


# Get Inspired by GenAI



Anouk Muis, November 23, 2023



A young boy with dark, curly hair, wearing a dark blue suit, is sitting on a wooden gymnasium floor. He is looking upwards and to the left, towards a basketball hoop. The background shows a basketball court with a wooden floor and a white wall with a blue baseboard. The Google logo is overlaid in the center of the image.

Google ■/●

“

Artificial Intelligence (AI) Will Be the Biggest Technological Shift We See in Our Lifetimes.

– Sundar Pichai - CEO, Google



**GenAI's origins...**



**What to embrace Today**



**What's coming tomorrow**

# What is **Generative AI**?

[bard.google.com](https://bard.google.com) “What is Generative AI?”

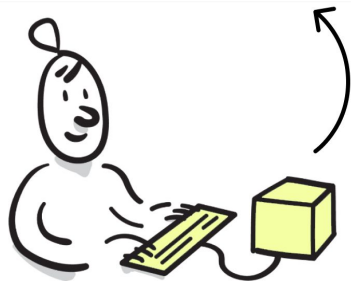
“**Generative AI** is a type of artificial intelligence that can **find complex relationships** in large sets of data and can generalize from that to **create entirely new content**, including text, images, media, videos and code **based on human language prompts.**”



# The Path to Large Language Models

cat:

```
type: animal  
legs: 4  
ears: 2  
fur: yes  
likes: yarn, catnip
```



Traditional Programming



This is a cat.  
This is not a cat.



Is this a cat?

Yes.



Wave of Neural Networks (~2012)



Go read this huge  
pile of books.



So, you've learned  
about cats and a ton  
of other concepts.  
What's a cat?

A cat is...



Large Language Models

# What is a **Large Language Model (LLM)** Actually?

"Cheetahs can accelerate from 0 to 103 km/hr in just 3 ..."



**Seconds**

**Minutes**

**Hours**

**Days**



# What is a **Large Language Model (LLM)** Actually?

I'll make him



he can't refuse

an offer 13.3%  
berry pie 8.8%  
a donut 5.3%  
a sweater 1.2%  
read documentation 0.09%  
...





# We can influence an LLM through **Prompt Engineering**

- Direct prompting (Zero-shot)
- One-Shot Prompting
- Few-shot Prompting
- Question Answering with Style
- Chain-of-thought prompting
- Many more...

Tell me why this code isn't running:

```
function divide(a,b) {  
  return a / b  
}
```

```
divide "a" / 1;
```

# We can influence an LLM through **Prompt Engineering**

**Prompt** Explain quantum entanglement **in the style of** a Snoop Dogg rap

## **Sample Response**

Yo, yo, listen up, I'm 'bout to drop some knowledge,

'Bout quantum entanglement, it's straight up from college.  
Picture two particles, they connected like a crew,  
Even if they far apart, they still be linked, it's true.

Einstein called it "spooky," he couldn't understand,  
How they communicate without no signal in hand.  
But it's quantum physics, it's wild and it's bizarre,  
The entangled particles, they leave you in awe.

It's like a magic trick, defying space and time,  
Quantum entanglement, it's a sublime rhyme.  
So next time you wonder 'bout the quantum game,  
Remember Snoop Dogg dropped the entanglement flame.



LLMs will have a  
**transformative** impact  
on industries, businesses  
and societies through  
**Generative AI**



# The LLM revolution **started at Google**

Our pioneering AI research has made recent advances possible

**+3000** LLM  
researchers



**2017**  
Transformer



**2018**  
BERT



**2019**  
T5



**2020**  
LaMDA



**2021**  
AlphaFold



**2022**  
PaLM



**2023**  
Bard

## Responsible AI in everything we do

Accountable  
to People

Built &  
Tested for  
Safety

Socially  
Beneficial

Privacy in  
design

Avoid  
creating  
unfair bias

Upholds  
high scientific  
standards

# Why are Large Language Models important?



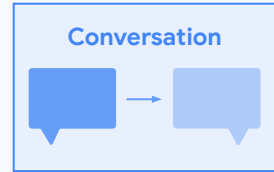
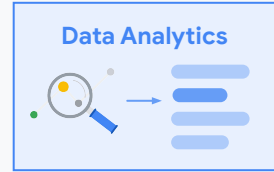
LLMs are characterized by **emergent abilities**, or the ability to perform tasks that were not included in their training examples.



LLMs contextual understanding of human language **changes how we can interact** with data and intelligent systems.



LLMs can find patterns and connections in **massive, disparate data sets**.





**Andrej Karpathy** 

@karpathy



The hottest new programming language is English

9:14 PM · Jan 24, 2023 · **3.2M** Views

**3,444** Reposts

**535** Quotes

**25.3K** Likes

**1,861** Bookmarks

# Generative AI can...

- Synthesize information
- Generate content
- Interact through conversations
- Predict Demand

Generative AI can **transform industries and roles** by a multiplying factor that is still unknown, and **professionals that don't use it will likely be less productive than those that do.**

As a consequence, we believe organizations that adopt generative AI **will leapfrog those who don't.**





Generative AI has the potential to **change the anatomy of work, augmenting the capabilities of individual workers** by automating some of their individual activities. Current generative AI and other technologies have the potential to **automate work activities that absorb 60 to 70 percent of employees' time today.**”

# Magic Editor

Get the perfect picture,  
every time



# Generative AI is amazing

But consumers & enterprises have **different needs**



## Consumers and enthusiasts

Help me plan a neighborhood block party

Outline my blog post about summer mocktail recipes

I want to write a novel. How do I get started?

Draft a packing list for my weekend fishing and camping trip

Give me a list of idioms for "let's circle back" that aren't cringe

Help me name my first EP



## Enterprises

Allow data analysts to search and summarize market reports while **controlling our data**

Handle a customer service interaction with **accurate info**

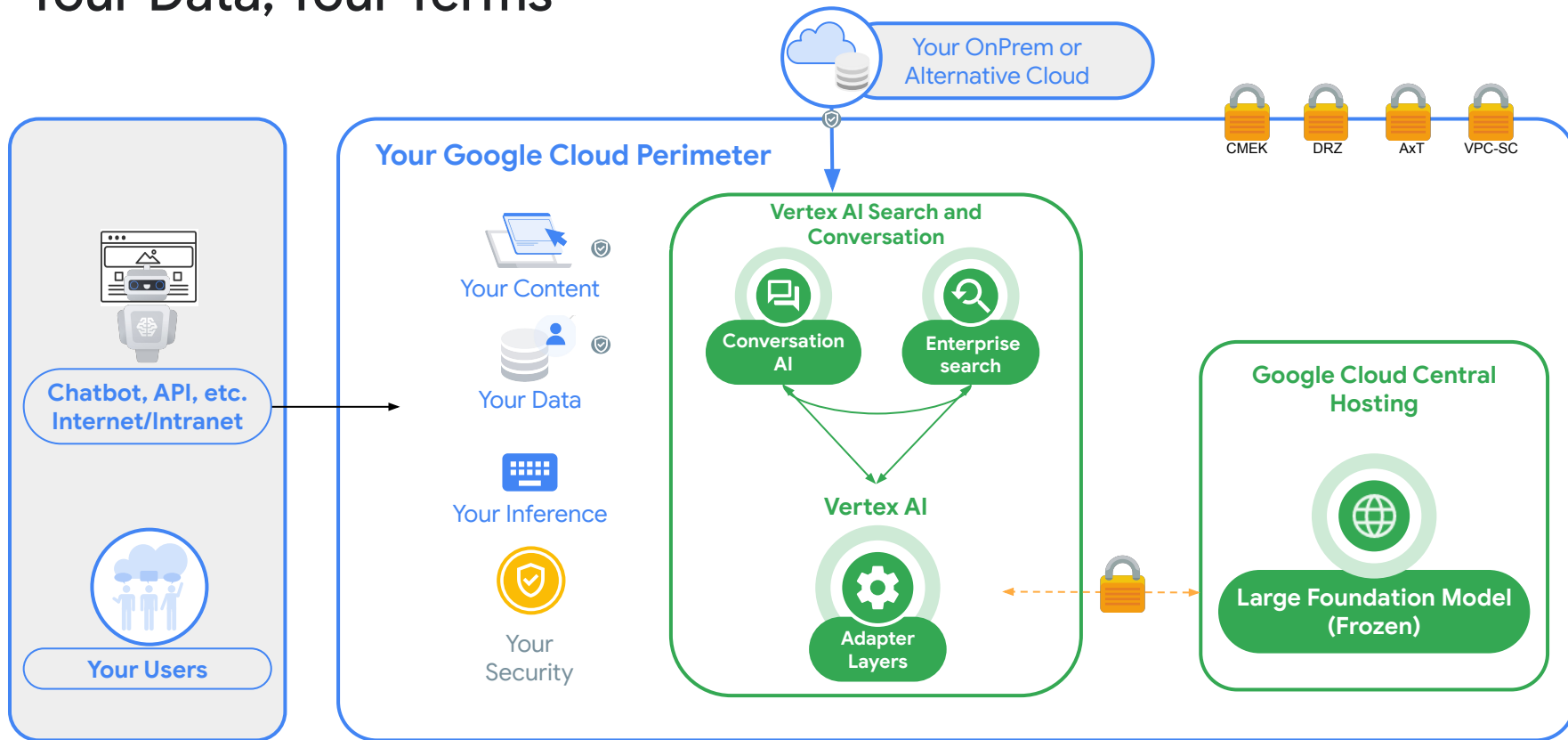
Help my customers understand my financial products while being **safe, explainable, and regulatory compliant**

Can you guarantee we have **access to state-of-the-art models**?

Is it easy to **integrate into our existing apps and platform**?

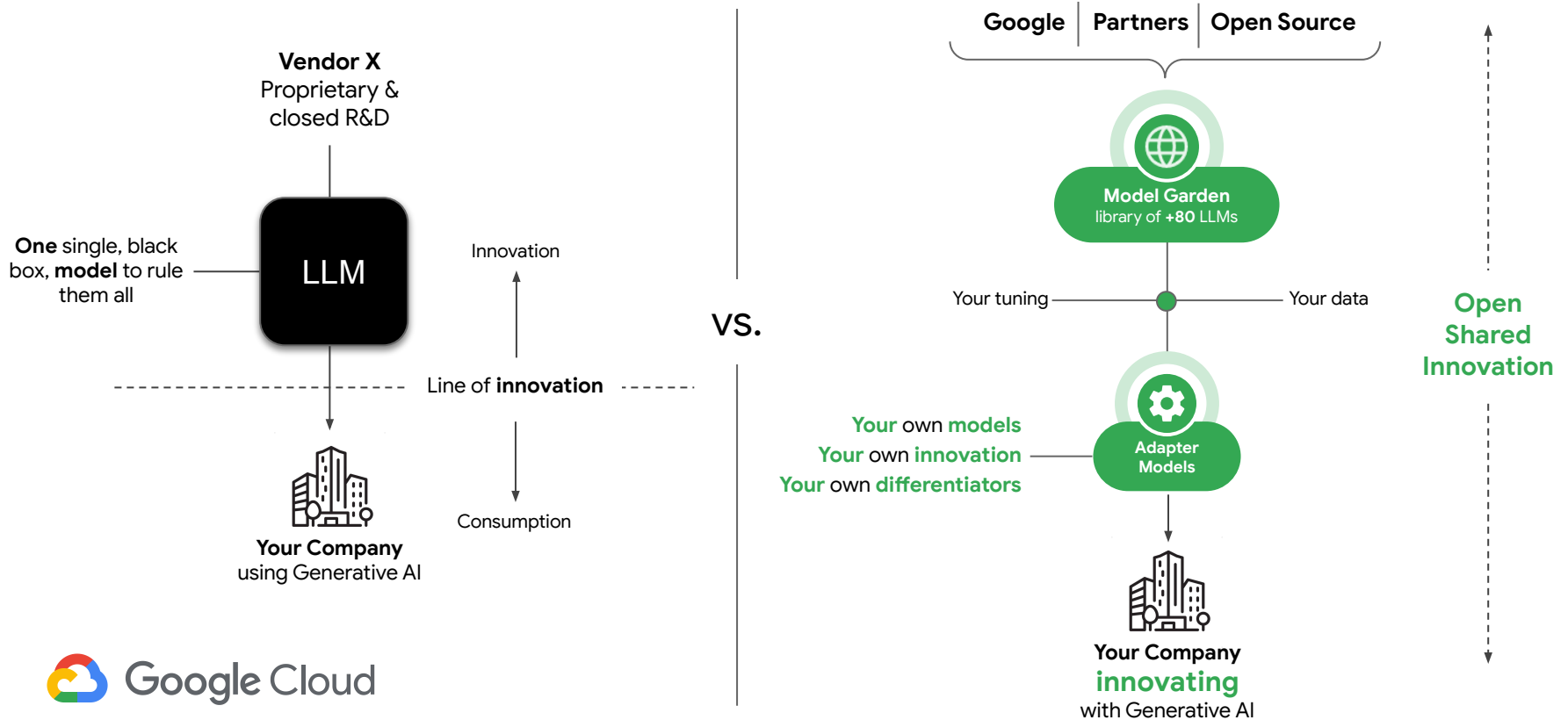
Can we generate content while **controlling costs**?

# Your Data, Your Terms



# Google Cloud Enterprise Generative AI Platform

Closed black box vs. **Open Shared Innovation**



# Generative AI is driving new opportunities

Operational efficiencies, cost savings, and value creation



**Complex data,  
intuitively accessible**

**Improve time-to-value** to search, navigate, and extract insights and understanding from large amounts of complex data



**Analyst**



**Online interactions  
made conversational**

**Improve customer experience**, reaching larger client bases by making online interactions more natural, conversational, and rewarding



**Customer  
Service**



**Content generation at  
the click of a button**

Generate text, code, image, video, or music quickly and multi-modally, speeding up every business process and **maximizing employee productivity**



**Creative**



**Customize  
Foundational models**

Customize large models and incorporate state of the art generative capabilities natively into **your own internal ML operational platforms**



**AI  
Practitioner**



# Accelerate research and discovery with generative AI

Google Cloud





**Harrison Kinsley** ✓

@Sentdex



AI is advancing so fast that if you try to stay completely up to date and explore everything, you'll likely not actually get anything done.

5:42 PM · Sep 16, 2023 · **105.2K** Views



51



116



1,034



53

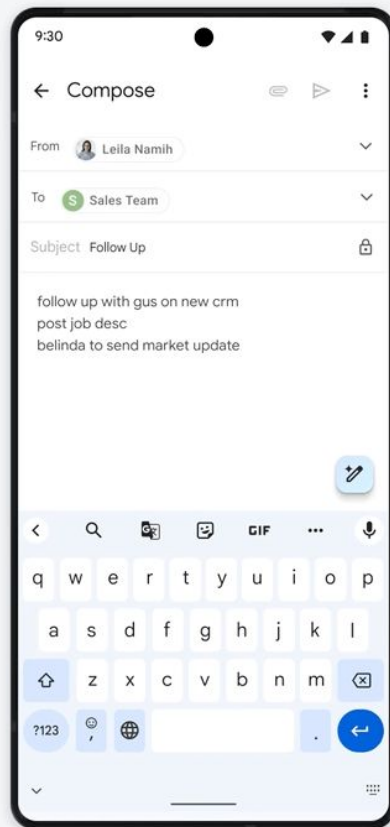





## ✍ Helping you write

# Helping you write in Gmail — even on the go

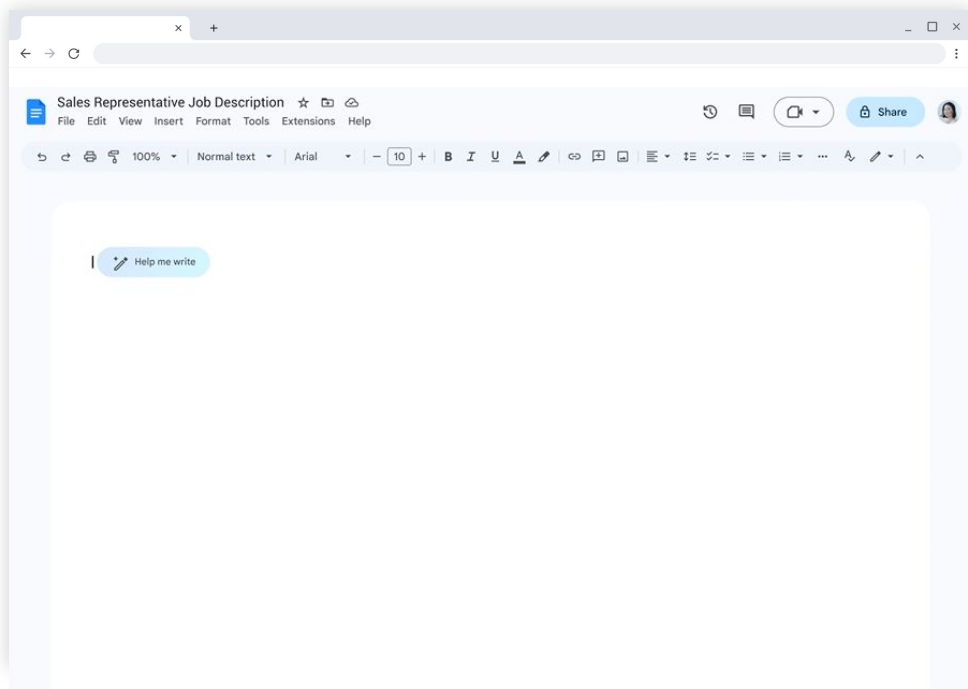
- Blank pages can stump the best of us — that's why we've embedded Duet AI in Gmail (on web and mobile) to help people get started writing
- Simply type a topic you'd like to write about, and a draft will instantly be generated for you — saving you time and effort
- With Duet AI, you can continue to refine and edit, getting more suggestions as needed



 Helping you write

## Helping you write with smart canvas in Google Docs

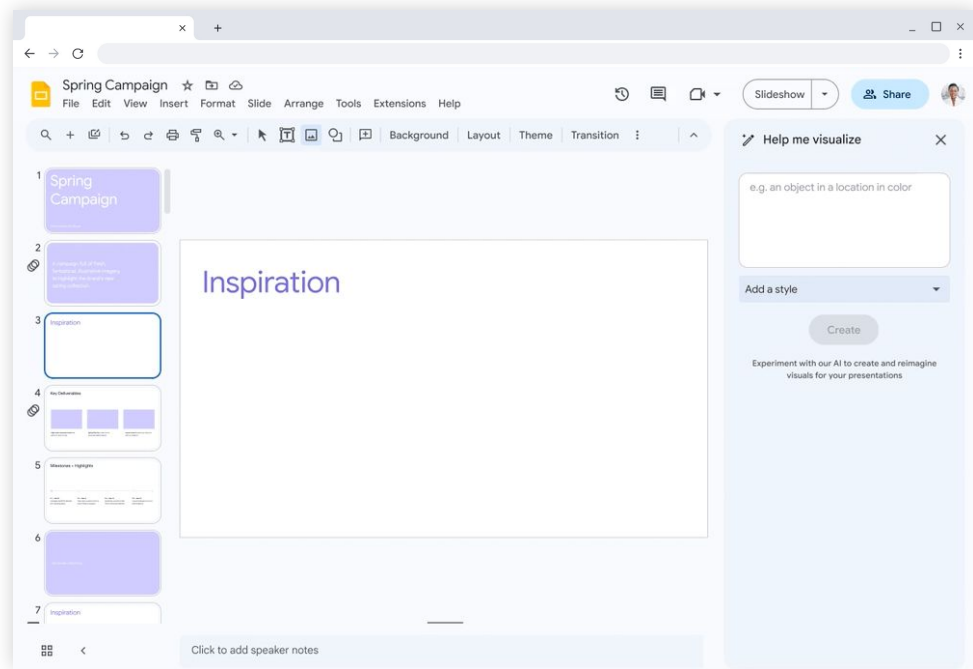
- We've also embedded Duet AI into Docs, helping you generate a project plan, proposal, or brief in just seconds
- Duet AI will not only help you write the content, it will also include smart chips for information like location, status, and custom variables
- This helps keep you in the flow of projects and go from concept to completion faster — without ever leaving your document



🔧 Helping you visualize

# Helping you visualize with custom images in Google Slides

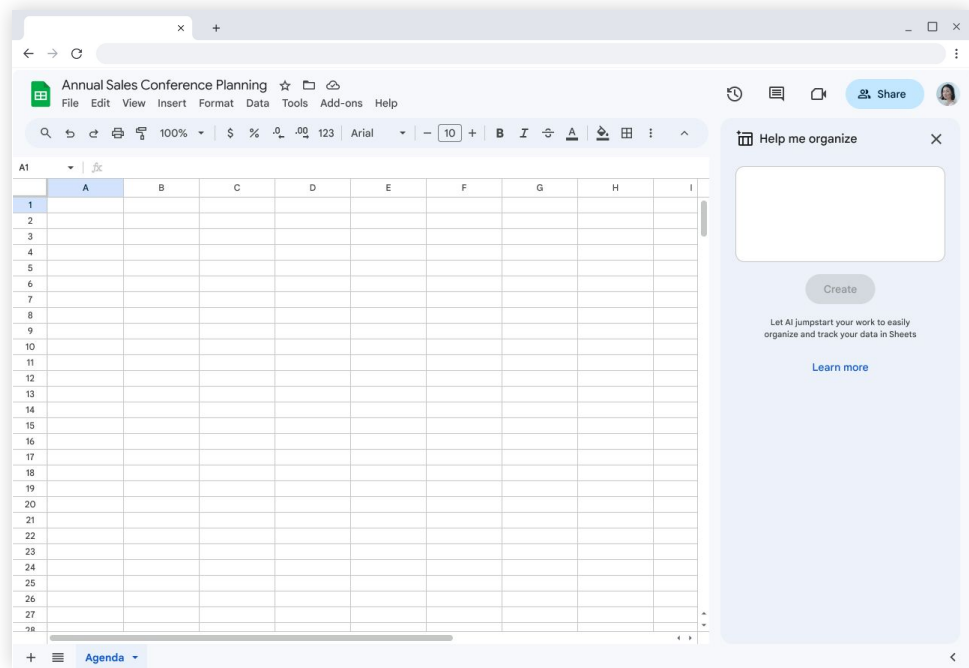
- Creating unique and compelling visuals for presentations has been a manual, time-consuming, and expensive process
- With Duet AI, you can easily create original images for your Slides presentations with just a few words
- The real power of image generation is you can now visualize something that has never existed



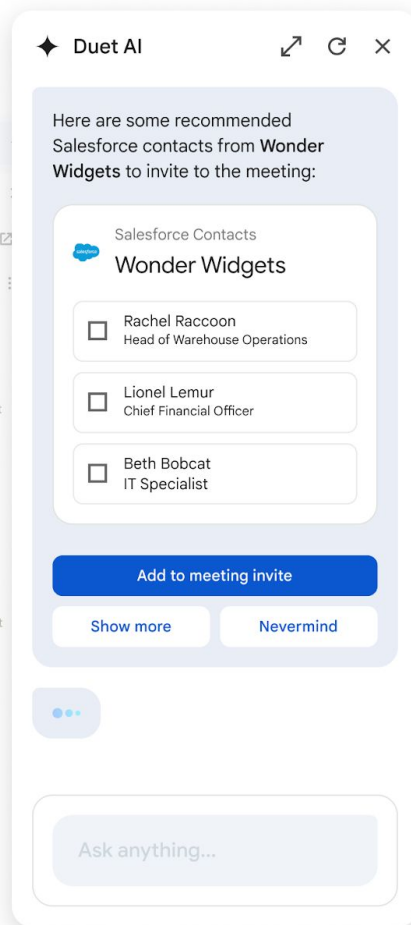
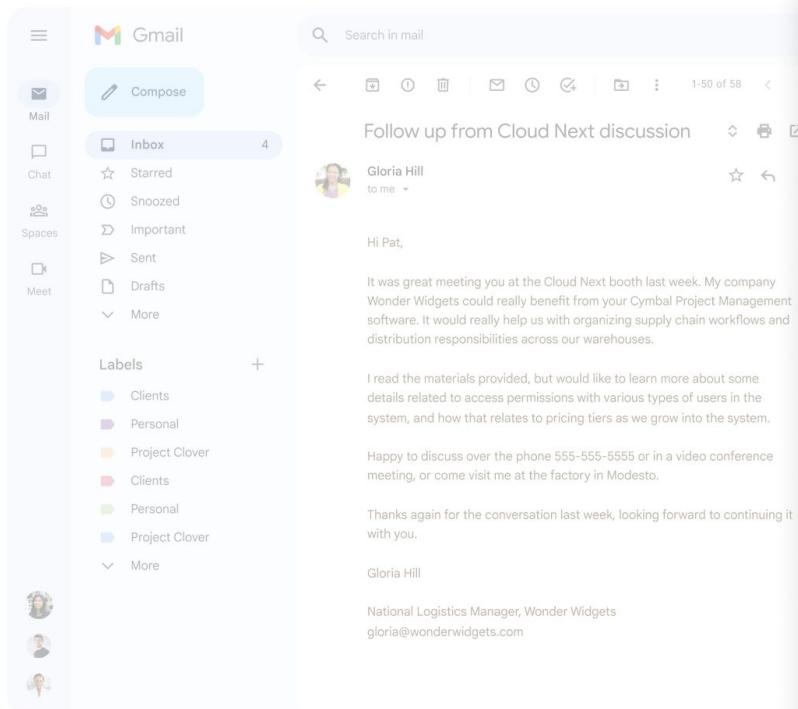
## Helping you organize

# Helping you organize and act on your data in Google Sheets

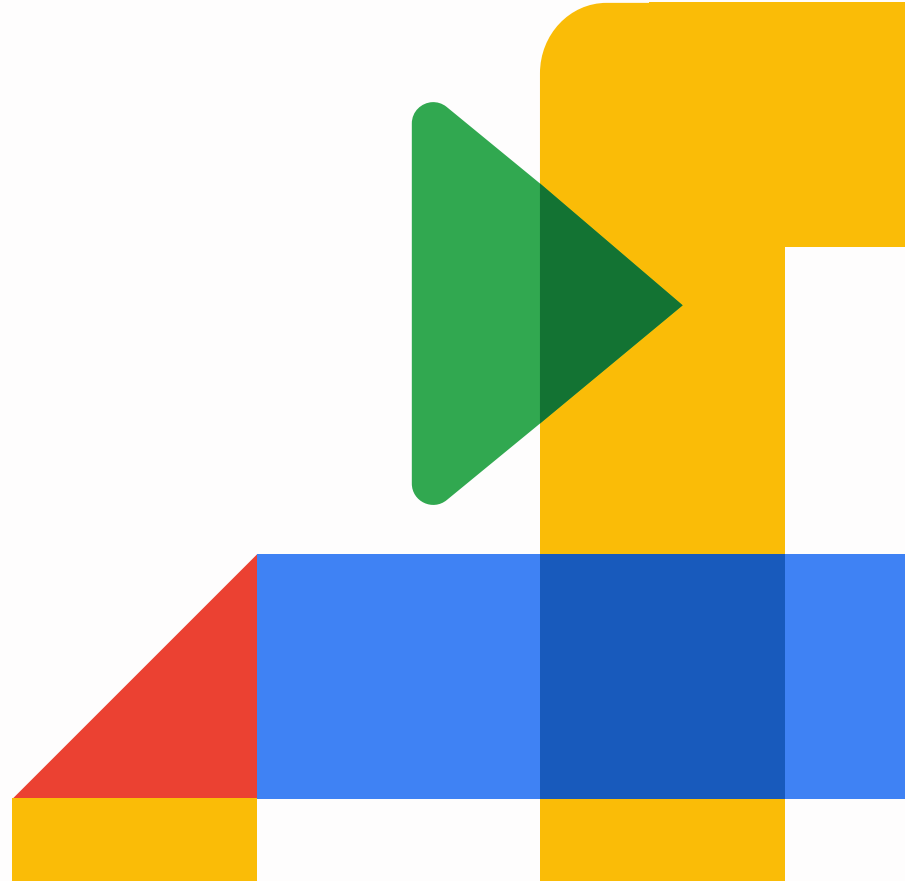
- Duet AI helps you analyze and act on your data in Sheets faster than ever before
- Simply describe what you're trying to accomplish, and Sheets can automatically generate a table to track any project
- Duet AI can also classify the data for you, freeing you up to focus on more important work



Features subject to change

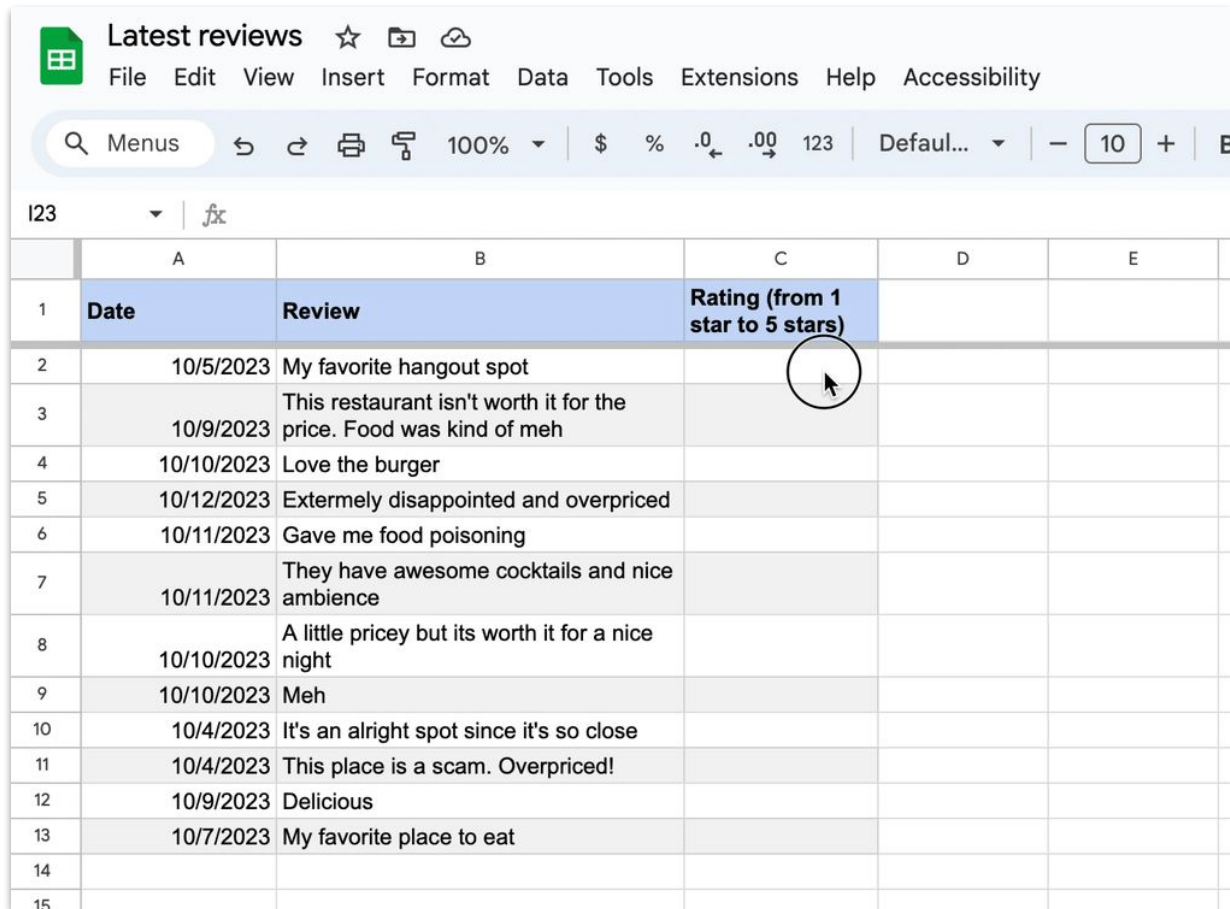


What's  
coming  
next



## Enhanced smart fill for Sheets

Enhanced smart fill automatically detects patterns and suggests Sheets formulas to fill columns with contextual data. This capability saves users from having to spend time on manual data organization and analysis.

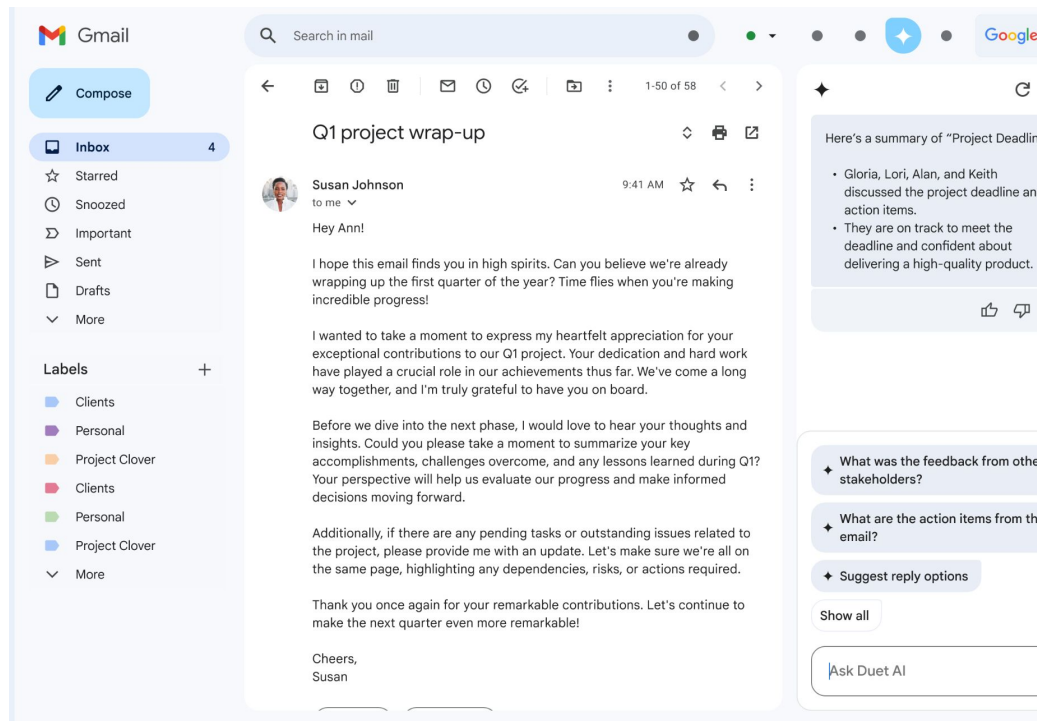


The screenshot shows the Google Sheets interface for a spreadsheet titled "Latest reviews". The spreadsheet has three columns: "Date", "Review", and "Rating (from 1 star to 5 stars)". The "Rating" column header is circled in red, and a mouse cursor is hovering over it. The data rows contain dates, review text, and empty rating cells.

|    | A           | B  | C                                      | D | E |
|----|-------------|--|--|---|---|
| 1  | <b>Date</b> | <b>Review</b>  | <b>Rating (from 1 star to 5 stars)</b> |   |   |
| 2  | 10/5/2023   | My favorite hangout spot   |  |   |   |
| 3  | 10/9/2023   | This restaurant isn't worth it for the price. Food was kind of meh |  |   |   |
| 4  | 10/10/2023  | Love the burger  |  |   |   |
| 5  | 10/12/2023  | Extremely disappointed and overpriced                              |  |   |   |
| 6  | 10/11/2023  | Gave me food poisoning   |  |   |   |
| 7  | 10/11/2023  | They have awesome cocktails and nice ambience                      |  |   |   |
| 8  | 10/10/2023  | A little pricey but its worth it for a nice night                  |  |   |   |
| 9  | 10/10/2023  | Meh  |  |   |   |
| 10 | 10/4/2023   | It's an alright spot since it's so close                           |  |   |   |
| 11 | 10/4/2023   | This place is a scam. Overpriced!                                  |  |   |   |
| 12 | 10/9/2023   | Delicious  |  |   |   |
| 13 | 10/7/2023   | My favorite place to eat   |  |   |   |
| 14 |             |  |  |   |   |
| 15 |             |  |  |   |   |

## Duet AI side panel

Introducing an always-on, contextual, real-time collaboration partner that understands you, your work, and your content. From the side panel, Duet AI will proactively offer suggestions and take action on your behalf, allowing you to focus on what really matters while it takes care of the rest. Users will be able to engage directly with Duet AI via the right side panel across all of Workspace.

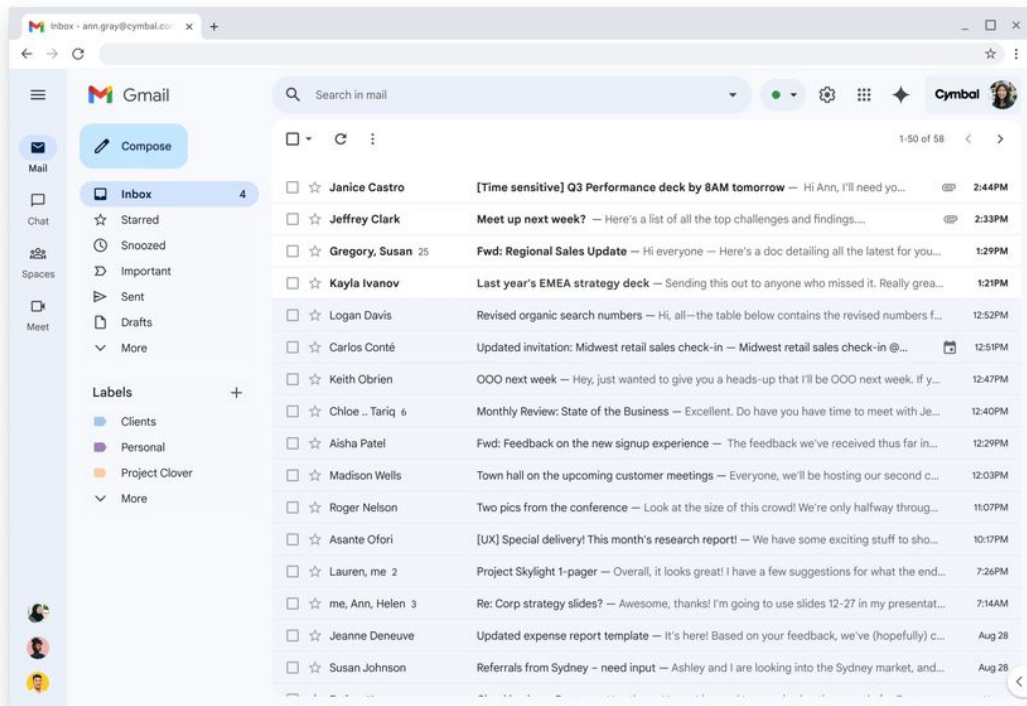




# Duet AI side panel

Preview

Proprietary + Confidential

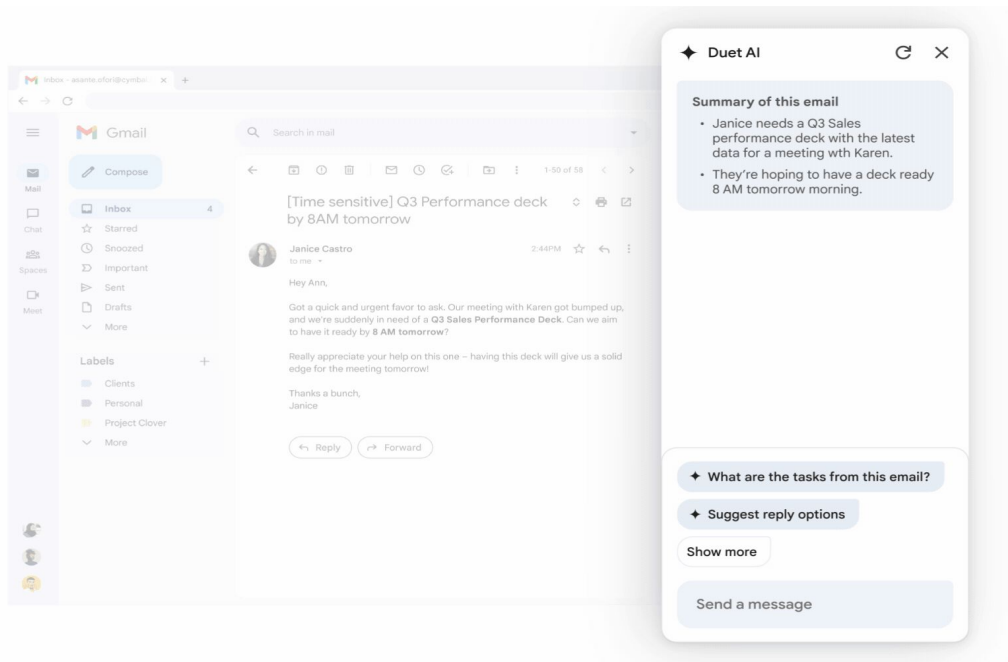


Features subject to change

# Duet AI side panel

Preview

Proprietary + Confidential



Features subject to change



## Project Finn: Kickoff Call

**Project Finn: Kickoff Call**  
Monday, May 15 · 12 – 1 PM

 **Join with Google Meet**  
meet.google.com/zkp-wzop-kpz

 **Join by phone**  
(US) +1 413-589-0032 PIN: 937404833

 **7 guests**  
5 yes (4 in a meeting room, 1 virtually), 2 awaiting

 **Fayette Leroy**  
Organizer

 **Gleb Levin**

 **Eloise Williams**

 **All employees (7)** ▾

Yes ▾

No

Maybe


Join



Azami Wu

Azami Wu

 Remove

 Add as co-host

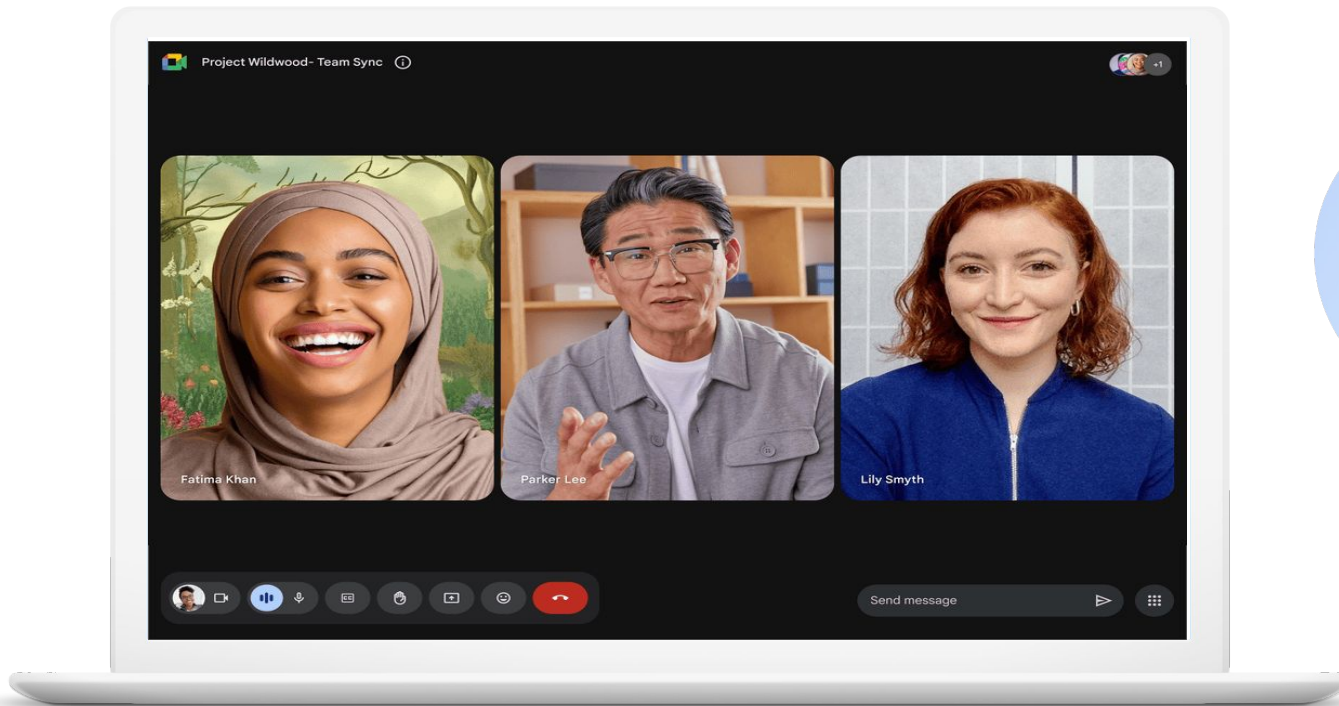
 Pin

 Mute



# Automatic translated captions

Proprietary + Confidential



Features subject to change

# Real-time teleprompting

Preview

Proprietary + Confidential

The screenshot shows a Google Meet interface for a meeting titled "Project Wildwood- Team Sync". A teleprompter overlay is positioned over a slide titled "SOUTH AMERICA LAUNCH Cymbal Coffee". The slide content includes the text "Everything you need to know before our coffee goes to market." and a logo. The teleprompter displays a real-time transcript of the speaker's words, which are highlighted in green. Two participants, Lily Smyth and Erick Mejia, are visible in video thumbnails on the right. The bottom of the screen shows the standard Google Meet control bar with icons for video, audio, chat, and other functions.

Project Wildwood- Team Sync

Hi everyone, I'm so excited to kick off the go-to-market effort for **Cymbal Coffee's upcoming South America launch**. This is a huge opportunity for us, but our successes in other markets *won't guarantee* a successful *launch in these*. Today we'll go over the high-level details of the product and

Notes via Google Slides

SOUTH AMERICA LAUNCH

**Cymbal Coffee**

Everything you need to know before our coffee goes to market.

Lily Smyth

Erick Mejia

Send message

Features subject to change





# Take notes for me

Preview

Proprietary + Confidential

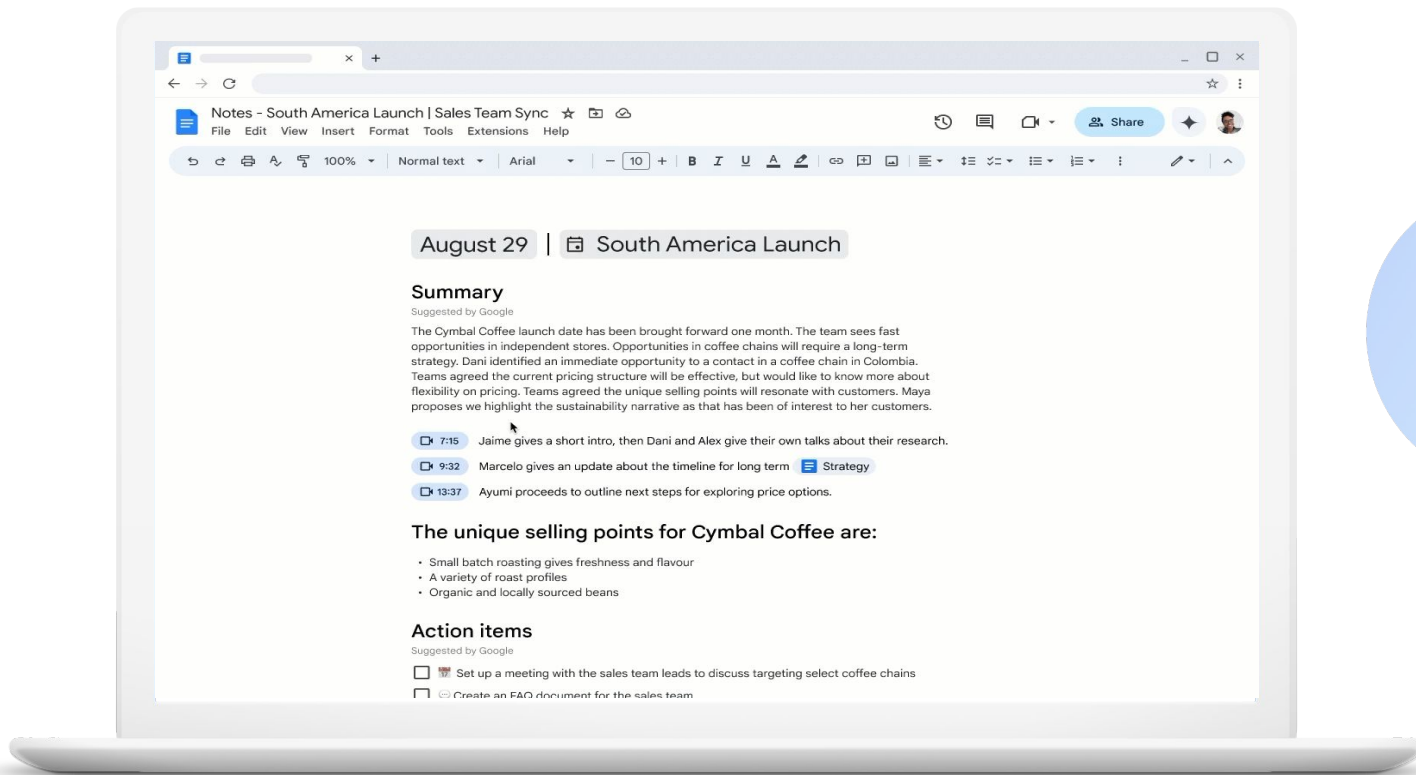


Features subject to change

# Take notes for me

Preview

Proprietary + Confidential



Features subject to change





|       |  |   |   |   |   |
|-------|--|---|---|---|---|
| 6 AM  | No meetings before 07:00a<br>6 - 7am                           | No meetings before 07:00a<br>6 - 7am                              | No meetings before 07:00a<br>6 - 7am                        | No meetings before 07:00a<br>6 - 7am            | No meetings before 07:00a<br>6 - 7am    |
| 7 AM  | Project Meeting  | GVC   Customer C  |   |   |   |
| 8 AM  | NO CALLS School drop-off                                       |   | TIM Sync, 7:15am  |   | NO CALLS School drop-off                |
| 9 AM  | Open for calls (no video)<br>8:15 - 9am<br>Monique, Amin, Sach | Cloud AI Meeting  | NO CALLS School drop-off<br>Alison / Sarah / Thomas, 8:15am | Accelerating Solutions, 7:1                     | Open for calls (no video)<br>8:15 - 9am |
|       | Project meeting  | 1:1 Michael / Thomas, 8:30am<br>CME Lab cost Revi                 | Bi-Weekly Project Review<br>8:30 - 10:30am                  | GVC   Customer H                                | Call / Theresa / Thomas                 |
|       | 1:1 Meeting  | 1:1 Katie / Thomas, 9:30am<br>Support Org Docs                    |   | Services Booking Actions<br>9am                 | Cloud Comms Sync, 9:20am                |
| 10 AM | Sales review, 10:00am  | Project Status Review   |   | Project Status Review, 9:50am                   | Phil / Thomas, 9:40am                   |
|       | Analytics Meeting  | Drive: Home to MTV-SL 10<br>HR Meeting                            | Project Meeting, 10:30am                                    | Amid / Brad / TK /                              | 1:1 Carrie / Thomas, 10:00am            |
| 11 AM | GVC   Customer A   | In Person   Customer K  | In Person   Customer F                                      | Internal Planning                               | CALL Internal                           |
|       | OPEX Meeting<br>11:30am - 12:15pm                              |   | Team Meeting, 11:30am                                       | Product Review, 11:15am                         | Burak / Thomas<br>11:30am - 12:15pm     |
| 12 PM | Break & Email, 12:15pm   |   | CALL Internal   | 1:1 Brian / Thomas, 11:45am                     | Break & Email, 12:15pm                  |
|       | 1:1 Meeting  |   |   | Closing out on Project, 12:05pm                 | In Person   Customer I                  |
| 1 PM  | GVC   Customer B   | MTV-40 H NO MEETINGS  | Break & Email, 1pm  | CALL Internal                                   | Break & Email, 12:50pm                  |
|       |  | In Person   Customer D  | Project Status Review, 1:15pm                               | HR Meeting                                      | In Person   Customer J                  |
| 2 PM  | T1 Meeting   | In Person   Customer E  | In Person   Customer G                                      | In Person Meeting                               | 1:1 Abhay / Thomas, 1:30am              |
|       | T1 Meeting   |   | Gen AI, 2pm   |   | 1:1 Behshad / Thomas, 1:50              |
| 3 PM  | AI Meeting   | Travel time   | Business Updates, 2:30pm                                    |   | 1:1 Phil / Thomas, 2:30am               |
|       |  | Tracy / Katie / Tho<br>CEO Office sync (T<br>Audio Call) Brad / L | Michael / Erin / Thomas, 3pm                                | Brian & Thomas 1:1, 3:15pm                      | Eric / Sachin, Monique 2:50am           |
| 4 PM  | Geo Expansion APAC, 4pm  | CALLS only, 3-30pm  | DNS - No meetings, 3:45p                                    | (AUDIO CALL) Burak / June / Th<br>CALL Internal | DNS - No meetings<br>3:05 - 4pm         |
|       | Travel Time<br>APAC Staffing Conn<br>(Audio Call) JD Mee       | DNS Blocked NO Meetings<br>4 - 5pm                                | Analytics Meeting   | NO Meetings<br>4 - 5pm                          | Executive Meeting                       |
| 5 PM  | In Person Meeting  | Amil / Chandu / Tho   | CALL Internal   |   |   |
|       |  | Candidate Hold  | Candidate Hold  | Travel Time (approx 30 min)                     | Candidate Hold                          |
|       |  | Project Meeting   | Brian / Thomas, 5:25pm                                      | Weekly update                                   |   |

# Attend for me

Preview

Proprietary + Confidential

The screenshot displays a Google Calendar interface in a weekly view from Monday (Jan 20) to Friday (Jan 24). The calendar is populated with various events and meetings. Key features visible include:

- Calendar Grid:** Shows events such as "Customer In Person", "Meeting", "Travel (45 min Drive)", "DNS", "ML", "Service Actions", "E-mail", "Customer Call", "Operations", "Marketing workshop", "Lunch & Email", "Project Kick off", "AI", "Candidate Interview", "Customer In Person", "Future", "Weekly update", and "DNS".
- Working from:** Indicators at the top of the calendar grid show "Working from SF" on Monday and "Working from SVL" on Friday.
- Sidebar:** Contains a "+ Create" button, a monthly calendar view for January, a "Meet with..." search bar, "Time insights" for the week of Jan 20-24, 2021 (showing 25 hours in meetings), and "My calendars" with checkboxes for "Work", "Personal", and "Customers / In Person".

Features subject to change

# Attend for me

Preview

Proprietary + Confidential

**Calendar** Today < > January Search ? ⚙️ Week ▾

**MON** 20 **TUE** 21 **WED** 22 **THU** 23 **FRI** 24

GMT+01 Working from SF Working from SVL

| Time  | MON 20   | TUE 21  | WED 22   | THU 23  | FRI 24   |
|-------|--|---|--|---|--|
| 7 AM  | Customer In Person 7 - 9 AM Meeting room 4a  | Meeting 7 - 9 AM                              | DNS 7 - 8 AM   | ML 7 - 9 AM Meeting room 3D                   | Customer In Person 7 - 9 AM Meeting room R8      |
| 8 AM  |  |   | Cloud Comms Sync 8 - 9 AM, Conference room           |   |  |
| 9 AM  | Meeting 9 - 10 AM, Meeting room BD   | Travel (45 min Drive) 9 - 10 AM               | Customer In Person 9 - 10 AM                         | Service Actions 9 - 10 AM Meeting room A9     | E-mail, 9 AM                                     |
| 10 AM | Project Eco Paws To Anton/Felix, 10:00 - Planning update 11 - 11:30 AM, Conference | Customer In Person 10 - 12 PM Meeting room 4a | Meeting Marketing Team 10 AM - 12 PM Meeting room 1b |   | Customer Call, 10AM                              |
| 11 AM |  |   |  | Travel (45 min Drive) 9 - 10 AM               | Operations 12:30 - 2:30 PM Meeting room 5c       |
| 12 PM |  | Marketing workshop 12 - 3 PM Meeting room 4a  | Lunch & Email 12 - 1 PM                              | Customer In Person 10 - 12 PM Meeting room 4a | Lunch, 12 PM                                     |
| 1 PM  | Analytics Meeting 1 - 2 PM, Meeting room BD  |   | Project Kick off 1 - 3 PM Meeting room 1b            |   | Project planning 12:30 - 2:30 PM Meeting room 5c |
| 2 PM  | Travel to SF 2 - 3 PM  |   |  | AI 2 - 4 PM Meeting room F21                  | Next, 2:30 - 3 PM                                |
| 3 PM  | Customer D Meeting 3 - 5 PM,   | Customer Call, 3 PM                           | Candidate Interview 3 - 4 PM, Meeting room 2c        |   | Executive Meeting 3 - 5 PM                       |
| 4 PM  |  | Product Plan 3:30 - 5:30 PM Meeting room 1b   | Customer In Person 4 - 5 PM                          | Future 4 - 6 PM                               |  |
| 5 PM  |  |   | Weekly update 5 - 6 PM, Meeting room 2c              |   | DNS 5 - 6 PM                                     |
| 6 PM  |  | Clouds  |  |   |  |

**January** < >

M T W T F S S

30 31 1 2 3 4 5

6 7 8 9 10 11 12

13 14 15 16 17 18 19

20 21 22 23 24 25 26

27 28 29 30 31 1 2

3 4 5 6 7 8 9

**Meet with...**

👤 Search for people

**Time insights** ^

Jan 20 - 24, 2021

22 hr in meetings (avg: 20 hr)

More insights

**My calendars** ^

- Work
- Personal
- Customers / In Person

# Thank You



**Anouk Muis**

[linkedin.com/in/anoukmuis](https://www.linkedin.com/in/anoukmuis)

