

tmforum

innovation

Hackathon 2024

Webinar briefing June 6th 2024
Driving innovation with AI

Google Cloud

Agenda

Section	Speaker	Time
Welcome & opening remarks including overall challenge scope	Aaron Basman-Patel	5 mins
Google Cloud Team – Opening remarks & Context setting	Jen Hawes-Hewitt	10 mins
Innovation Hub Team & Google Cloud - Introducing AIVA and detailing the challenge: <ul style="list-style-type: none">• What is the TMF AIVA• Use case ideas• The platform we are using• Onsite Agenda• Judging criteria	Krishnamurthy Srinivasan ('Srini') Aniket Mhala	25 mins
TM Forum - Operational Set Up and Logistics <ul style="list-style-type: none">• Onsite location and set up and move in• Confluence space• Judging process	Graham Hughes	5 mins
Questions and Answers	All	15 mins

Welcome to the Hackathon! Are you ready???

The Challenge

Utilize TM Forum AIVA to demonstrate how you can harness its capabilities to address a substantial business challenge within your organisation

Prototype development
18th – 19th June
The Pitch, 20th June 9am –
Midday at 12:30pm

4 Teams competing



Expert support

TM Forum onsite staff,
Google mentorship,
Innovation Hub Team

Pre event training

Make sure you take advantage of the pre-event training that is available. GenAI training and Google Vertex.

Preparation

Decide on the solution that you and your team are going to work on! Remember the different skills that you need in order to build your use case and what do you need to be successful?

Remember the judging criteria

Don't get lost in the technical solution – remember the challenge and the judging criteria – need to really demonstrate business value

Have fun!

It is a competition but do not forget to enjoy yourself

Ask for help!

Don't be shy, we have a team on hand to help you if you have any questions. Make sure you familiarise yourself with TM Forum Assets, AVIA, and Google Vertex and any other infrastructure or tools that you need and make sure you have the correct permissions to create your solution.

Banking

\$270B

Media & entertainment

\$100B

Retail

\$315B

\$7 trillion

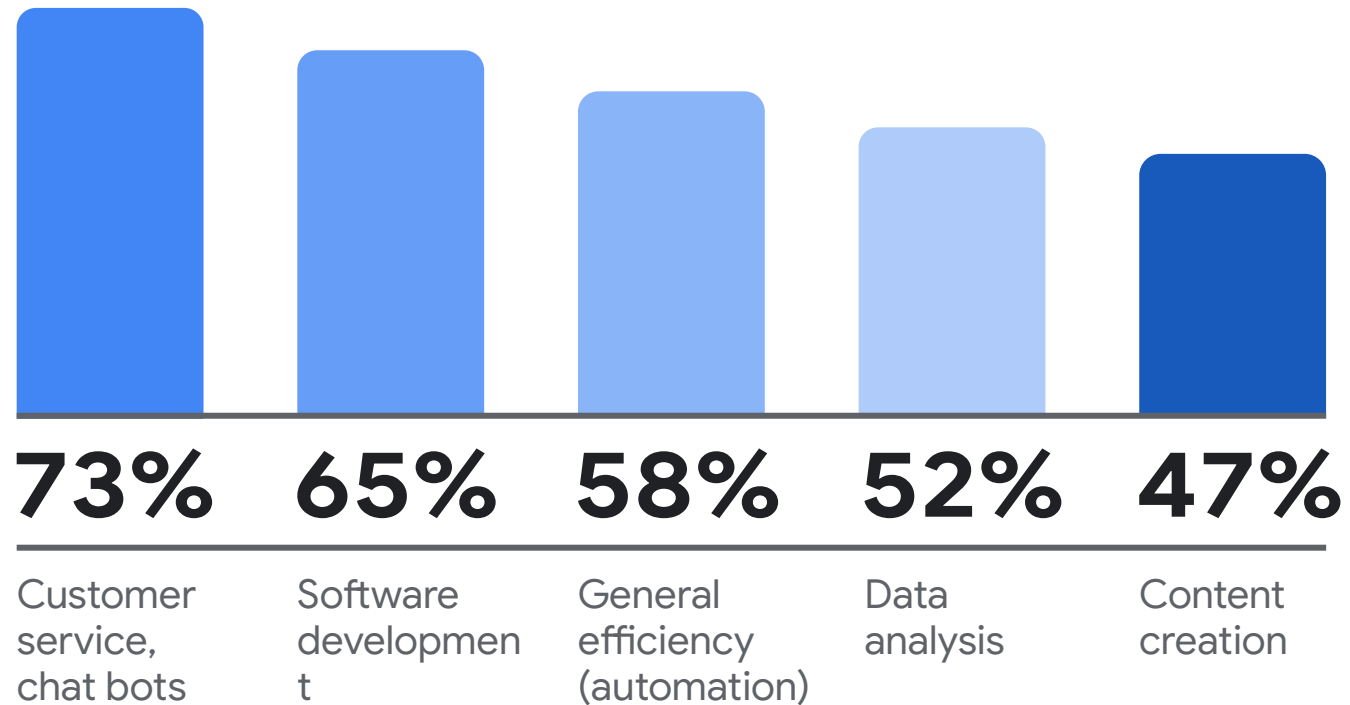
Healthcare

\$205B

Telco

\$80B

Top generative AI use cases



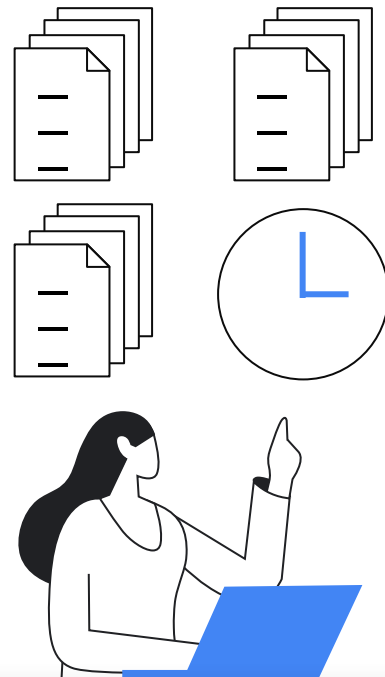
*Based on pre-event survey of 113 of Next'23 Leaders Circle attendees

Employee Knowledge Search

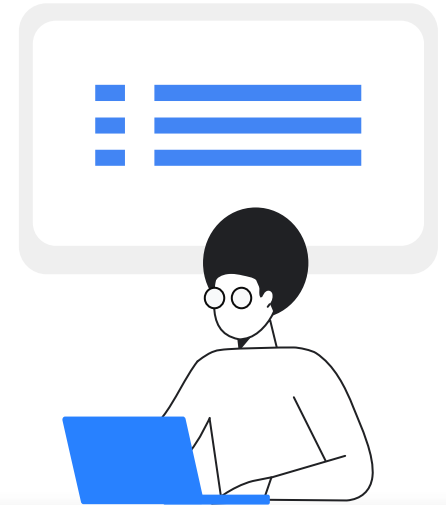
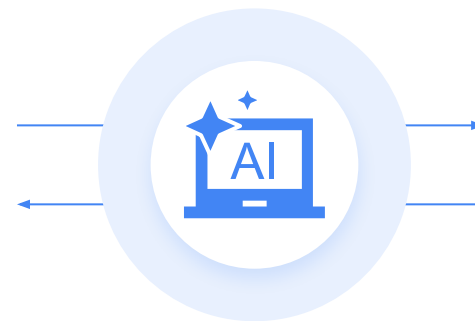
Example only

Quickly find the most relevant data and content via natural language search to **boost employee productivity and knowledge sharing.**

Example: A team of Device Requirement Engineers wanting to find approved devices based on a set of specifications.



Hours spent navigating thousands of pages and tables of unstructured data in PDF and HTML formats.



Vertex AI Search makes this task easier by providing a summary of search results, as well as pointing to all related documents that discuss the same device and/or specification.

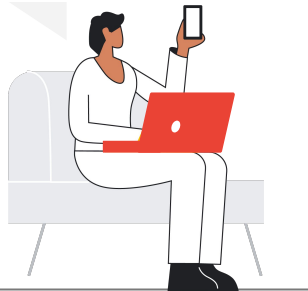
Test/Code Script Generation

Example only

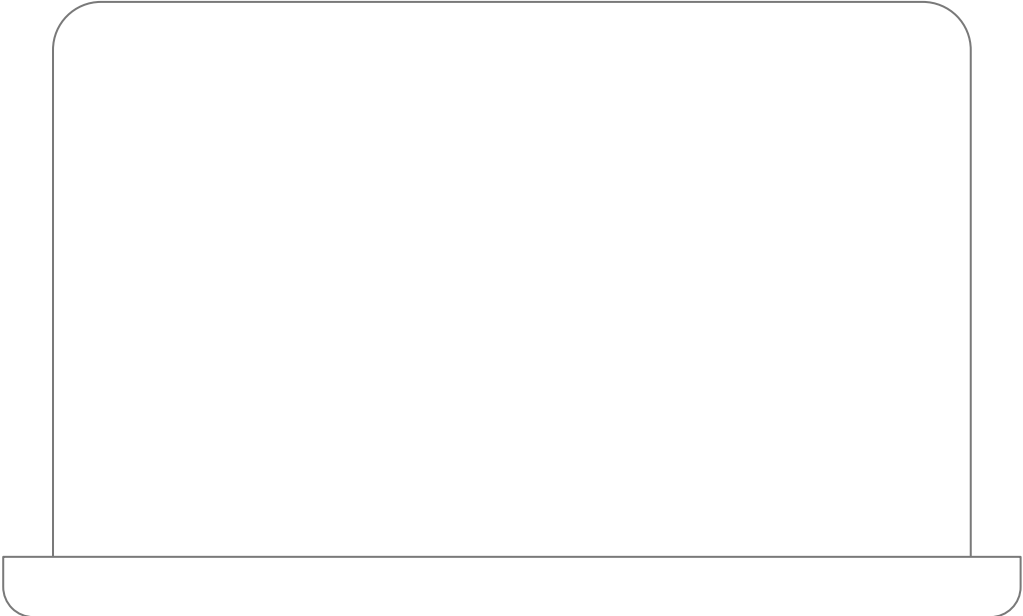
Improve quality and save time in a variety of Enterprise IT functions, including software testing, script generation, code recommendations and troubleshooting.

Example: Automate test scripts generation to ensure SLAs and NPIs are met using code generation.

"I need to update my test script use cases and adapt them to new software requirements."



CSP App Developer



Codey - Google's text-to-code foundation model, and Duet AI can be embedded in an SDK or application to help improve developer velocity with code generation and code completion, and to improve code quality.

Why participate?

Join the challenge! Compete with industry leaders to solve real-world telco problems using Google Cloud's cutting-edge AI and TM Forum AIVA.

Here's why you should participate:

- Get mentored by Google experts and win prizes.
- Walk away with a **cutting edge prototype** solution to your business challenge
- **Gain recognition!** Showcase your innovative solution to the global telco audience and get featured on TM Forum and Google sites.
- **Network and learn!** Participate in the hackathon and receive a complimentary pass to DTW Ignite, a premier industry event.

Don't miss this exciting opportunity and make your mark in the telco industry!

Teams to showcase their solution to judges from TM Forum

Date

18th- 20th June , 2024

What Time

9am to 5pm

Where

Hackathon Quad

Winners Announced

20th June - 12:30 pm

Winners will receive

- Post Hackathon Google mentor support
- TM Forum Trophy + Google Swag/Credits
- Inform article spotlight in July
- Post event marketing - 'winning social posts'
- Showcase webinar alongside TMF and Google Cloud in Sept 2024

Context setting - What is [TM Forum AIVA](#)?



TM Forum AIVA is an enterprise search agent built with Google's Gemini, that draws on TM Forum's rich corpus of accumulated industry knowledge and standards and provides synthesized industry insights at Members' fingertips.

TMF AIVA has been built collaboratively by TM Forum Innovation Hub members

Leverages Google's multimodal Gemini model and the Vertex AI Agents

Built to be grounded in TM Forum facts to avoid hallucination

Offered "as a Service" via API to integrate with your business flows and also accessible with a GUI

Easy to integrate with your own documents, data, images and personal productivity tools.

Can auto generate ODA API code – with assured IP protection and security for TM Forum

The Challenge

Innovate using GenAI & TM Forum Best Practices - leverage TM Forum AIVA & Google Cloud

Use TM Forum AIVA to solve business challenges

- Develop plans for autonomous operations, sustainability, network modernization, customer service, or major business endeavors

Augment TM Forum AIVA with your data

- Integrate your enterprise, public (e.g., Kaggle), or 3rd party data with AIVA (you control your data)
- Leverage this data for Gen AI, ML, analytics, and data solutions from Google Cloud

Enhance TM Forum AIVA with additional modes of communication

- Add new ways to interact with AIVA, like embedding it in dashboards

Use Case Inspiration

Ideas are illustrative! Please bring your own ideas to address your specific challenges!

Use TM
Forum AIVA
to

Enrich
Enterprise
Data to

Accelerate creation of a strategic plan for RAN Energy Savings

- Learn from the leaders from case studies and Catalysts
- Identify TM Forum assets such as toolkits you can leverage

- Integrate with recommendations from your key vendors
- Use your own enterprise's energy spend data to prioritize areas of focus

Automate autonomous operations assessment

- Generate a questionnaire based on the TM Forum Maturity model

- Use your enterprise information to customize the questionnaire for different domains (network ops, customer support,...), auto-generate instructions / messages to targeted respondents

Design a best-of-breed, plug-and-play solution for targeted marketing

- Identify the relevant eTOM business processes and APIs to standardize on

- Use your enterprise IT data (e.g., CMDB application mapping) to identify your apps and interfaces to be impacted

Generate skeleton code for a specific API, customize, add biz logic and integrate with your flow

- Generate skeleton code for an API

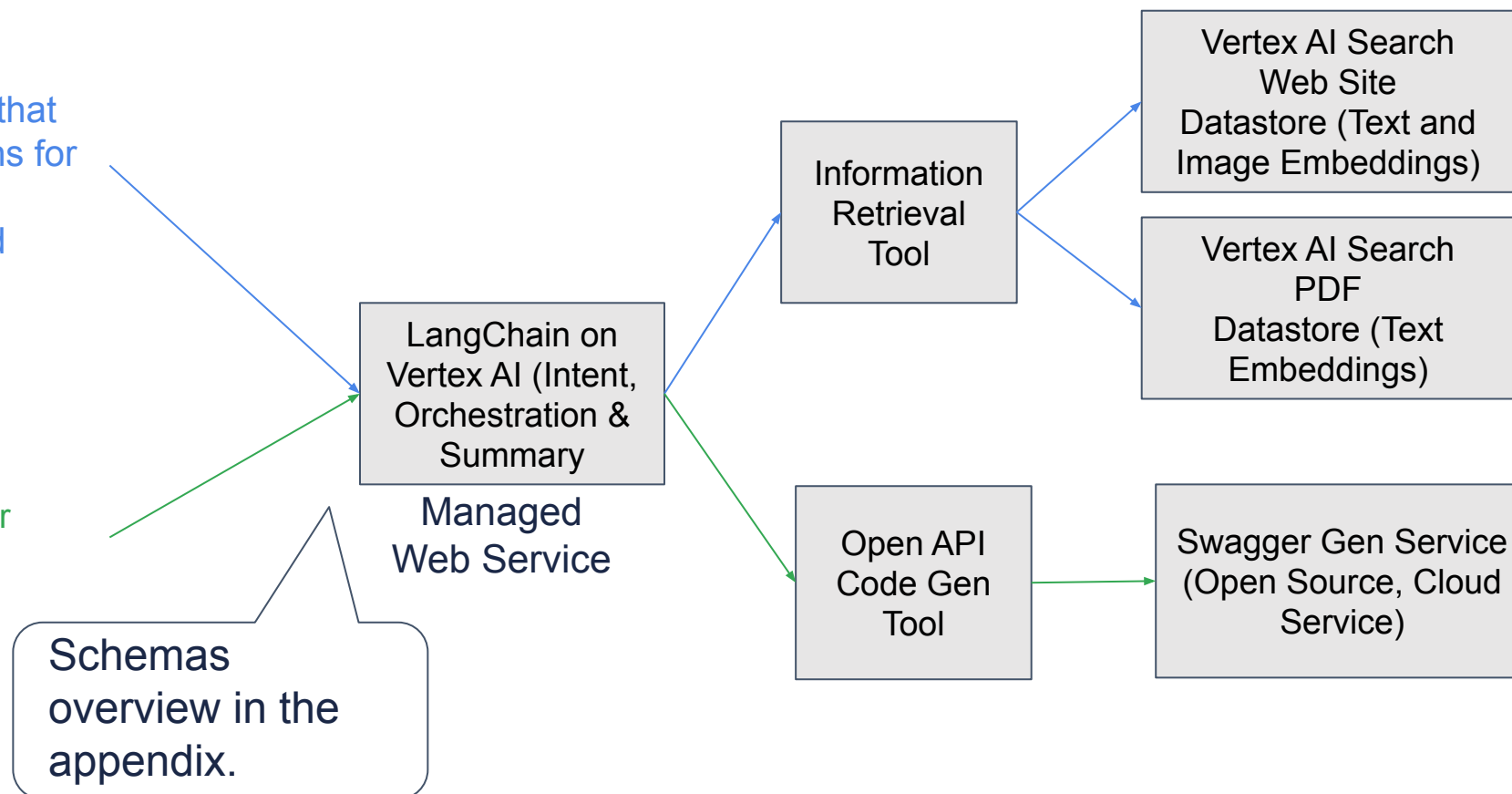
- Customize the code to your enterprise needs, add some biz logic and integrate with UI or other functions

“TM Forum AIVA aaS” Architecture

“Describe case studies that use AI knowledge graphs for autonomous networks including use cases and benefits.”

Generate code in java for Trouble ticket API

Schemas overview in the appendix.



Example Use Case: Developing Knowledge Graphs Proposal for NWOps

You are a Principal Architect for NWOps Innovation. You want to develop a proposal to convince your leadership to invest in exploring the use of Knowledge Graphs for achieving autonomous networks.

Some information you need:

- Has anybody operationalized it?
- For what use cases?
- What problems did they solve or what benefits did they get?

- How important are these problems / benefits for my business?

Start with TM Forum AIVA for Industry Insights

Query: “Describe case studies that use AI knowledge graphs for autonomous networks including use cases and benefits.”

TM Forum AIVA Response (after Markdown rendering)

Case Studies of Knowledge Graphs for Autonomous Networks:

Here are some case studies of how knowledge graphs are being used to improve autonomous networks:

China Unicom:

- **Use Case:** China Unicom deployed an AI knowledge graph to automate network fault management across multiple mobile domains.
- **Benefits:**
 - **Increased Efficiency:** Fault handling efficiency improved by 67%, reducing the average process time from 45 minutes to 15 minutes.
 - **Cost Reduction:** Annual costs decreased by 11.3 million euros due to reduced manual analysis.
 - **Improved Accuracy:** Root Cause Analysis (RCA) accuracy increased from 70% to 89%.
 - **Knowledge Sharing:** Knowledge gathering increased by 38%, and knowledge dissemination time was reduced from 2 months to 2-4 weeks.
 - **Interpretability:** 100% of the inference processes are now interpretable, aiding front-line engineers in understanding recommended actions.

China Telecom:

- **Use Case:** China Telecom is using a knowledge graph in conjunction with a large language model (LLM) to improve network autonomy.
- **Benefits:**
 - **Improved Production Efficiency:** Production efficiency increased by 50% compared to manual processes.
 - **Enhanced Fault Identification:** The knowledge graph helps identify causal relationships between separate network faults, improving prediction accuracy.
 - **Knowledge Retrieval and Reasoning:** The knowledge graph enables knowledge retrieval, reasoning, and intelligent question and answer capabilities.
 - **Interpretability:** The knowledge graph provides interpretable inference processes, ensuring transparency in decision-making.

Green AI for Autonomous Networks:

- **Use Case:** This Catalyst project focuses on building autonomous knowledge graphs by sharing and applying vertical domain knowledge graphs across network topologies.
- **Benefits:**
 - **Energy Savings:** The network knowledge graph enables real-time analysis of network parameter indicators, leading to energy-efficient collaborative control mechanisms and optimization strategies.
 - **Continuous Optimization:** Deep learning and big data analysis are used to continuously optimize the network based on data from base station KPIs, alarms, cases, work orders, and business information.

Integrate with your own enterprise data & finalize proposal

Some typical queries you may want answers for:

- Find the percentage of incidents that required more than one cause-identification attempt
- Find the longest / average outage duration

Integrate with TM Forum AIVA results using any of the following options

- Run SQL queries against your database, integrate with industry insights
- Use LLMs for natural language to SQL
- Be like TM Forum AIVA! Have an orchestration engine that queries TM Forum AIVA or your database using natural language

Use Gemini to write your proposal and create a presentation

Some possible technical ideas to enhance / augment TM Forum AIVA

Ideas are [just illustrative!](#) Please bring your own ideas to address your specific challenges!

Enhance TM Forum AIVA with new modalities of interaction

- Currently TM Forum AIVA retrieves only text and images. Can you enhance it by identifying relevant video clips from TM Forum's extensive publications on YouTube or other platforms ([example](#))?
- Enable voice interactions with TM Forum AIVA (e.g., using [Gemini multimodal prompts](#))

Orchestrate calls across TM Forum AIVA and other Gen AI Agents of your own

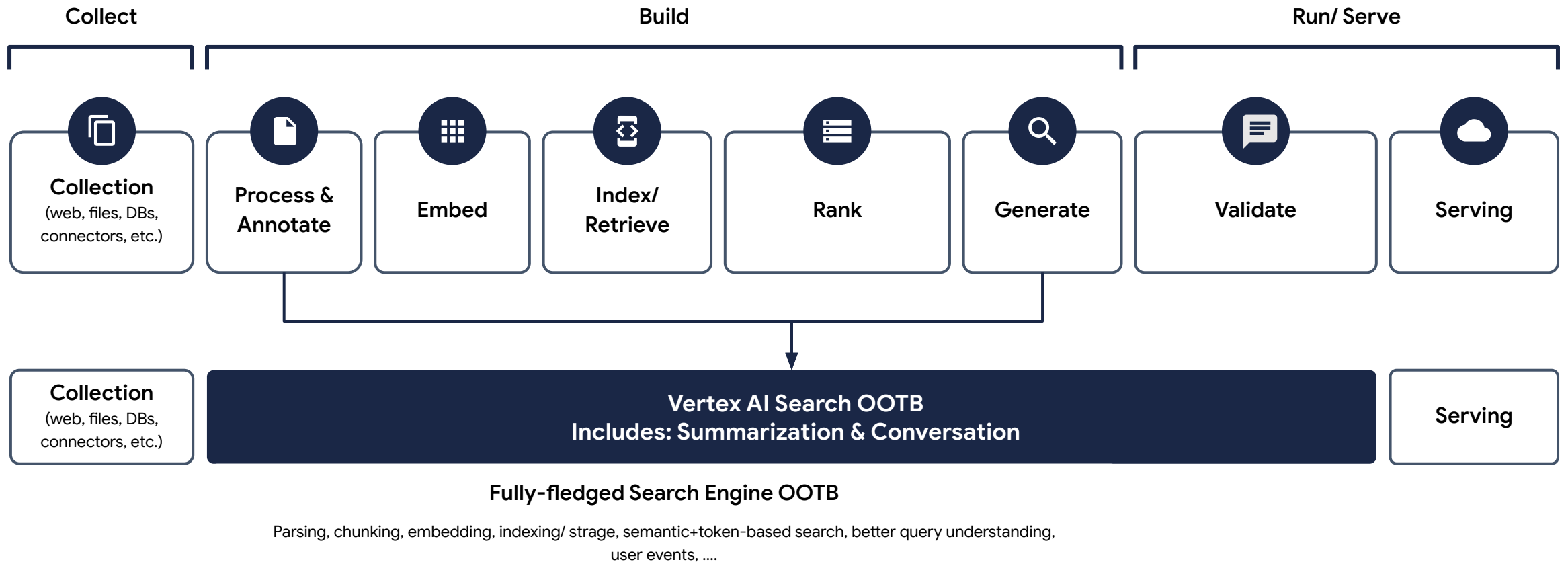
- How cool would it be to augment TM Forum AIVA's responses with current [Google Search](#), your [enterprise data and services](#)? You can do it now by reasoning on the user's intent and dynamically incorporate multiple agents using [LangChain on Vertex AI Extensions](#), and [Function calling](#)
- Automate adding the TM Forum AIVA output to Sheets and Slides, create PDFs, and send as emails ([example](#))

Integrate TM Forum AIVA with your own front-end or applications using any programming language

- TM Forum AIVA will be packaged and made available as a [Vertex AI Agent](#). You will be provided CURL command as well as SDK examples to access it.
- You should be able to integrate the information TM Forum AIVA with any application using a broad range of languages

Follow the links for code samples and introductions

With Vertex OOTB Search we simplified the process of building RAG applications into a few clicks



Agent builder products for different needs

No Code

Google-quality out-of-the-box experience for implementers

Fast and easy setup via a UI

Code-first

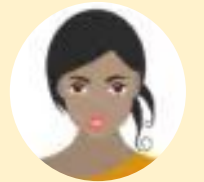
Choice of orchestration layer: Langchain, Llama Index on Vertex AI or Google's 1st party frameworks for Java (Genkit) and Python apps

SOTA tools to customize applications, debug, evaluate and optimize model outputs and quality



Non Developers

No ML skills required



Developers

Advanced ML skills

Agent console

Vertex AI

Building a High Performing Hacking Team

Team



4-5 people from your company (on-site recommended, hybrid with a min. 1 member on-site)

Roles will vary by use case but may include:

- Product Manager/Business Representative
- Business/Technical TM Forum users
- Gen AI/Analytics/Developer
- API Back-End Developer
- Front-End Developer

Bring



- your own laptops & access to your GCP environments
- Optional: obfuscated enterprise/public/3rd party data

Provided



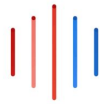
- Google Cloud GenAI online training
- API access to TM Forum AIVA
- Technical documentation & user guides
- Broadband connectivity
- Onsite expertise (TM Forum & Google)
- Pitch template

Focus on identifying valuable innovations using TM Forum assets and Google Cloud AI.

Don't miss this chance to showcase your ideas and win!!!

Showcasing your innovation!

Objective: To present your Use Case to the Evaluation Panel, each team is requested to prepare a 3 slides presentation. The title of the presentation should indicate the name of the team. Googlers are here to help you!



Slide 1. Use Case Concept and Architecture

A **brief description** of what the use case is and a simple view on the **architecture** implemented to deliver the use case. **Call out any 1P data** you are integrating with.



Slide 2. Business Impact Analysis

How much **impact** would bring this use case if deployed **at scale**? Most probably is going to bring **efficiency**, so let's estimate how much **time** and **cost** saving could be produced! Let's also **identify critical success factors/key considerations for scaling**



Slide 3. Use Case Demo - Screen Recording and notes

Demo time! **Record the screen** to show the demo to the Evaluation Panel!

Judging Criteria

Impact & Innovation

- This solution will demonstrate the most compelling real world business cases

30%

Challenge Fit & Feasibility

- How relevant is the project to challenge?
- Is the solution feasible and implementable at scale?

20%

Technical Execution

- How well has the team utilized the available Google Cloud platform and technologies?
- How easy is the solution to use & implement?
- How advanced is the solution?

30%

User Experience

- Is your solution user friendly and accessible?
- Is it intuitive to interact with (no need to be polished or flashy)?

20%

Agenda

DAY 1 | “PREP & HACK”

TOPICS

Welcome Briefing

Overview of Hackathon Objectives

Share Hackathon Infrastructure details

Participant team ideation and brainstorming

Helpdesk and SME Support (over Teams & breakout)

Hacking Starts...

DAY 2 | “HACK CONTINUES”

TOPICS

Hacking...

Hacking...

Hacking...

Hackathon Code Freeze

Prepare Elevator Pitch & Demo dryruns

Helpdesk and SME Support (over Teams & breakout)

DAY 3 | “REWARD”

TOPICS

Code Freeze

Hackathon Storytelling Pitch by Participants (each team 15 minutes including Jury Q&A)

Hackathon Winner Announcement

Award Ceremony & Closing

Start Self Learning for the Hackathon Participants



Gain an edge by starting your learning today!

Learning Generative AI

- For the non-technical audience (intro): [‘Introduction to Generative AI learning path’](#),
- For Vertex AI deep dive on Generative AI :[Cloud Skill Boost Generative AI Explorer - Vertex AI](#)
- For more advanced technical practitioners: [‘Generative AI for Developers learning path’](#).
- [Generative AI labs](#) for getting some hands-on experience in Google Cloud

Learn to Integrate Gen AI with enterprise data, Google search

- Lab: [Integrate Search in Applications using Vertex AI Agent Builder](#)
- [Intro, tutorials, labs for Vertex AI Agent Builder](#) and [additional details](#)

***Your specific areas of focus will depend on your solution design**

Next Steps

From TM Forum / Google

- Google mentor reachout: **Started**
- Email “TM Forum AIVA aaS” JSON documents to participants: **June 6th**
- Email sample client Colab Notebook: **June 10th**
- User Guide and Pitch Deck slide template: **June 12th**

For you!

- Identify / refine use cases
- Start developing your augmentation, extension ideas in your Google environment
- Reach out to TM Forum contacts or your Google mentor with any questions

Graham Ops Update

Onsite location

DTW - Ignite quad (expo) schedule

Monday, 17 June: CLOSED TO ATTENDEES

Tuesday, 18 June: 8:30 am – 7:00 pm
Team move-in 8:00 am – 8:30 am

Wednesday, 19 June: 8:30 am – 6:30 pm

Thursday, 20 June: 7:30 am – 2:30 pm

ALL teams must be in by **8:30 am Tuesday** when the quad opens to attendees and the hackathon starts



Judging

- 15 minutes per team to present your demo and Q & A with the judges
- **The winner** –will be announced during the innovation awards at 13:15 at the **Park Stage**



- **WHEN** - Onsite 20th June
09:15 am – 10:45 am
- **WHERE** – M3 Hall B
- **WHO** – Meet your judging panel!



Christine Anderson
Managing Director,
Technology Strategy
Accenture



Eric Davis
VP of Global LLM
SK Telecom



George Glass
CTO
TM Forum



2 x Judges
TBD
Google



Confluence space

URL : <https://projects.tmforum.org/wiki/display/CS/Hackathon+-+Google+Cloud+Challenge%3AVertex+AI>

Hackathon - Google Cloud Challenge:Vertex AI

Created by Graham Hughes, last modified on May 29, 2024

📅 18 Jun 2024 - 📅 21 Jun 2024

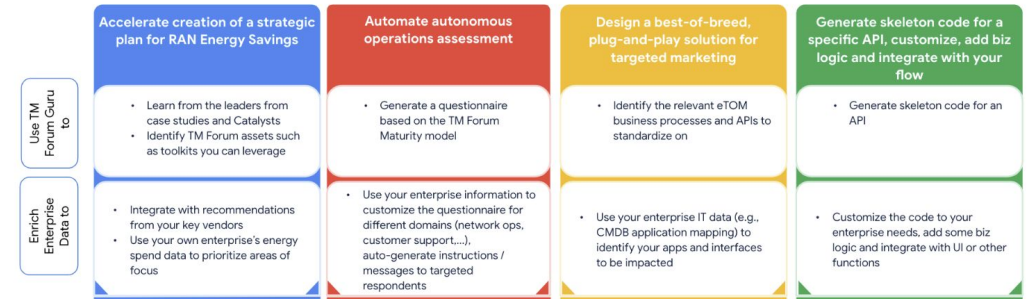
This page is for the participants of the Google Cloud Challenge hackathon taking place at DTW-Ignite24 - please use this space for information and further training.

The challenge: Utilize TM Forum Guru to demonstrate how you can harness its capabilities to address a substantial business challenge within your organization.

What is TM Forum Guru: TM Forum Guru is an enterprise search agent built with Google's Gemini, that sits on top of TM Forum's decades of accumulated industry knowledge and standards and provides synthesized industry insights at Member's fingertips.

2. Use case inspiration

N.B - Ideas below are just illustrative. Please bring your own ideas to address your specific challenges



3. Judging

Meet the Judges !



Christine Anderson
Managing Director,
Technology Strategy
Accenture

Any questions?

Google Cloud

tmforum
labs

tmforum

thank
you