



Agentic Era Hackathon

Participants guide

September 16th 2025

Agentic Era Hackathon



Welcome



Thanks for joining

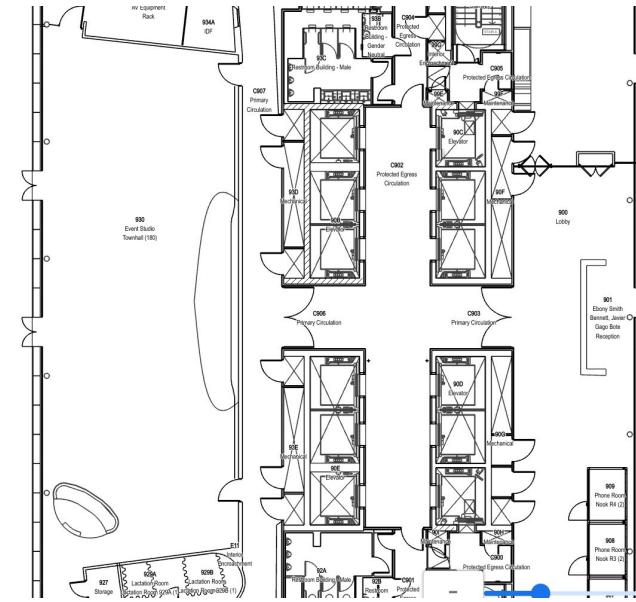
For online attendees please pin participant '**Townhall**' for the event feed



Event will **start @ 9.30am (BST) / 10:30 (CEST)**

Please mute your microphone 





Just a bit of Housekeeping for London...

- **Not** expecting any fire alarms
- Fire exits behind either bank of lifts
- Toilets are behind the stage (via the corridor)
- Please mute online

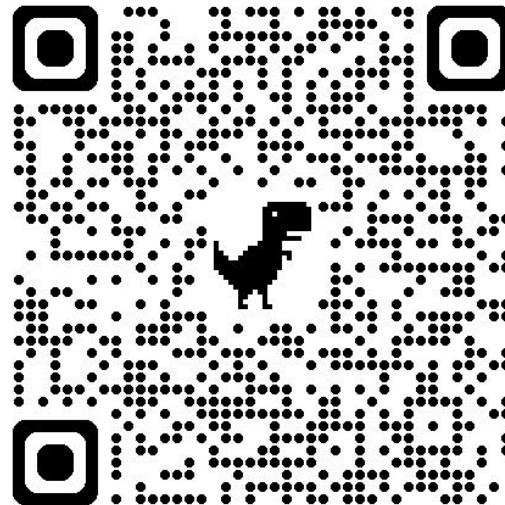
Access to this participant's guide

You should have received an email today at your corporate email address which you registered for the hackathon with, with a link to this guide.

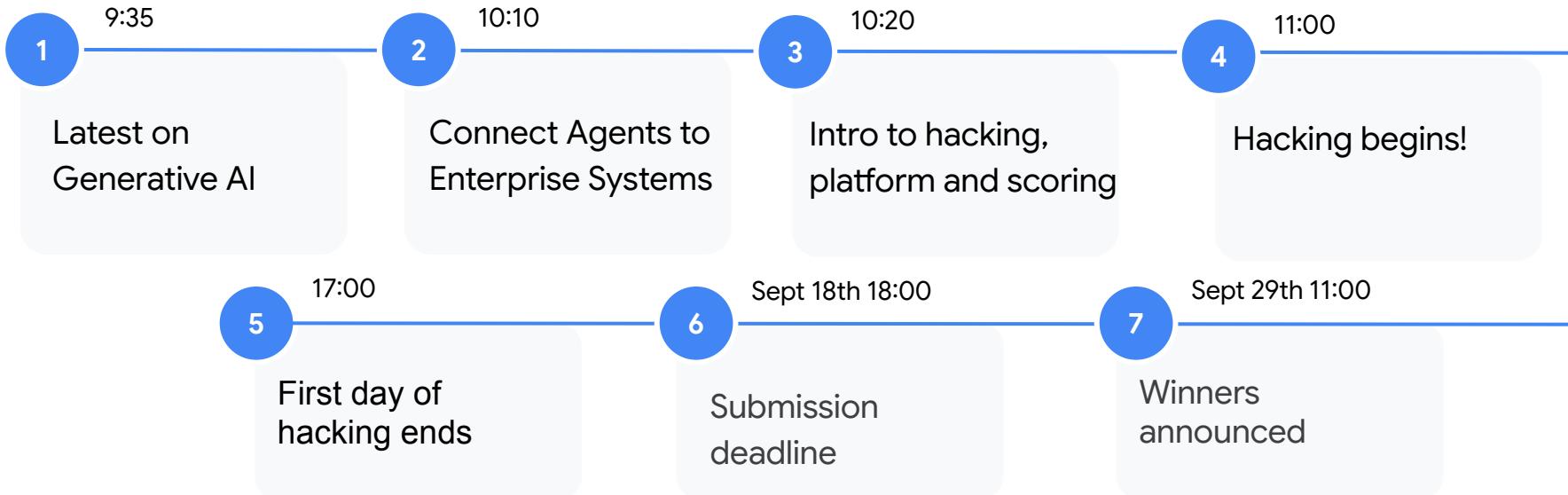
Otherwise feel free to scan this QR



Important! You can only access with your
corporate email

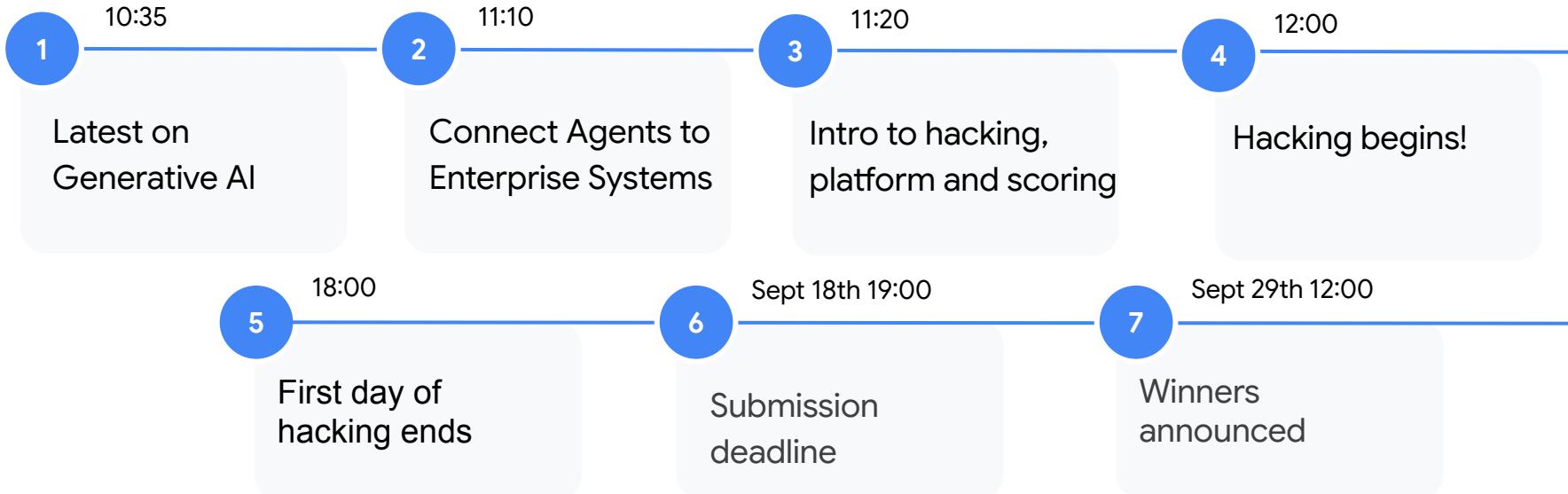


Agenda (GMT+1)



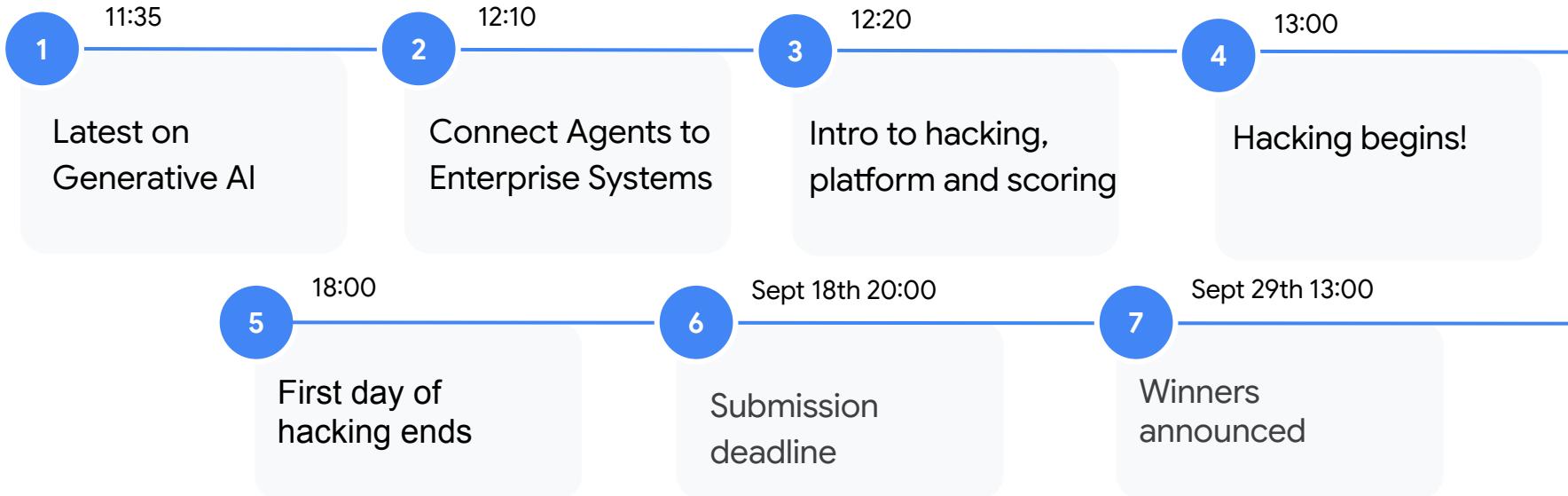
* break and lunch times will vary depending on the city

Agenda (GMT+2)



* break and lunch times will vary depending on the city

Agenda (GMT+3)



* break and lunch times will vary depending on the city

Latest on Generative AI

August at Google DeepMind

Nano
Banana



Genie 3



Gemini
Embeddings



Imagen 4 &
Veo 3 Fast



Gemma 3
270M



Google Cloud

Proprietary + Confidential



Gemini 2.5 Flash Image on Vertex AI



Create without limits...



Gemini 2.5 Flash Image Features

Input features

Input modality: Text, Image, PDF

Input context window: 32k

Up to 3 image references

Output features

Output modalities: Text, Image

Output image resolution: 1k

1:1 aspect ratio from text

Responsible AI filters

SynthID

Provisioned Throughput (soon)

NEW

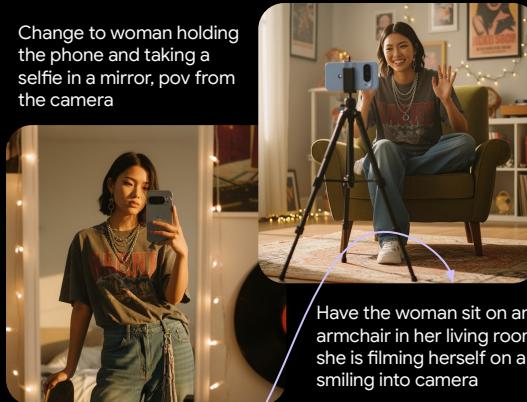
Create a shot of this female model close up holding the phone, make the woman take a call from the phone in her hand, portrait shot



Change the background setting to the woman standing on a rooftop bar in brooklyn



Now have the woman laying down on sofa and texting on the phone



Have the woman sit on an armchair in her living room and she is filming herself on a tripod, smiling into camera

Change to woman holding the phone and taking a selfie in a mirror, pov from the camera

GA

Image

Imagen 4

Multiple variants to optimize for quality, cost, and latency

Imagen 4 - Outstanding quality

Imagen 4 Ultra - Best in class model quality

Imagen 4 Fast - Exceptional speed

Multilingual prompt support to help creators globally

Outstanding text rendering



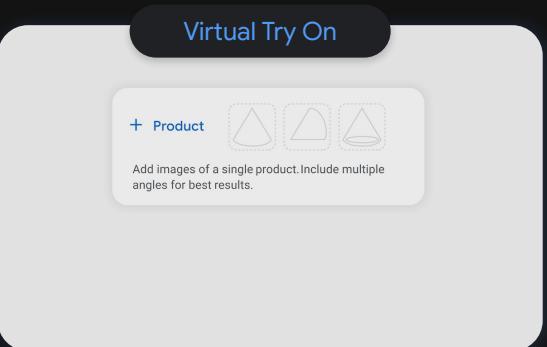
Higher image quality across all styles



Imagen

Studio-grade, on-brand
visuals for every channel

Image



Product placement



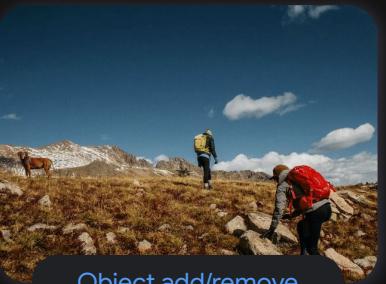
Text on image



Background replacement



Person customization



Object add/remove



NEW

Video Speech & Dialogue Music

Veo 3

Portrait 9:16 and with
more time durations
(4, 6, 8 seconds)

Native Portrait & 8s generation



Prompt

"A group of people player poker. The camera whips or pans from one player to the other as they eye each other intensely, trying to read into their opponents facial cues. The music is intense, really setting the tone of intensity and suspense "

Native Portrait & 4s generation



Prompt

"A tracking shot of two butterflies racing, style of action movie, voiceover says "look at them go!" with some fun theme music to match "

NEW

Real-Time

Interactive

Genie 3

A general purpose world model that can generate an unprecedented diversity of interactive environments.



Given a text prompt, Genie 3 can generate dynamic worlds that you can navigate in real time at 24 frames per second, retaining consistency for a few minutes at a resolution of 720p.

```
import { useState, useEffect, useRef } from 'react';

export const WITTY_LOADING_PHRASES = [
  "I'm Feeling Lucky",
  "Don't panic...",
  "Don't rush perfection (or my code)...",
  "Greasin' the cogs of the machine...",
  "Hold tight, I'm crafting a masterpiece...",
  "I'm Giving Her all she's got Captain!",
  "I'm going the distance, I'm going for speed...",
  "I've got a good feeling about this...",
];
```



```
56 }, PHRASE_CHANGE_INTERVAL_MS);
57 } else {
58   // Idle or other states, clear the phrase int
59   // and reset to the first phrase for next act
60   if (phraseIntervalRef.current) {
61     clearInterval(phraseIntervalRef.current);
62     phraseIntervalRef.current = null;
63   }
64   setCurrentLoadingPhrase(WITTY_LOADING_PHRASES[0]);
65 }
66
67 return () => {
68   if (phraseIntervalRef.current) {
69     clearInterval(phraseIntervalRef.current);
70     phraseIntervalRef.current = null;
71   }
72 };
73 }, [isActive, isWaiting]);
74
75 return currentLoadingPhrase;
76};
```

Gemini CLI

Google

Gemini CLI - GitHub Actions

The screenshot shows a GitHub pull request interface with a dark theme.

Code Review:

```
app.py
64  42
65  - def generate_ascii_art(text):
66  + def generate_ascii_art(text, font='slant'):
67  44      if not text:
68  45          return "Please enter some text"
```

Comment: gemini-cli bot now

It would be good to define a constant for the default font, for example `DEFAULT_FONT`, make it easier to change the default font in the future and avoids using a magic string

Suggested change:

```
45 -     return "Please enter some text"
45 + DEFAULT_FONT = 'slant'
46 +
47 + def generate_ascii_art(text, font=DEFAULT_FONT):
48 +     ...
```

Labels:

- area/frontend
- kind/enhancement
- priority/p3

Comments:

bartolimo 2 minutes ago

@gemini-cli implement this feature

Plan:

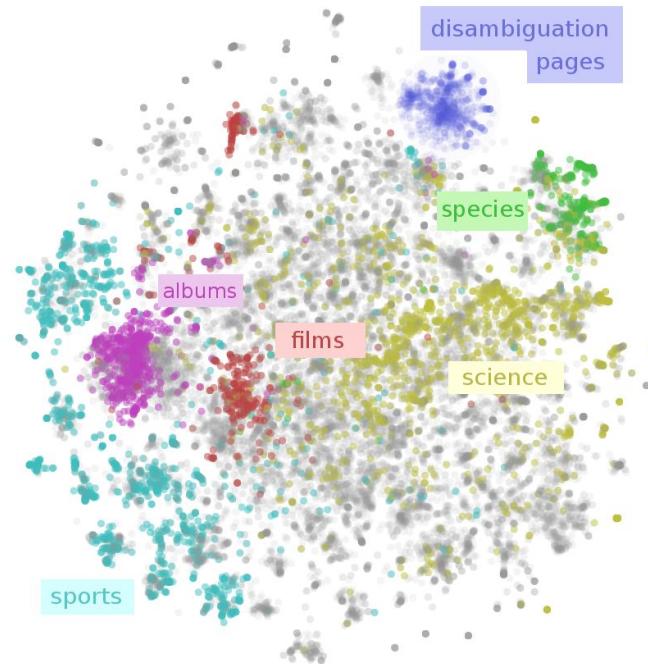
- Get the list of available fonts from pyfiglet in `app.py`.
- Pass the list of fonts to the template.
- Add a dropdown menu for font selection in `templates/index.html`.
- Update `app.py` to use the selected font.
- Create a commit with the changes.

Gemini CLI - Deploy to Cloud Run!



Gemini Embedding: Generalizable Embeddings from Gemini

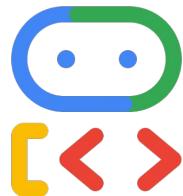
- State-of-the-art performance across English, multilingual and code tasks.
- `gemini-embedding-001` is our large model designed to provide the highest performance with support of up to **3072** output dimensions
- It unifies the previously specialized models like `text-embedding-005` and `text-multilingual-embedding-002` and achieves better performance in their respective domains



Building Agents

ADK Open Source

Code agents like Google



Agent Engine GA

Deploy agents to a fully managed runtime



A2A Protocol Open Source

Support for multi-agent communication





Agent Development Kit



Parallel execution

of parallel function calls in ADK v1.10.0

```
from google.adk.agents import Agent
from google.adk.sessions import InMemorySessionService
from google.adk.runners import Runner

# Define agent
agent = Agent(
    name="agent",
    model="gemini-2.5-flash",
    instruction="You are an helpful assistant",
    tools=[get_weather, get_travel_advisory],
)

# Set session and Runner
session_service = InMemorySessionService()
runner = Runner(app_name="agent_app", agent=agent, session_service=session_service)
session = await session_service.create_session(user_id="user", session_id="session")

# Run the conversation
await run_conversation()

# User Query: What's the weather and travel situation in New York?
# Agent Response:
# In New York, it's sunny with a temperature of 25°C. The subway is ...

# ----- Tool Execution Log -----
# 1499.85s - START: get_weather
# 1499.85s - START: get_travel_advisory
# 1500.85s - END:  get_weather
# 1500.85s - END:  get_travel_advisory
```

⚙️ Multiple tool calls were executed serially:

tool_A() -> tool_B() -> tool_C()

🚀 ADK v1.10.0 now runs them in parallel:
[tool_A(), tool_B(), tool_C()]

✓ Lower latency and more responsive agents.

Agent Development Kit
Running Agents

Deploy

Sessions & Memory

Callbacks

Artifacts

Events

Context

Observability

Evaluate

MCP

Plugins

Bidi-streaming (live)

Grounding

Safety and Security

A2A Protocol

Introduction to A2A

A2A Quickstart (Exposing)

A2A Quickstart (Consuming)

A2A Protocol Documentation

Community Resources

Contributing Guide

API Reference

- > Deploy
-
- > Sessions & Memory
-
- > Callbacks
-
- > Artifacts
-
- > Events
-
- > Context
-
- > Observability
-
- > Evaluate
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- > MCP
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- > Bidi-streaming (live)
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- > A2A Protocol
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- > Introduction to A2A
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- > A2A Quickstart (Exposing)
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- > A2A Protocol Documentation
-
- > Community Resources
-
- > Contributing Guide
-
- > API Reference

ADK with Agent2Agent (A2A) Protocol

With Agent Development Kit (ADK), you can build complex multi-agent systems where different agents need to collaborate and interact using [Agent2Agent \(A2A\) Protocol!](#) This section provides a comprehensive guide to building powerful multi-agent systems where agents can communicate and collaborate securely and efficiently.

- > Navigate through the guides below to learn about ADK's A2A capabilities:

[Introduction to A2A](#)

Start here to learn the fundamentals of A2A by building a multi-agent system with a root agent, a local sub-agent, and a remote A2A agent.

[A2A Quickstart \(Exposing\)](#)

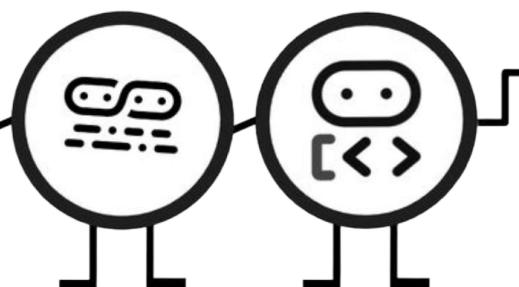
This quickstart covers: **"I have an agent. How do I expose it so that other agents can use my agent via A2A?"**.

[A2A Quickstart \(Consuming\)](#)

This quickstart covers: **"There is a remote agent, how do I let my ADK agent use it via A2A?"**.

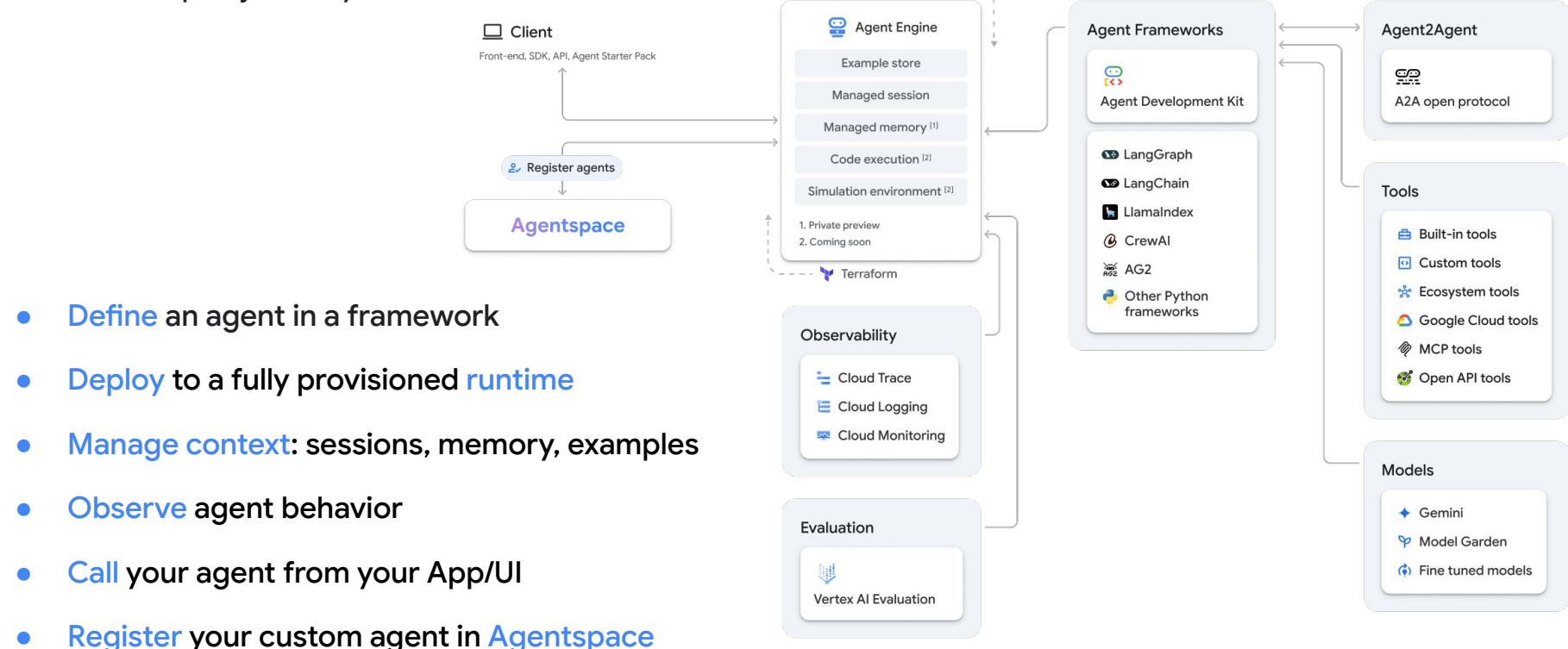
[Official Website for Agent2Agent \(A2A\) Protocol](#)

- > The official website for A2A Protocol.



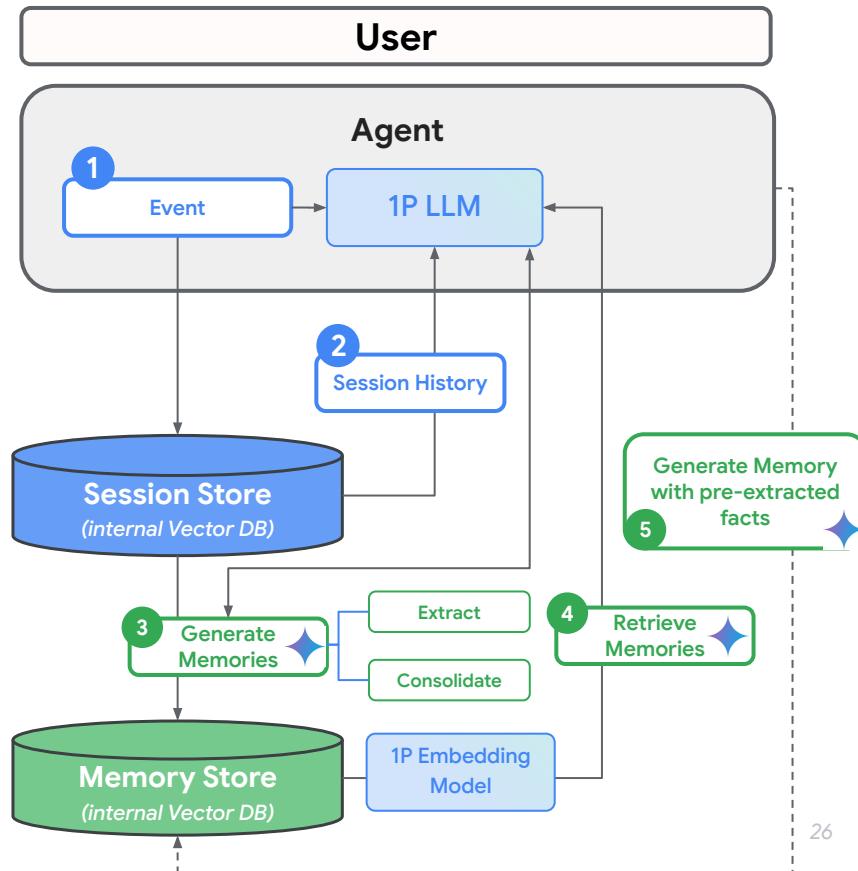
Vertex AI Agent Engine

The developer journey

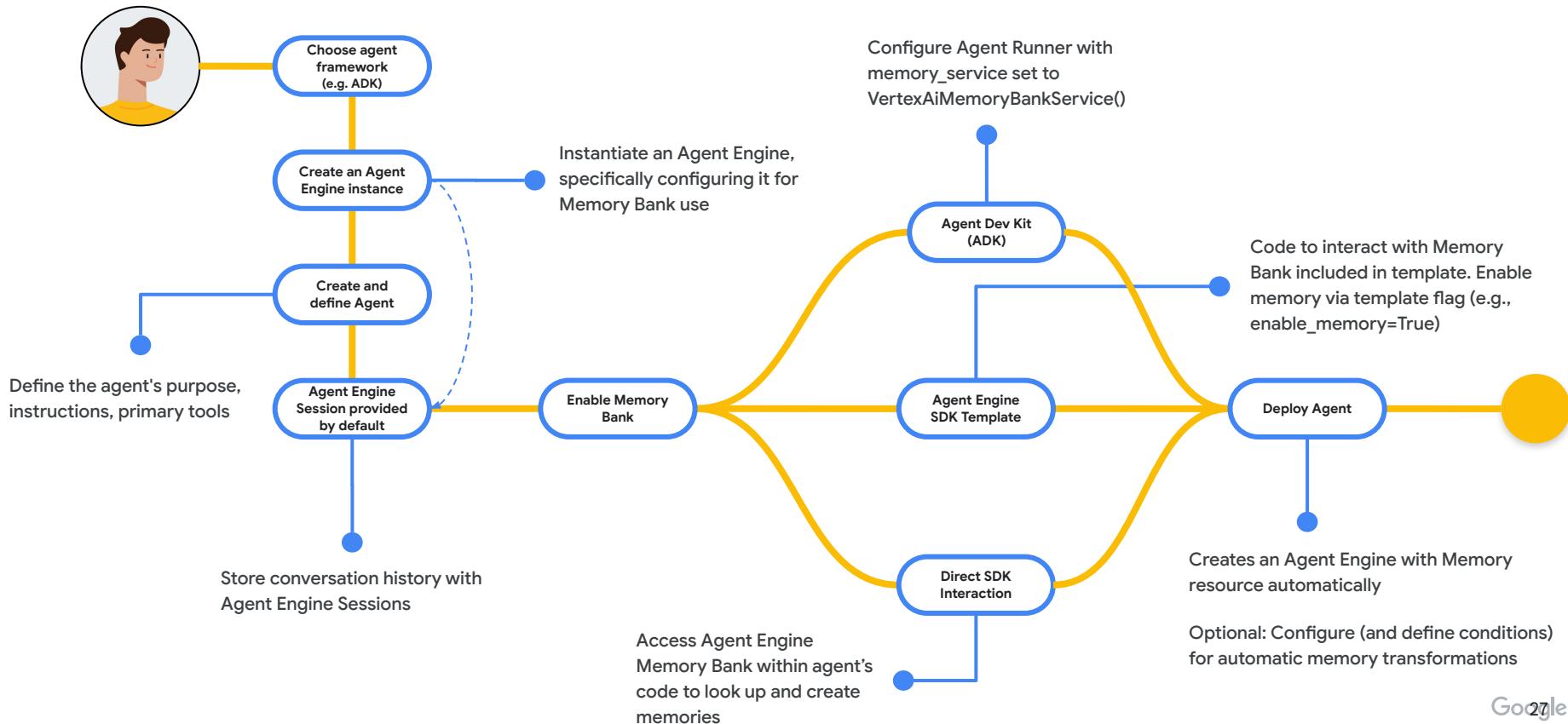


Sessions and Memory Bank Architecture Diagram

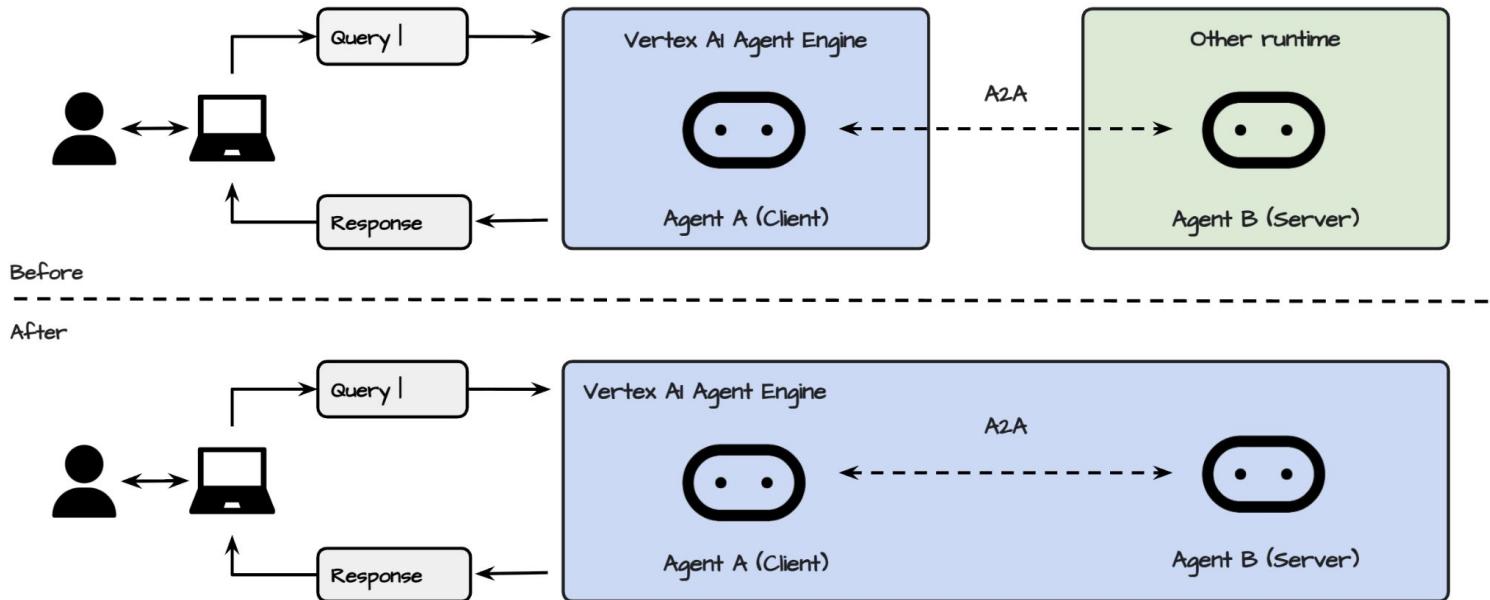
- 1 Raw event data (e.g., user prompts, agent responses, and agent actions) of an ongoing conversation stored in a Session Store.
- 2 Upon each turn, the full session history is retrieved and passed to the LLM as input alongside the next event to provide full session context.
- 3 Memory Bank can generate memories from Sessions at your desired intervals (e.g., end of session, at 10 turn intervals) using customer selected Gemini LLM. New memories are stored as embeddings in the Memory Store.
- 4 Agent continually searches for relevant memories from the Memory Bank using - relevant memories are retrieved and passed into the Agent as input context (e.g., retrieved memory of “I live in Dallas” in response to “What’s today’s weather like?”)
- 5 User or Agent decides to directly create a memory. Use GeneratedMemories to combine your extracted memories with existing memories.



User journey: Develop and deploy agent with memory



Support for A2A!



Connect Agents to Enterprise Systems

Do you need to connect your agent to ...

Any Random Enterprise System

- Modern tools ---->
- Legacy applications ---->



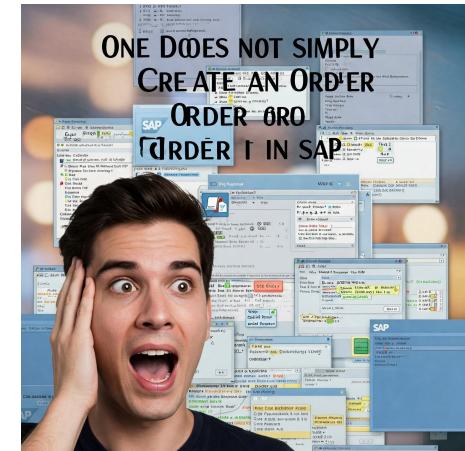
With a **deterministic workflow** in a sensitive system

- E.g. Creating or paying an invoice
- Updating a complex relational database
- According to regulatory rules or delicate business logic

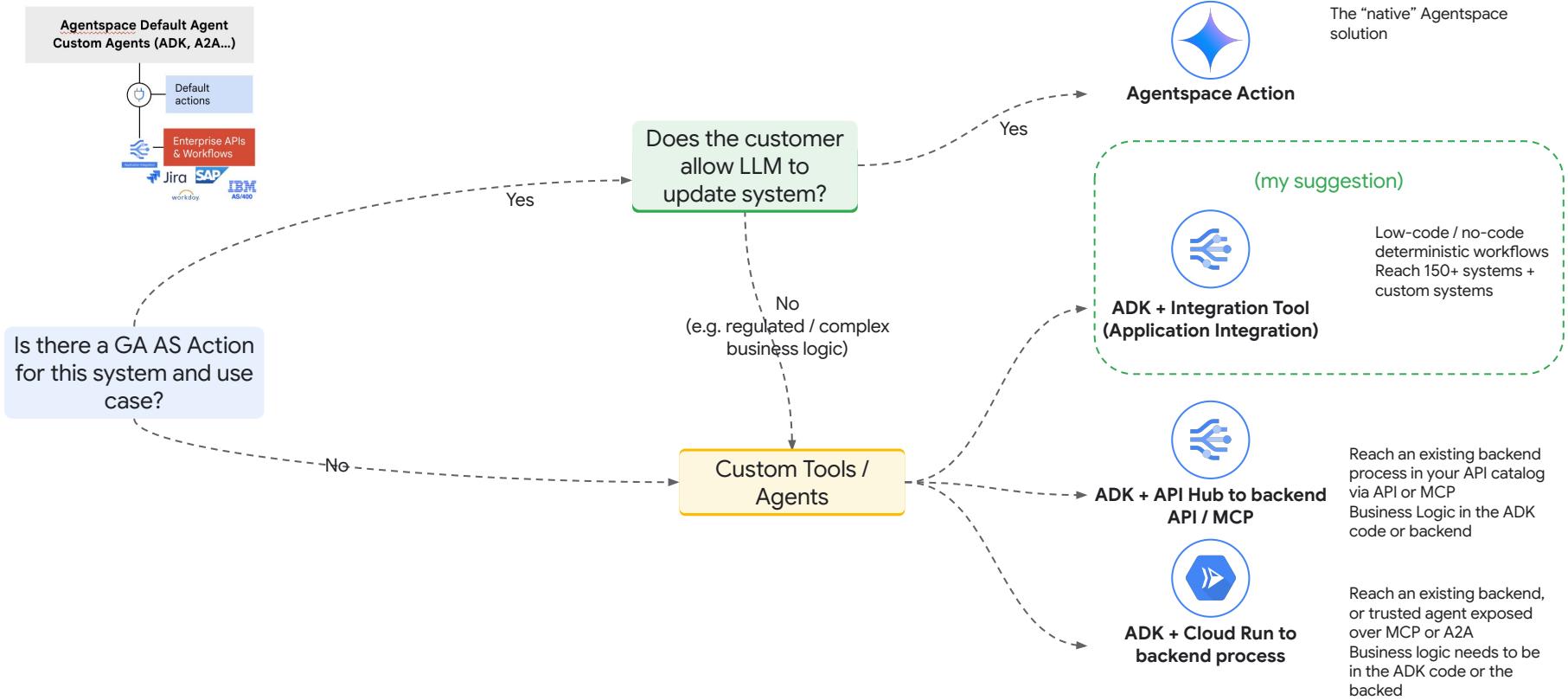
Or to **search** and ask questions

- In a real-time federated search mode
- Respecting enterprise ACLs

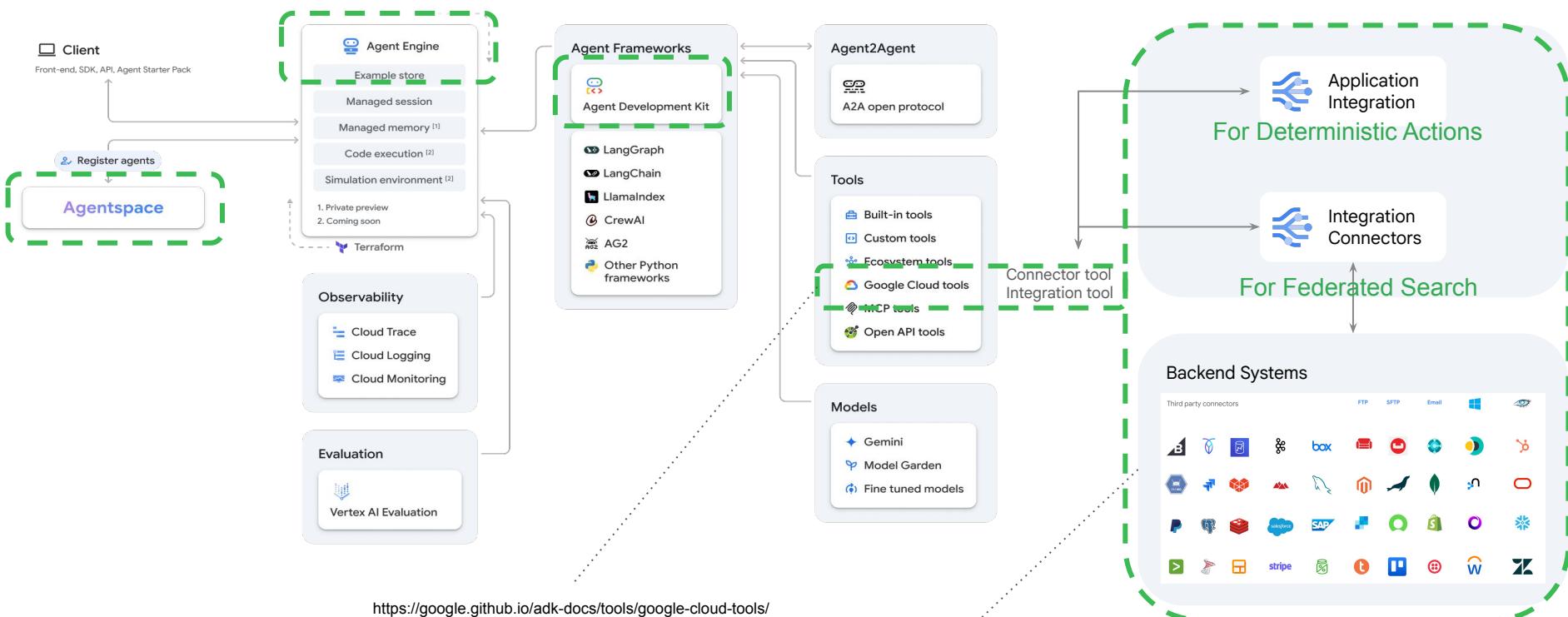
What are your options?



Decision Tree: Action Use Case



What components are involved?



Let's see it in action (code examination)

- Show the Code
- Show the Integration Components
- Run ADK Web and “talk” to SAP

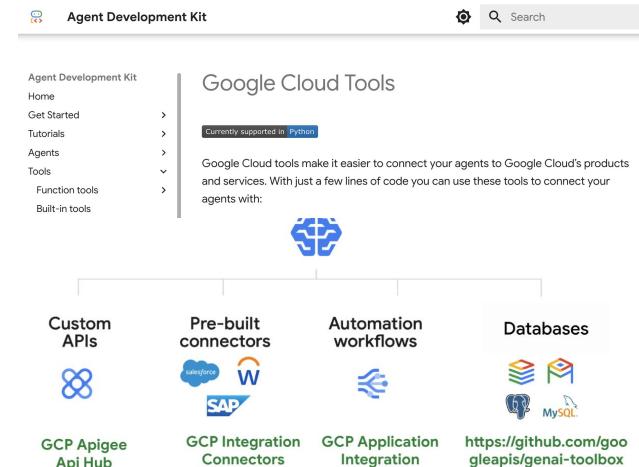
What can be useful for this hackathon?

ApplicationIntegrationToolset under ADK -> Tools

- Getting Started:
<https://google.github.io/adk-docs/tools/google-cloud-tools/#application-integration-tools>
- Create a Connector to your system and use `connector_tool` in your ADK to query it
- Create an Application Integration for a deterministic workflow and use `integration_tool` to call it

Useful assets to speed you up:

- [Demo video and setup of Jira Connector](#)
- [Blog post with a Getting Started](#)



Intro to hacking, platform and scoring

Hacking

Today's hacking challenge will consist on:

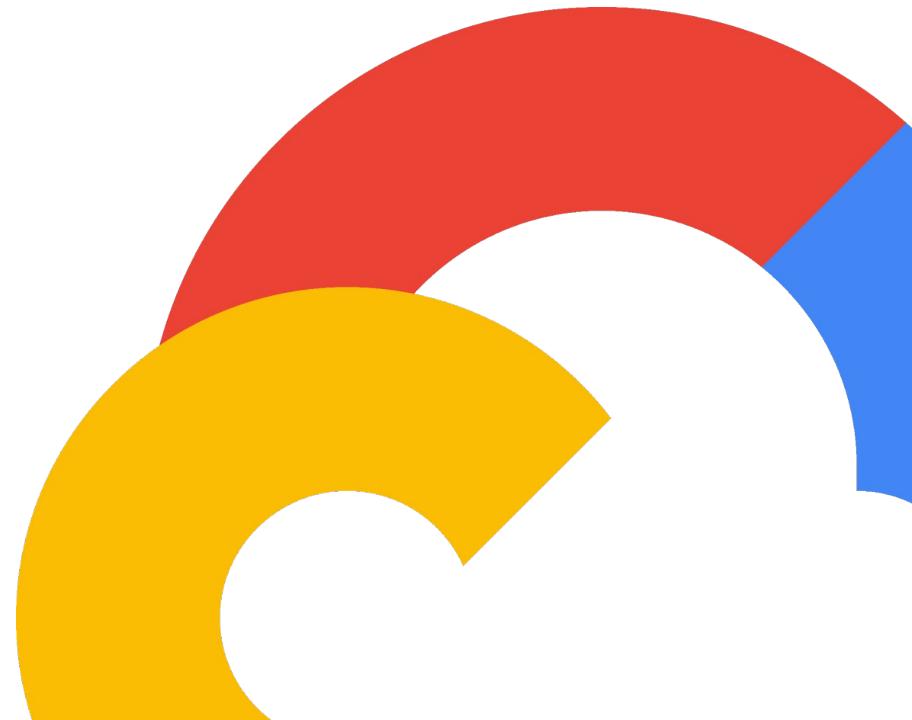
1. Deploying the **Agent Starter Pack** by following the steps of a lab in our Qwiklabs platform.
2. Building on top of your deployed Agent Starter Pack, you will use the same Google Cloud environment to continue with the **development of your own Agentic use case**.

We strongly recommend that your team works on a use case of your own, so we suggest either meeting beforehand to decide on a use case or taking some time today to think of a good use case idea to implement.

Nevertheless, if you arrived at the hackathon without any particular solution in mind that you wish to work on, feel free to take a look at [these examples](#).

Proprietary & Confidential

Scaling GenAI for Production: Agent Starter Pack



Google Cloud



Why an Agent Starter Pack

A few numbers

3

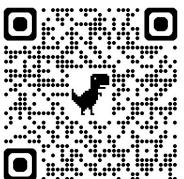
Months

Time required by us (experienced GCP developers) to develop a dummy Gen AI agent to production

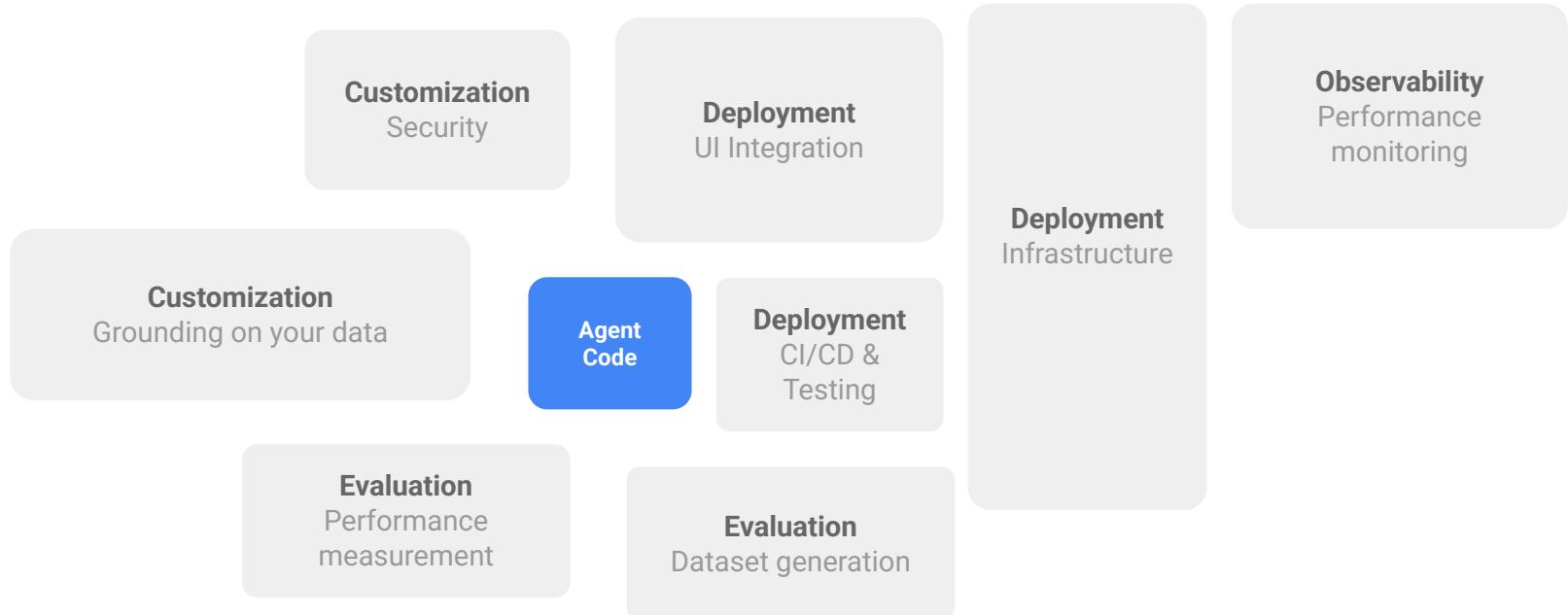
3-9

Months

Average time for GCP customer to launch a GenAI Agent in production



Why is that?

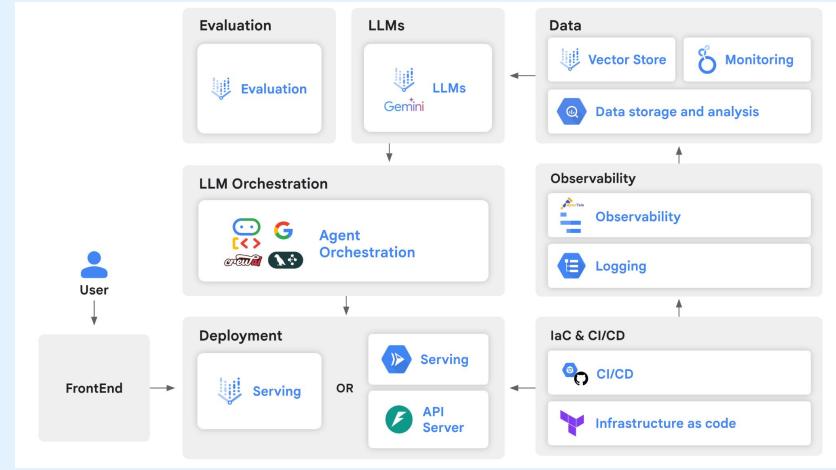


Agent Starter Pack

A collection of prod-ready templates

Reduce time-to-production from **months to weeks**.
Learn how to build **production-ready Agents** in GCP

goo.gl/agent-starter-pack



Deployment & Operations

Prod-ready API server

With a real-time chat interface, event streaming, and auto-generated docs.

UI Playground for experimentation

Including chat curation, user feedback collection, multimodal input, and more.

CI/CD and Terraform

For quick deployment. Including a set of unit, integration and load tests.

Customization

Ready-to-use AI patterns

Offering a diverse set of examples: Conversational chain, custom RAG, LangGraph agent.

Observability

GCP Native Observability

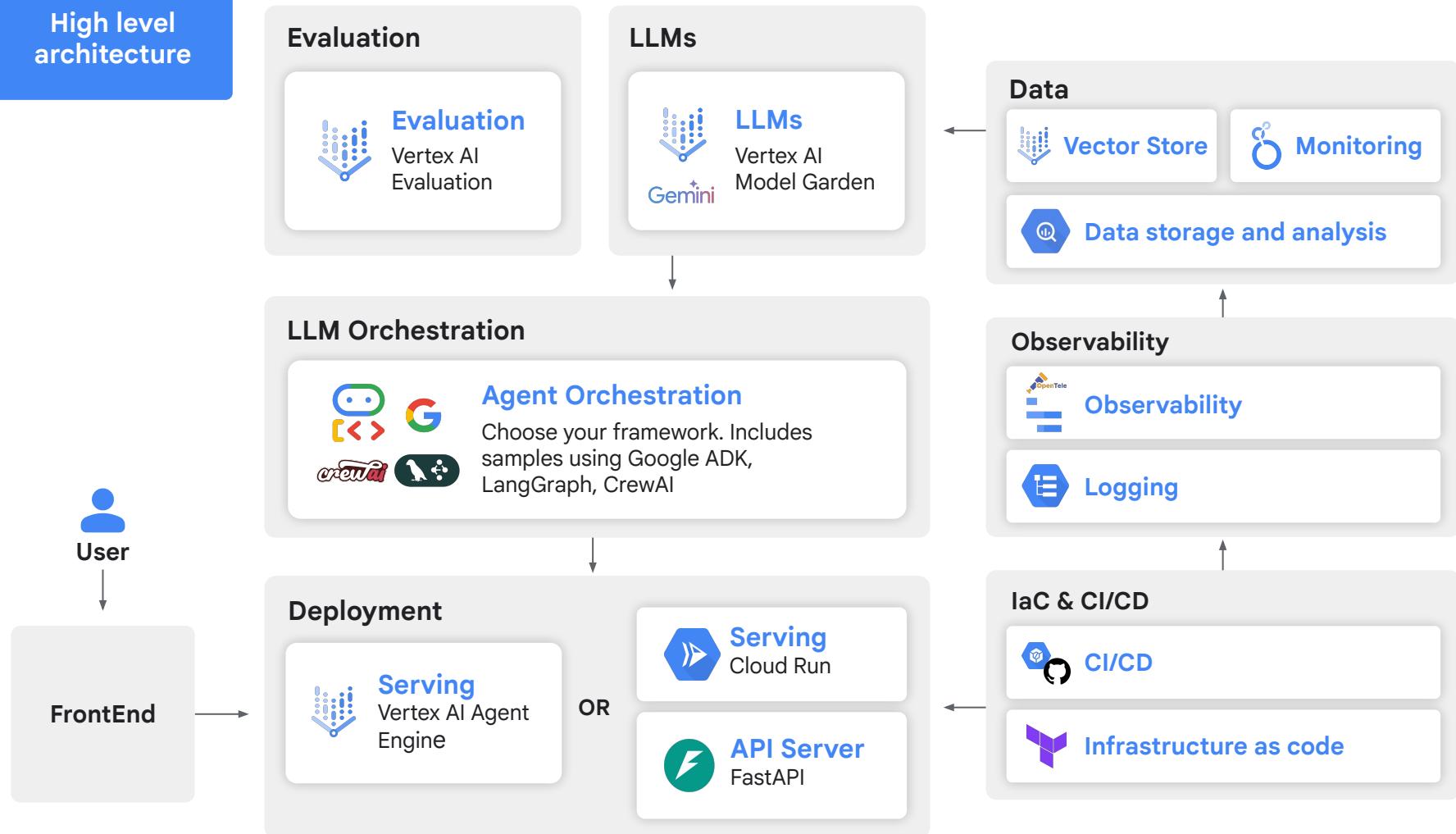
With Cloud Tracing and Logging. Includes a pre-built Looker dashboard for monitoring.



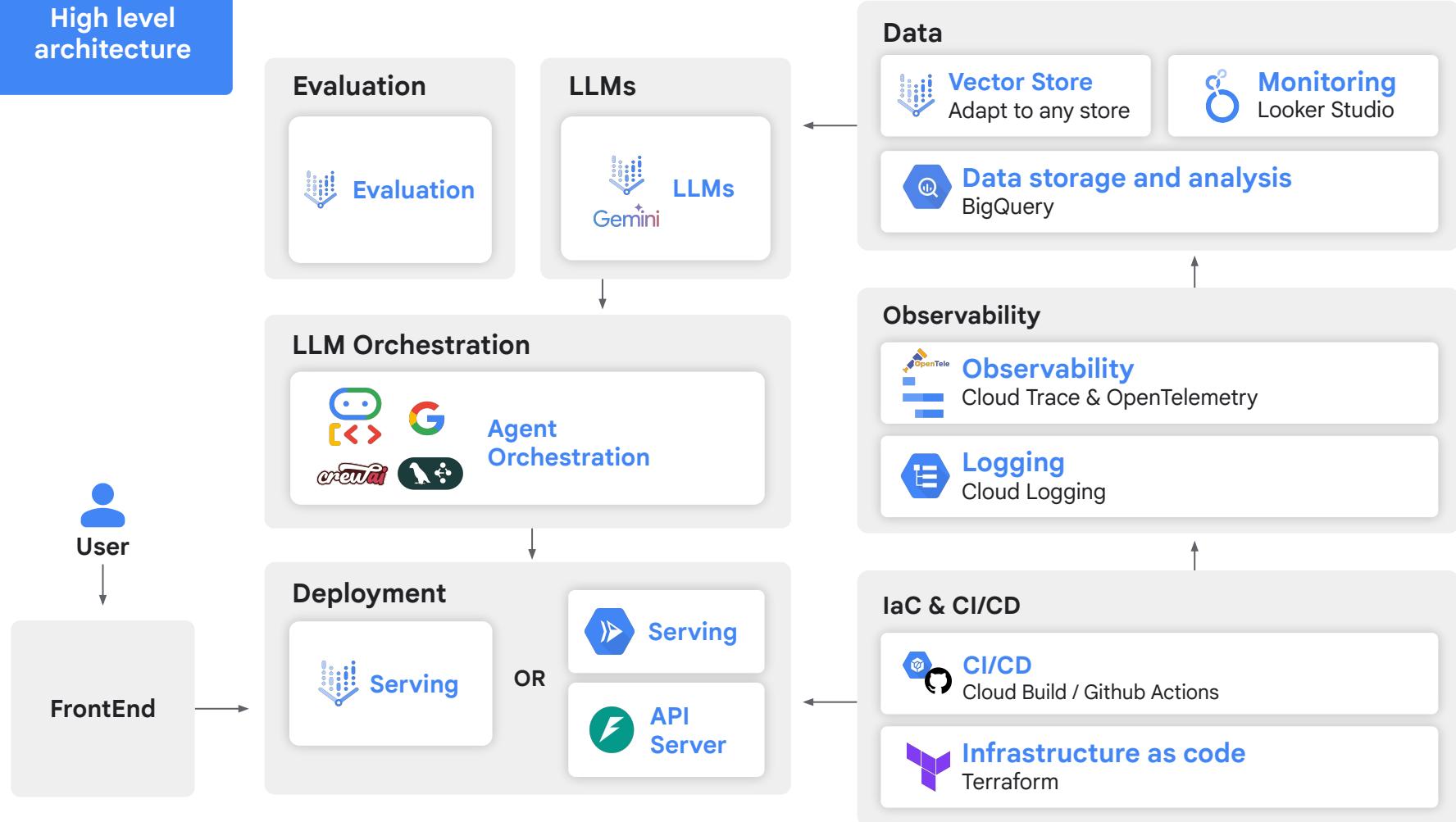
Evaluation

Evaluation

High level architecture

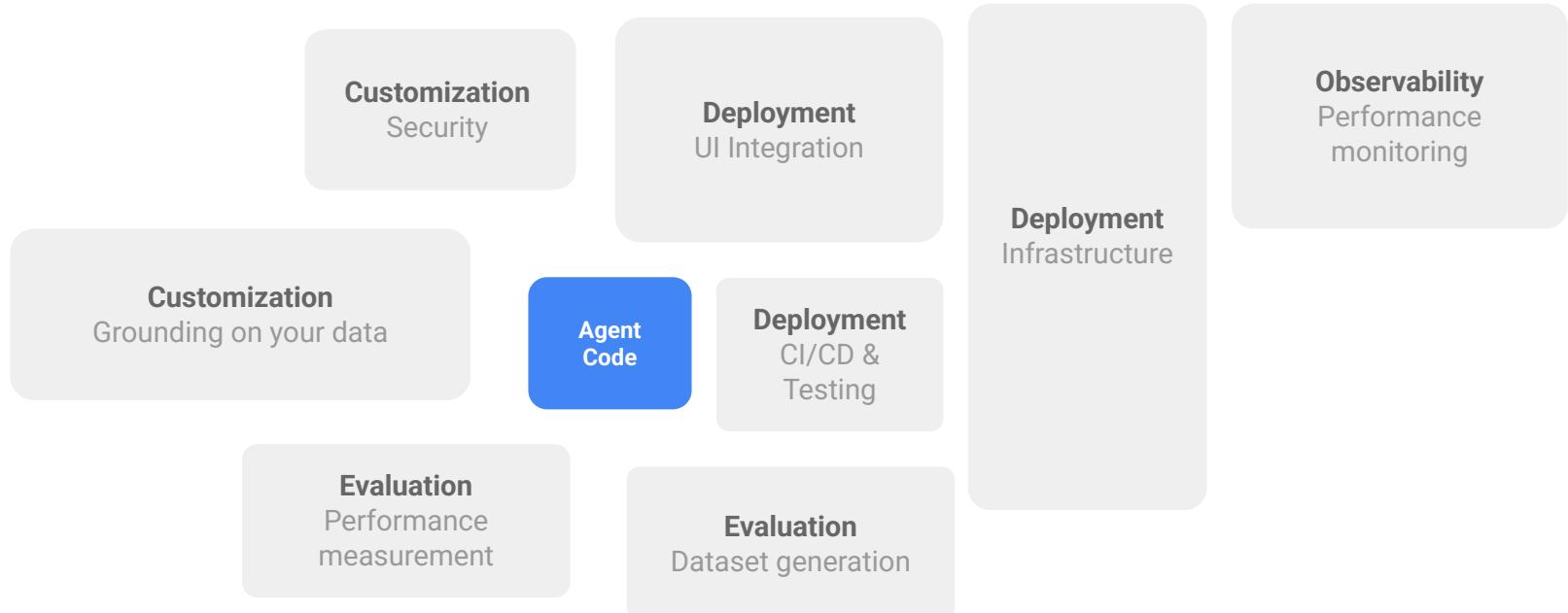


High level architecture

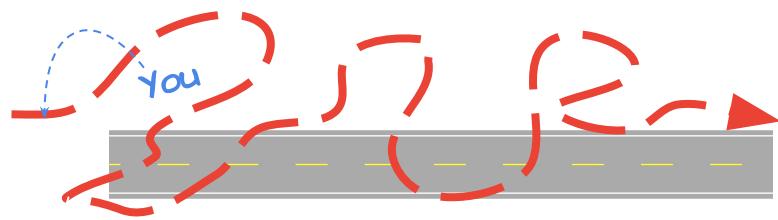


Agent Starter Pack

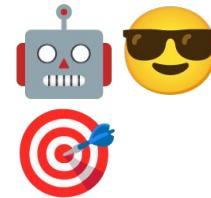
Focus on your core Agent, we provide the template foundation



Prototype



Production



46



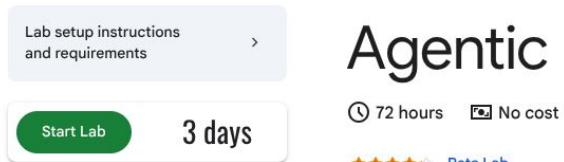
Live Demo!

How to access your lab & environment

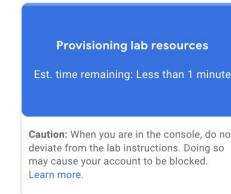
Remember! Only 5 team members maximum per team!

How to access your lab & environment

1. If this is your first time using Qwiklabs, go to https://explore.qwiklabs.com/users/sign_up and create an account (using your corporate email address, the same one you registered for the hackathon).
2. Important! **Only the team lead^(*) needs to follow this step:**
 - a. Go to <https://explore.qwiklabs.com/focuses/104187>
 - b. Sign in using your Qwiklabs account
 - c. Click on “Start Lab”



- d. It can take some minutes to provision the Google Cloud project



* if the team lead is not able to participate (e.g. is ill or similar) please [fill out this form](#) asking to replace your team's lead with another team participant's email

How to access your lab & environment

3. Once provisioned, you now have unique credentials for each team member to login to Google Cloud. The team lead should share each user account with each team member

End Lab 14:59:55

Caution: When you are in the console, do not deviate from the lab instructions. Doing so may cause your account to be blocked.
[Learn more.](#)

[Open Google Cloud Console](#)

Username
student-00-559181cb9d82c

Password
RkhQboNGnwUR

Dev - GCP Project ID
qwiklabs-gcp-00-a1065f5c

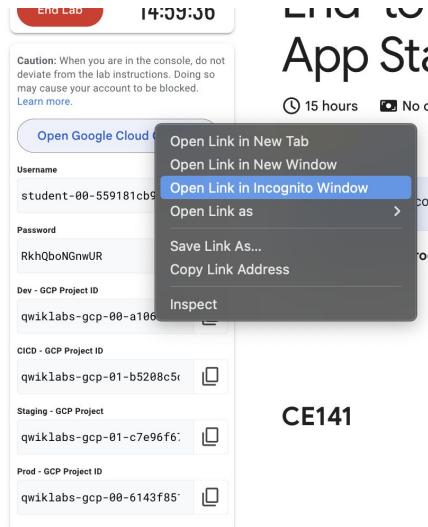
CICD - GCP Project ID
qwiklabs-gcp-01-b5208c5e

Staging - GCP Project
qwiklabs-gcp-01-c7e96f61

Prod - GCP Project ID
qwiklabs-gcp-00-6143f85c

How to access your lab & environment

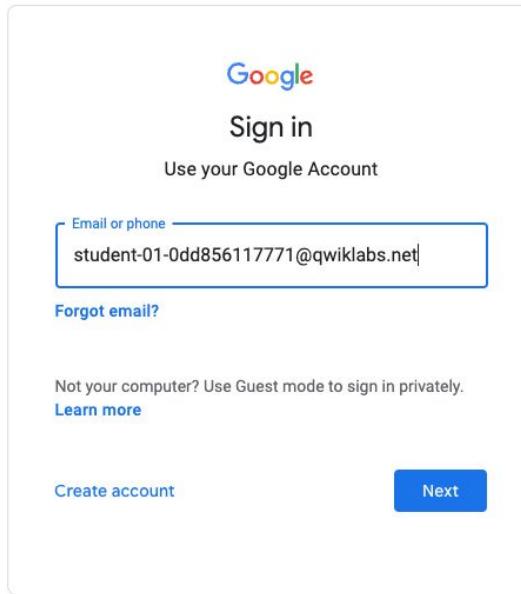
4. Click on “Open Google Cloud Console” in a new Incognito Window



CE141

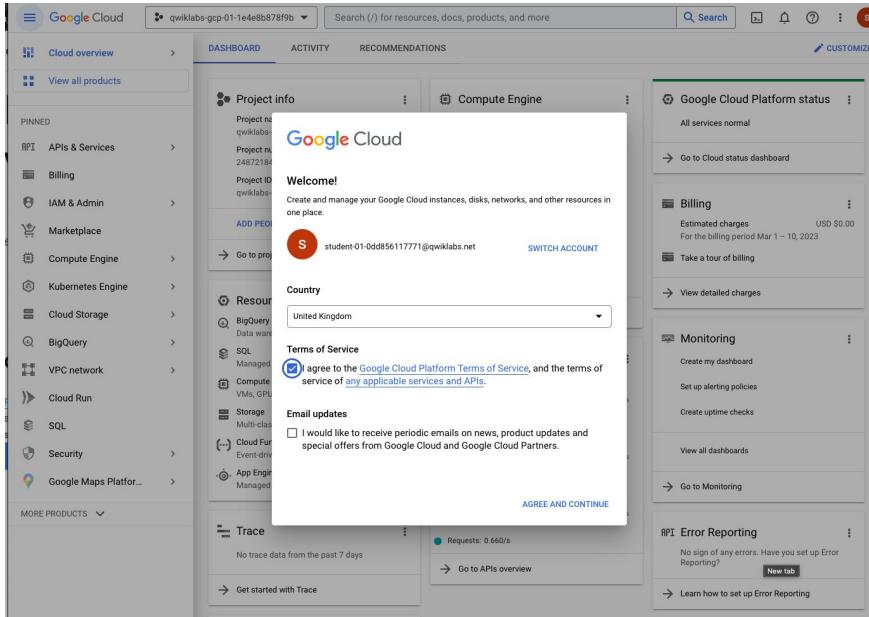
How to access your lab & environment

5. Sign in using the credentials received in step 3



How to access your lab & environment

6. In the Google Cloud console, accept the Terms of Service



How to access your lab & environment

7. Now follow the instructions in the lab

Brainstorm and Design Your Agent

- Before diving into development, **spend time exploring** existing agents in the starter pack to understand their capabilities.
- **Conduct** a team brainstorming session to:
 - Identify the problem your agent will solve
 - Define the core functionalities and features
 - Determine how your agent will interact with users
 - Choose a creative and memorable name for your agent

Team Collaboration Strategies

- After the initial setup, your team can collaborate in various ways. Here are some effective strategies:
 - **Peer Programming:** One person codes, while others review. *Best for complex features or onboarding to new tools, promotes quality and shared understanding.*
 - **Git Workflow:** Utilize Git for concurrent code contributions. Team members work on different features and use pull requests to merge changes. *Essential for parallel work and managing contributions.*
 - **Task Division:** Divide tasks based on individual strengths, allowing team members to contribute to different agent components. *Efficient for covering more ground quickly.*
 - **Mob Programming:** The whole team collaborates on a single screen. *Excellent for real-time problem-solving and intensive knowledge sharing on critical components.*

Important Notes

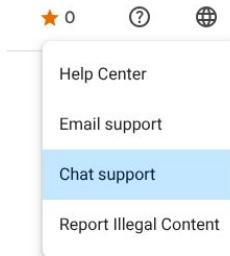
How to access your lab & environment

Important!

- Please make sure to select the “**adk_base**” or “**live_api**” template in the “Create an Agent” step.
- In order to avoid issues when setting up CI/CD:
 - [Cloud Build Github App](#) needs to be installed on the github repo

Need help?

- If you are experiencing **issues with the Qwiklabs platform** itself (cannot log in, lab not loading, etc) please click on the top right corner to request help via Chat Support. A virtual agent will triage your request and forward you to a technician available 24/7:



- If you are on site and have questions about **logistics** (when is lunch, where are the restrooms, etc) please contact the Googlers who are on site to assist you.
- If you have questions about **how to access the lab, scoring, how or when to submit your agent**, you should find all answers in this same guide.

Need help?

- If you have questions, are getting an error or face blockers while developing your agent we strongly encourage you to use [**Gemini CLI**](#)!

It is really great at **code understanding** and **generation**, **debugging** and **troubleshooting** issues, and more.

[Gemini CLI](#) will likely be faster than our human coaches. 

Need help from a coach?

If you are **on site**:

There will be coaches in the room who can help you. Please raise your hand to ask for assistance and a coach will help you once available.

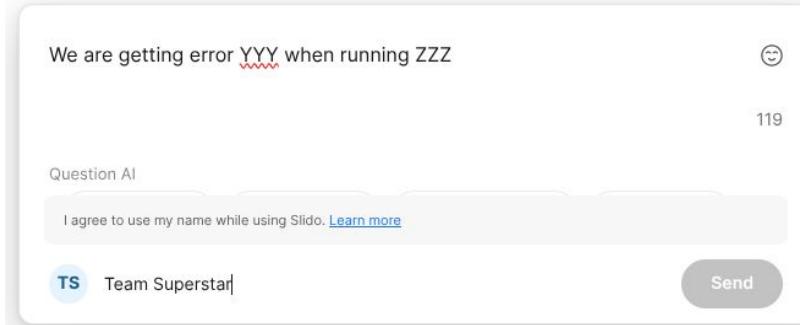


Need help from a coach?

If you are **online**:

There will be coaches online available to assist you:

- Please go to [this Slido](#)
- Post your question / help request and be as detailed as possible (include your team name)

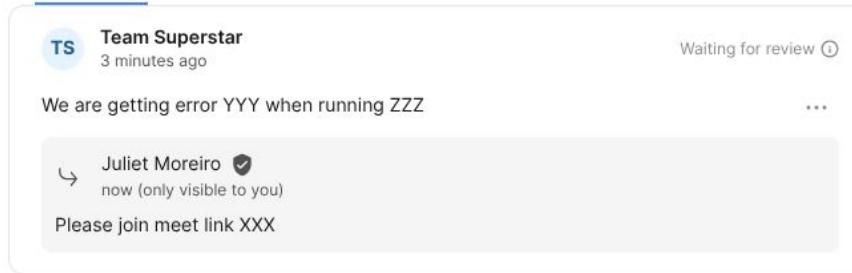


Need help from a coach?

- A coach might answer your request directly:

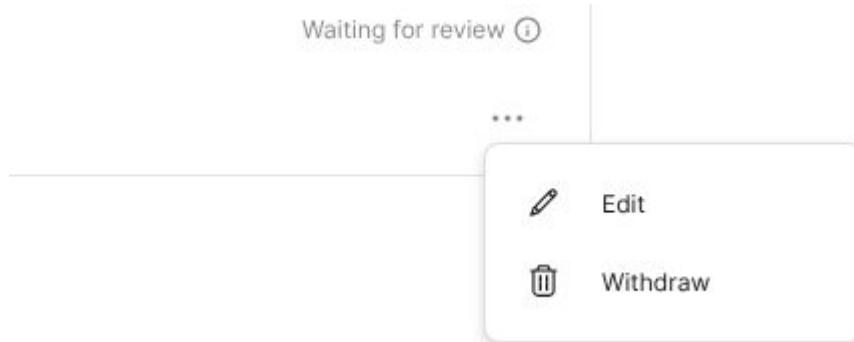


- Or ask you to join him/her in a Meet room to look further into your request / issue:



Need help from a coach?

- If you need to edit your request, add more details or delete it because you no longer need help:



Need help from a coach?

Important!

- Only join the Meet room when invited by a coach.
- If you have different questions or requests for help throughout the day, post a new request for each one in [Slido](#). Different coaches can assist you in each request.
- Please be patient, we expect a high number of participants and each team might need different dedication from our coaches. But if your request is in [Slido](#), we will make sure to help you!

Once you finish the lab

In order for each team member to receive the **Credly badge** please submit your team details by filling out [this form](#) (only the team lead needs to submit the form).

The fun begins! You will continue to **work on your own agentic use case**.

We strongly recommend that your team works on a use case of your own, so we suggest either meeting beforehand to decide on a use case or taking some time today to think of a good use case idea to implement.

Nevertheless, if you arrived at the hackathon without any particular solution in mind that you wish to work on, feel free to take a look at [these examples](#).

You can continue to request help from a coach if needed.

Once you finish the lab... Google AI Principles

AI Should

- 1 be socially beneficial
- 2 avoid creating or reinforcing unfair bias
- 3 be built and tested for safety
- 4 be accountable to people
- 5 incorporate privacy design principles
- 6 uphold high standards of scientific excellence
- 7 be made available for uses that accord with these principles

Areas we will not pursue

- 1 likely to cause overall harm
- 2 principal purpose to direct injury
- 3 Surveillance violating internationally accepted norms
- 4 purpose contravenes international law and human rights

When choosing a use case to work on, please keep these AI principles in mind. You can read more about our [AI Principles here](#).

Scoring Criteria



Agent Architecture & Complexity

- Architectural Design
- Tool Integration & Function Calling
- Task Decomposition & Planning



Implementation & Production Readiness

- Effective Use of GCP & Starter Pack
- Code Quality & Execution
- CI/CD & Observability (Bonus)



Problem, Solution & UX

- Problem-Solution Fit
- User Experience & Ease of Use



Innovation & Presentation

- Innovation & Market Potential
- Clarity of Presentation & Demo

Agent Architecture & Complexity



40%

Category	Sub-Criterion	Description
Agent Architecture & Complexity	Architectural Design	Is the agent well-architected? Does it employ advanced patterns like multi-agent systems, long-term memory or a clear chain-of-thought process?
Agent Architecture & Complexity	Tool Integration & Function Calling	How effectively does the agent use external tools, APIs, or functions? Higher scores for agents that can select and utilize multiple tools based on context.
Agent Architecture & Complexity	Task Decomposition & Planning	Can the agent break down a complex, high-level goal into smaller, manageable sub-tasks and create a plan to execute them?

Implementation & Production Readiness



30%

Category	Sub-Criterion	Description
Implementation & Production Readiness	Effective Use of GCP & Starter Pack	Did the team effectively leverage the provided agent-starter-pack and the right GCP services for the job (e.g., Vertex AI, Cloud Run, Agent Engine)?
Implementation & Production Readiness	Code Quality & Execution	Is the code clean, well-structured, and functional? Does the agent run reliably and handle potential errors gracefully?
Implementation & Production Readiness	CI/CD & Observability (Bonus)	Did the team successfully implement the optional CI/CD pipeline and/or observability dashboard, demonstrating a clear path from prototype to production?

Problem, Solution & UX

Category	Sub-Criterion	Description
Problem, Solution & UX	Problem-Solution Fit	Is it immediately clear what real-world problem the agent solves? Is the solution practical, useful, and a good fit for the problem?
Problem, Solution & UX	User Experience & Ease of Use	How intuitive and effective is the agent to interact with? Is the user interface or conversational flow smooth and well-designed?

Innovation & Presentation



Category	Sub-Criterion	Description
Innovation & Presentation	Innovation & Market Potential	Does the solution present a highly innovative idea or address a significant market need in a creative way?
Innovation & Presentation	Clarity of Presentation & Demo	How clearly did the team explain the problem, solution, and technical architecture? Was the live demonstration effective and compelling?

Submission process

[Submit your agent!](#)

Once your team is ready to submit your agent:

- The **team lead** should submit the agent by filling out [this form](#).
- Submissions will be **accepted until September 18th at 18:00 GMT+1**. No exceptions.
- Agent details:
 - o Team Name
 - o Email of team lead
 - o Video Presentation (maximum 5 minutes, the video must be publicly accessible or shared with agentic-era-hack-reviewer@google.com)
 - o GitHub repo link (the repository must be publicly accessible or shared with agentic-era-hack-reviewer@google.com)
 - o Slides*
 - o Demo*

(*) optional

Submission process

Video

- Maximum 5 minutes:
 - 2 minutes of intro and demo
 - 2 minutes of technical details, Google Cloud services used, complexity of the agent
 - 1 minute closing, future improvements, experience building the agent
- Maximum 1 GB
- Video must be publicly accessible or shared with agic-eric-era-hack-reviewer@google.com
- Judges have the authority to deduct points on case of substantial doubts that the submitted video is based off, and backed by, the submitted code repository
- If video is longer than 5 minutes, only the first 5 will be considered

Submission process

GitHub repo

- Please either stop editing your repository after the submission deadline, or provide a link to a branch / tag below that will stay stable after the submission deadline.
- The repository must be publicly accessible or shared with
agentic-era-hack-reviewer@google.com

Submission process

Additional assets (optional)

- You can include a slide deck presentation or an architecture diagram
- You may include a live demo for judges to be able to see. Include usage instructions such as authentication, etc for access to the demo.

Important!

- If any rules are being violated (more than 5 members in one team, [AI principles](#) not taken into account, etc) your team could be disqualified.

Winners!

All participants who complete the Agent Starter Pack lab and whose team filled out [this form](#) will receive a Credly badge in their inbox which can be shared in social media.

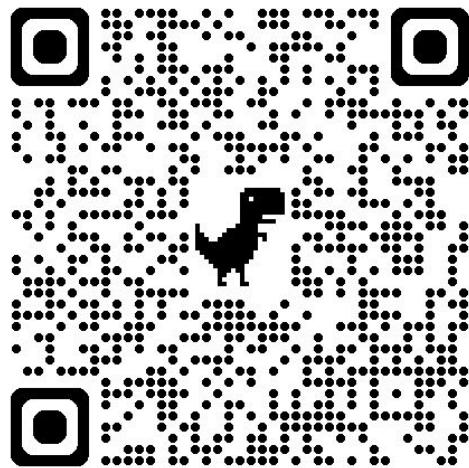


Agentic Era Hackathon '25
Issuer: Explore Google Cloud

Winners will be announced on September 29th at 11:00 GMT+1 via Google Meet (look out for a calendar invite you will soon receive).

The top 3 winning teams will receive a \$50 voucher for each team member for the Google swag store and will be featured in our repository.

Are you missing out on our EMEA AI Partner Community?



Our community gives you access to:

- Regular technical live online sessions with AI specialists and PMs
- Product Updates
- Resources (decks, recordings, template SoWs)
- Watch [previous sessions](#)

Request to join goo.gle/emea-partner-practice-ai

Feedback

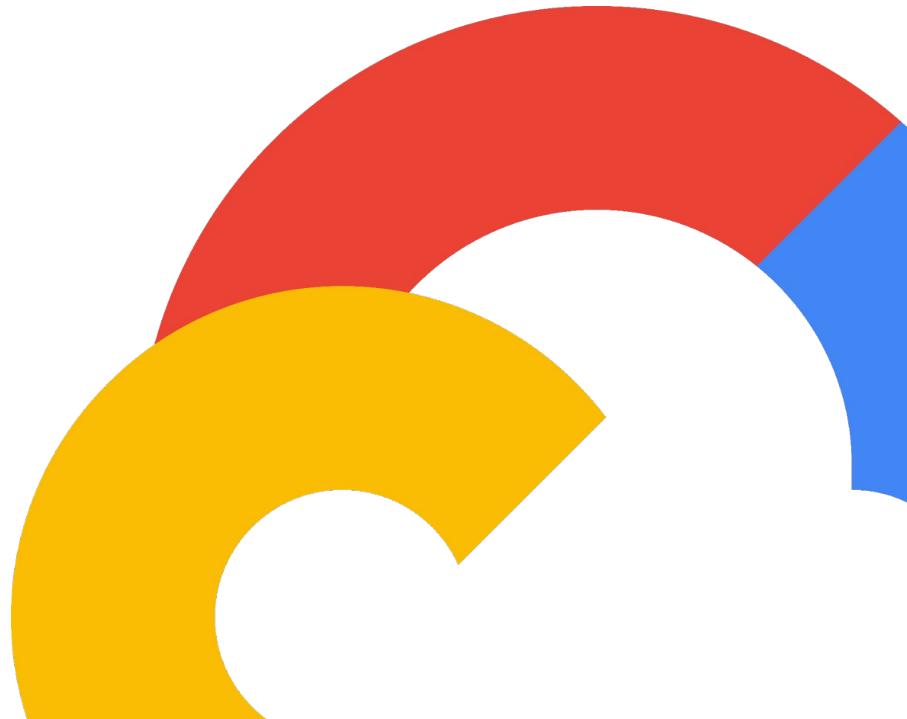
<http://goo.gle/41xjLEU>



Questions?

Check out our [FAQ](#), request assistance from a coach
or contact us at emea-pep-ai@google.com

Let's hack!



Google Cloud