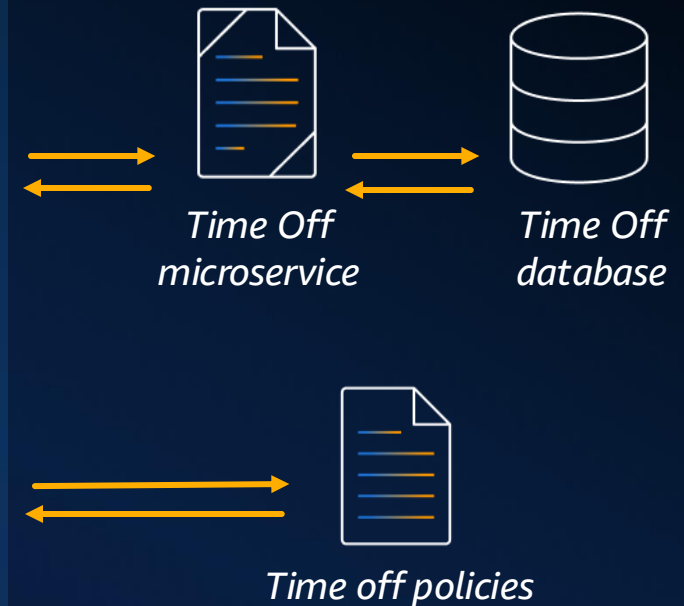
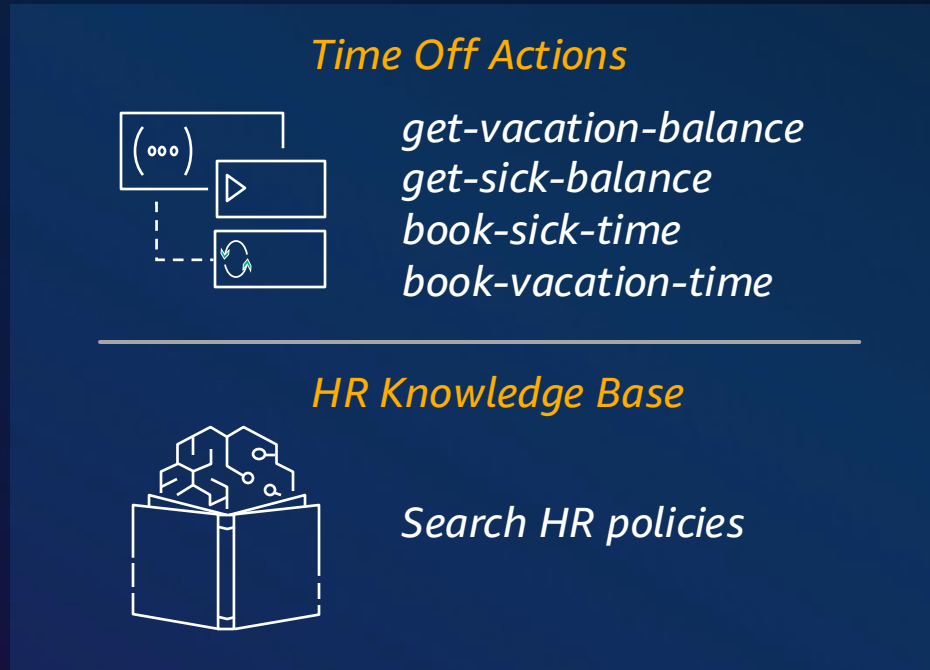
... and can be easily expanded

1 Action Group + 1 Knowledge Base

V2



HR Time Off
Agent



... and so on

2 Action Groups + 1 Knowledge Base

V3



HR Time Off Agent

Time Off Actions



get-vacation-balance
get-sick-balance
book-sick-time
book-vacation-time

HR Knowledge Base



Search HR policies

Leave of absence (LOA) Actions



start-new-LOA
extend-LOA
close-LOA
get-LOA-details



... but if you take a *SINGLE* agent too far

V4



Multiple Action Groups + Multiple Knowledge Bases



Time Off Actions
get-vacation-balance
get-sick-balance
book-sick-time
book-vacation-time



Leave of Absence (LOA) Actions
start-new-LOA
extend-LOA
close-LOA
get-LOA-details



HR Knowledge Base
Search HR policies



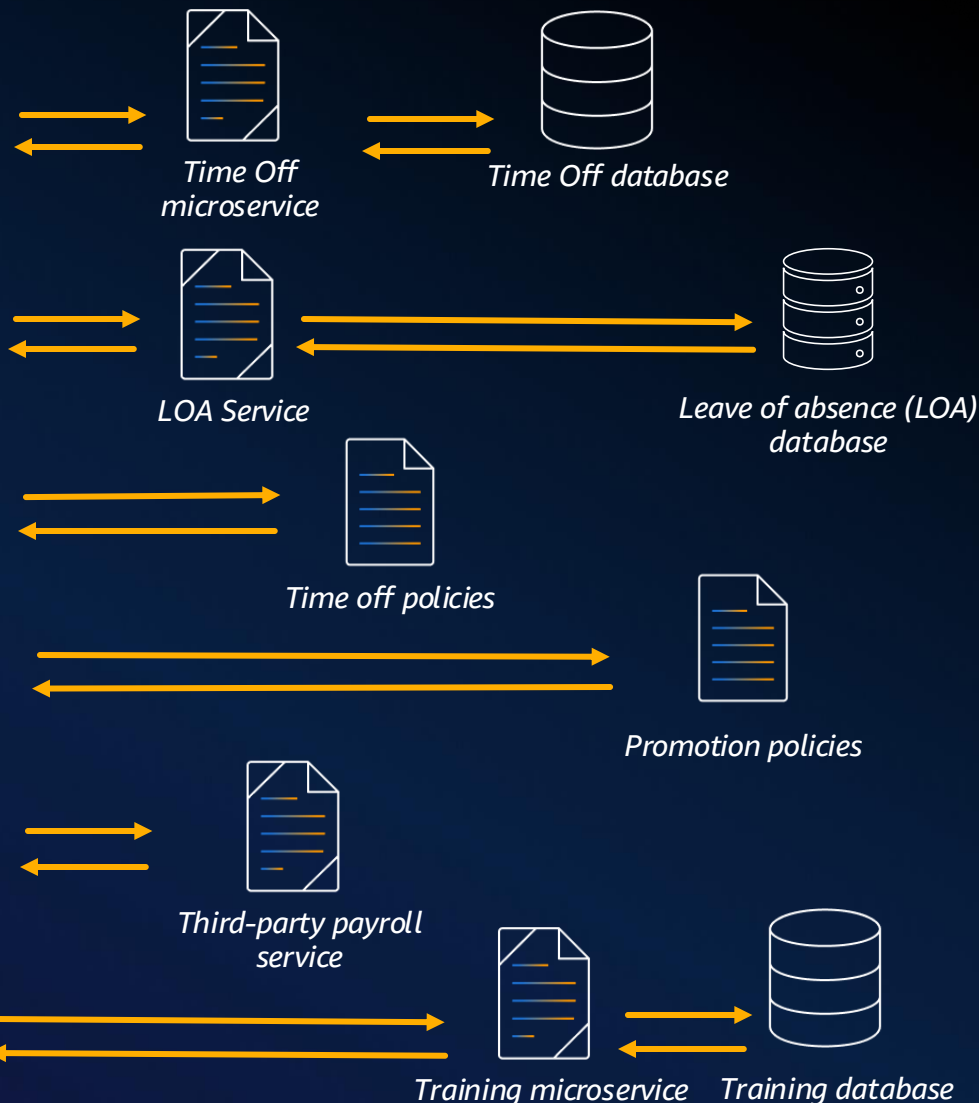
Promotion Knowledge Base
Promotion policies



Payroll Actions
get-latest-pay-stub
submit-payroll-ticket
manage-deductions



Training Actions
find-training
list-certifications
register-for-course
submit-review



... it leads to challenges

Coding gets complicated



- *Complex prompts to limit hallucinations*
- *Fragile, hard to maintain*

Agent gets confused



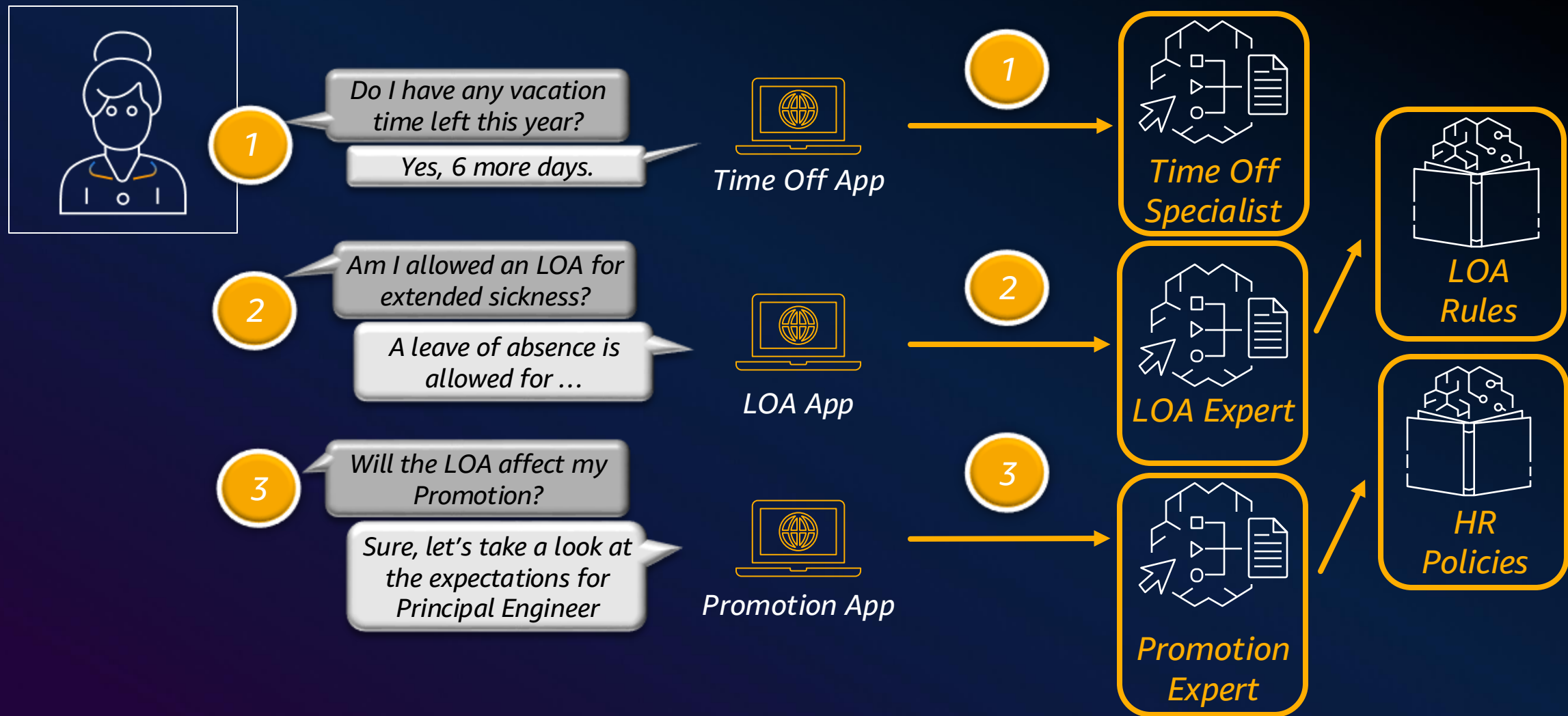
- *Calling wrong tools*
- *Passing wrong arguments*
- *Inconsistent responses*

Agent gets slower and more expensive



- *Frontier models needed*
- *Prompt sizes grow*
- *Agents retry steps*

Using multiple agents helps ...



... but single agents are still siloed and limited

Splintered user experience



- *Sea of apps for users to find and navigate*

Do-it-yourself multi-agents is hard



- *Needs to be reliable, low latency, scalable*
- *Takes time away from core business value*
- *Difficult to keep pace*

Complex automation still unsolved



- *No clear path to solving game-changing problems*

Amazon Bedrock Agents multi-agent collaboration

Scaling agentic experiences



Easily assemble agents and knowledge bases



Plan and execute complex tasks across agents



Unify conversations across agents with built-in intent classification



Observability across multi-agent flows



Guardrails, security, and privacy

Big opportunities for multi-agent collaboration



*1. Unify customer
experience*



*2. Automate complex
processes*

1. Unify customer experience



Do I have any vacation
time left this year?

Yes, 6 more days.



HR Agent as
supervisor agent



Time Off App



LOA App



Promotion App

1



Time Off
Specialist



LOA
Expert



Promotion
Expert

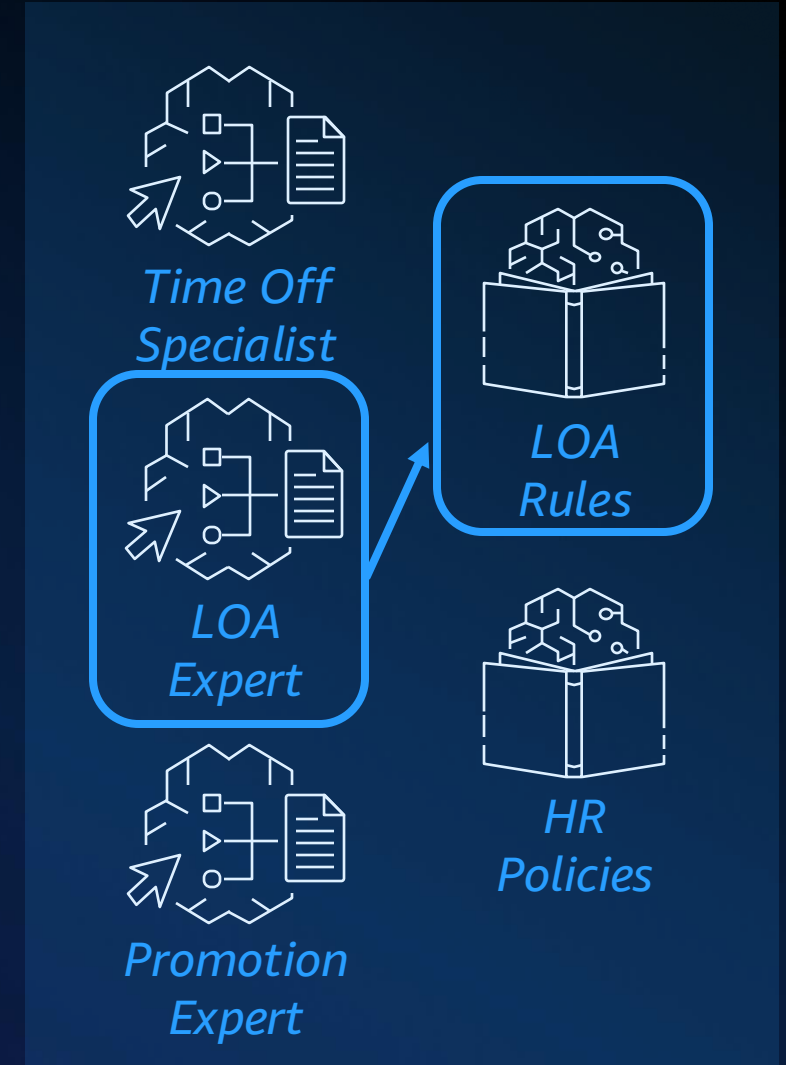
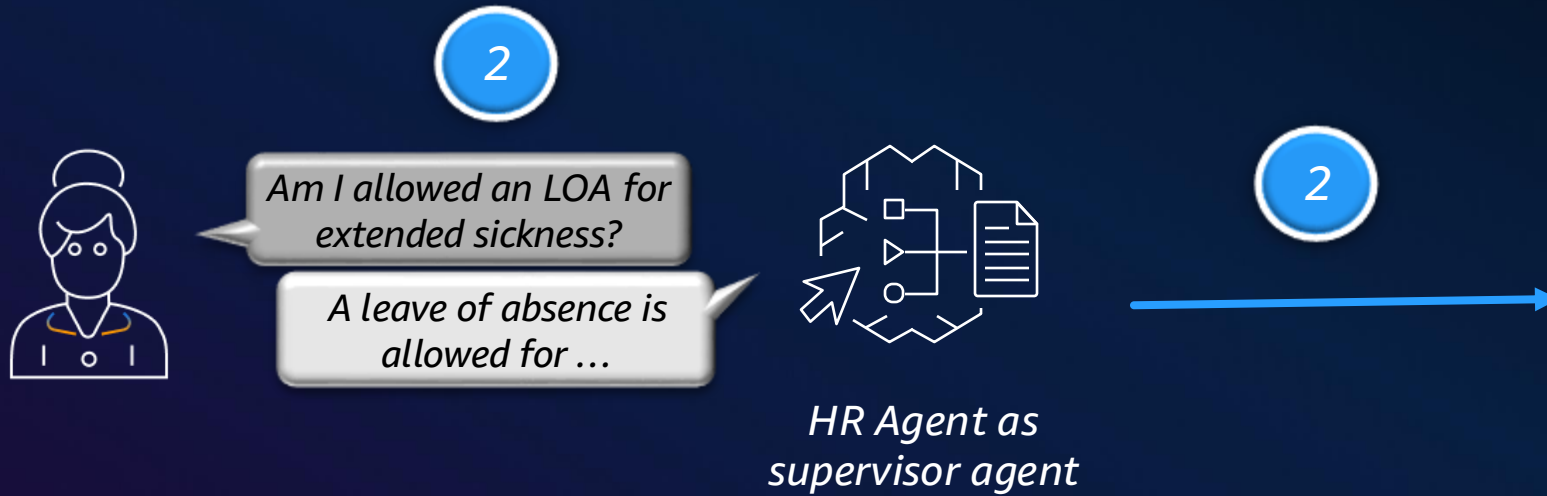


LOA
Rules



HR
Policies

1. Unify customer experience



1. Unify customer experience



Supervisor provides one-stop shop for customers,
with optimized routing and
seamless conversation handling



Help me get promoted to

One-stop shop

Sure, let's take a look at
the expectations for
Principal Engineer



HR Agent as
supervisor agent

Optimized
routing

3



Time Off
Specialist



LOA
Expert



Promotion
Expert



LOA
Rules



HR
Policies

How does routing work?

Create supervisor agent

```
type = SUPERVISOR_ROUTER  
router model = "small-fast-model:1.0"
```

Collaboration descriptions



Use for handling vacation
and sick time

Time Off Specialist



Use for handling Leave
of Absence requests

LOA Expert



Use for handling
Promotion discussions

Promotion Expert

Use supervisor agent

Collaboration descriptions



Example conversation

"how much vacation left?"

Use: Time off Specialist

"can I use it next week?"

Continue: Time off Specialist

"does my LOA affect my
promotion?"

Plan: Time off Specialist AND
Promotion Expert

Big opportunities for multi-agent collaboration



2. Automate complex processes

2. Automate complex processes with supervisor agents ...



1

Generate plan dynamically

1. Conduct thorough market research, include competitors
2. Develop detailed project summary, target persona
3. Formulate comprehensive marketing strategy with goals, tactics, channels, KPIs
4. Create three innovative marketing campaign ideas
5. Develop detailed marketing copy for each campaign, including a video ad script, and a draft video
6. Produce final report and save interim results

Sub-agents and Knowledge bases



Marketing
Strategist



Content
Creator



Style
Guide



Campaign
Feedback



Market
Analyst



Copy
Editor



Project Storage
Agent



Video
Generation
Expert

2

Execute plan

Demo



© 2025, Amazon Web Services, Inc. or its affiliates. All rights reserved.

Try Amazon Bedrock multi-agent collaboration

Ready to run examples:

- *Build a marketing strategy*
- *Chat with a mortgage company*
- *Plan a trip*
- *Manage energy efficiency*

Try it for yourself!

- *Kick off a POC to automate a complex process*
- *Prototype a multi-agent chat experience*

Tell us what you'd love to see next!





**Create a free account
on AWS Skill Builder
to gain in-demand
skills**

Thank you!

Pavan Kumar Rao Navule

Solutions Architect

AWS India



*Please complete the session
survey in the mobile app*

