Insight

SADA
An Insight company

Gemini Code Assist Workshop

ETLS 2025

Google Cloud

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SADA, an Insight Company

Google Developers Experts

8x WINNER
GOOGLE CLOUD PARTNER OF THE YEAR

Google was born as a data & AI company…

Organize the **world's information** (Data) and make it universally **accessible and useful** (Intelligence)

...and is a world leader in applying AI & ML to real-world situations

Search	Translate	Photos	Gmail
• Search ranking • Speech recognition	• Text, graphic and speech translations	• Photos search & smart sharing	• Smart reply • Spam classification

Self Driving Car	Data Center Power Usage	AlphaGo	YouTube
• 25M miles driven	• Reduced cooling energy	• First AI to beat a world Go champion (2016)	• Video recommendations • Better thumbnails

People | **One Google** | **Sparring partner** | **Partnership & trust** | **10x Ideation** | **DEI & culture**

A deep history of research and innovation at Google

2017 Transformer	2018 BERT	2019 T5	2020 LaMDA	2021 AlphaFold	2022 PaLM	2023 Bard
Google invents Transformer kickstarting LLM revolution	Google's groundbreaking large language model, BERT	Text-to-Text Transfer Transformer LLM 10B P model open sourced	Google LaMDA model trained to converse	AlphaFold predicts structures of all known proteins	Industry leading large language model	A conversational AI Service powered by LaMDA. (now known as Gemini)

Responsible AI at the foundation

2024 was all about rapid AI innovation

Google Agentspace

2M tokens

Imagen

NotebookLM

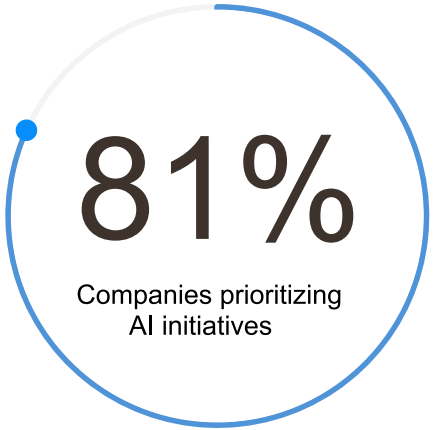
Q1
Evaluations

Q2
Gemini 1.0

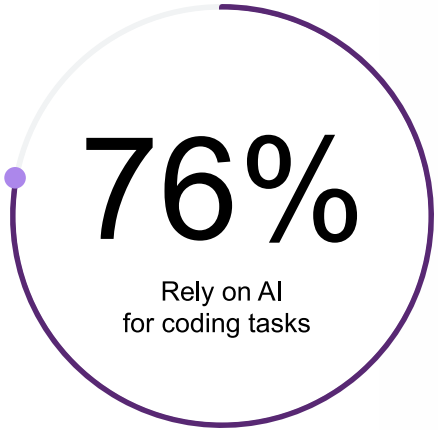
Q3
Gemini 1.5
Imagen

Q4
Gemini 2.0 is #1
NLM & Veo go viral
Agentspace is GA

AI is transforming software development



Leadership feels they **have** to change



Developers **want** to change

Developer **feel** more productive

https://dora.dev/dora-report-2024

"… **We are using AI for coding**, we are continuing to make a lot of progress there in terms of people using coding suggestions. I think, the last time I said a number, it was, like, 25% of code that's checked in involves people accepting AI-suggested solutions. That number is **well over 30%** now."

Sundar Pichai

CEO, Alphabet (Q1 2025 earnings call)

Many organizations are just getting started with Gen AI

Generative AI is a top boardroom agenda

82% See gen AI as significant or transformative to their industry

81% Have urgency to adopt

23% Feel they are behind

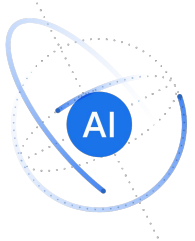
15% Self reported experts

Room for improvement

Only

10%

are very satisfied with their existing AI program

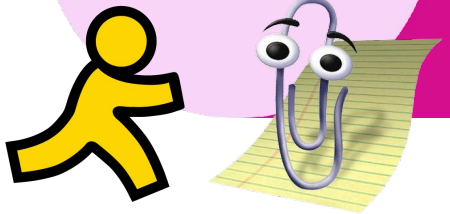


Source: Google Cloud internal Data Survey, 1000 decision makers.

AI capabilities continue to evolve

Picking the right modality for the job is key

The Deterministic Chatbot



Generative Chatbots

ReAct Agents

Autonomous Agents

Google AI's Ecosystem

01

Gemini Code Assist

Built for SDLC use cases
SaaS
Available in many clients/surfaces
No skills required
Built-in SDLC Agents
Fully managed and supported

codeassist.google

02

Agentspace

Custom Agent Platform
Not strictly for software development
Low Code/No Code UX
Build your own experiences
Customize with integrations
Maintain yourself

agentspace.google.com

03

Vertex AI

Build/Run any AI application
Full control end to end DIY
Models, Platforms, Architecture, Languages
AI skill set and maintenance required

vertexai.google.com

04

Jules

Asynchronous Coding Agent
Long running jobs
Autonomous (runs in Google infra)
Integrate with GitHub
~~Public Beta~~
Public GA

jules.google

Enterprise Products

Google Labs
labs.google

PRDs > Prototypes

Google’s approach

Empower enterprise AI adoption by focusing on quality and software delivery performance

01

Empower Enterprise AI Adoption

Secure
Fully integrated
Enterprise operations
Available everywhere
Built for Enterprise

02

Improve Quality not just speed

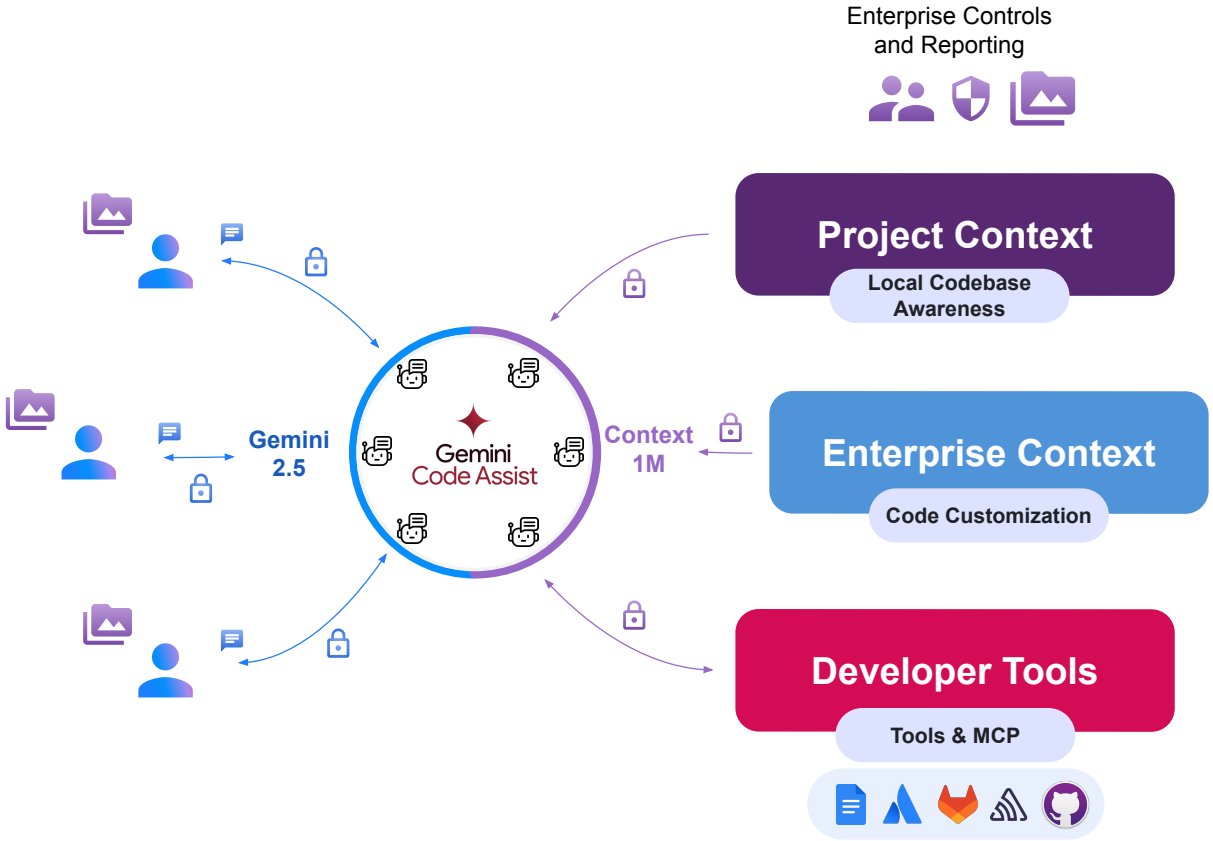
Codebase Awareness
Enterprise Context
Maintainable
Consistent
Developer Experience

03

Boost Software Delivery Performance

Focus on the entire SDLC
Inner Loop
Outer Loop
Plan to Production
Agentic flows in Dev and Ops

Gemini
Code Assist



Gemini Code Assist

Gemini 2.5 Pro

bit.ly/gemini25pro-blog

Benchmark		Gemini 2.5 Pro Experimental (03-25)	OpenAI o3-mini High	OpenAI GPT-4.5	Claude 3.7 Sonnet 64k Extended Thinking	Grok 3 Beta Extended Thinking	DeepSeek R1
Reasoning & knowledge Humanity's Last Exam (no tools)		**18.8%**	14.0%*	6.4%	8.9%	—	8.6%*
Science GPQA diamond	single attempt (pass@1)	**84.0%**	79.7%	71.4%	78.2%	80.2%	71.5%
	multiple attempts	—	—	—	**84.8%**	84.6%	—
Mathematics AIME 2025	single attempt (pass@1)	**86.7%**	86.5%	—	49.5%	77.3%	70.0%
	multiple attempts	—	—	—	—	**93.3%**	—
Mathematics AIME 2024	single attempt (pass@1)	**92.0%**	87.3%	36.7%	61.3%	83.9%	79.8%
	multiple attempts	—	—	—	80.0%	**93.3%**	—
Code generation LiveCodeBench v5	single attempt (pass@1)	70.4%	**74.1%**	—	—	70.6%	64.3%
	multiple attempts	—	—	—	—	**79.4%**	—
Code editing Aider Polyglot		**74.0% / 68.6%** whole / diff	60.4% diff	44.9% diff	64.9% diff	—	56.9% diff
Agentic coding SWE-bench verified		63.8%	49.3%	38.0%	**70.3%**	—	49.2%
Factuality SimpleQA		52.9%	13.8%	**62.5%**	—	43.6%	30.1%
Visual reasoning MMMU	single attempt (pass@1)	**81.7%**	no MM support	74.4%	75.0%	76.0%	no MM support
	multiple attempts	—	no MM support	—	—	78.0%	no MM support
Image understanding Vibe-Eval (Reka)		69.4%	no MM support	—	—	—	no MM support
Long context MRCR	128k (average)	**94.5%**	61.4%	64.0%	—	—	—
	1M (pointwise)	83.1%	—	—			
Multilingual performance Global MMLU (Lite)		89.8%	—	—	—	—	—

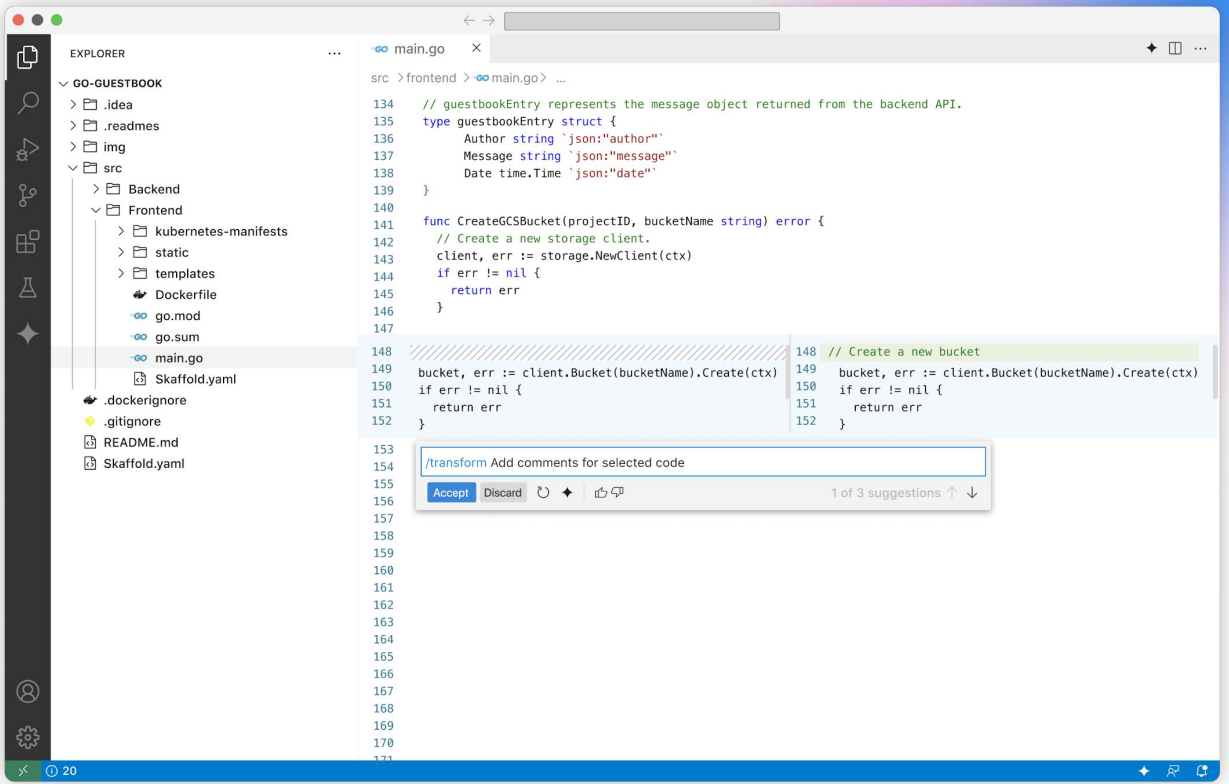
Core features

Smart actions—code transformation

Assistive development

Developers can use natural language prompts to perform modifications on existing code, such as adding comments, bug fixing, or making code more readable

IDE Coverage

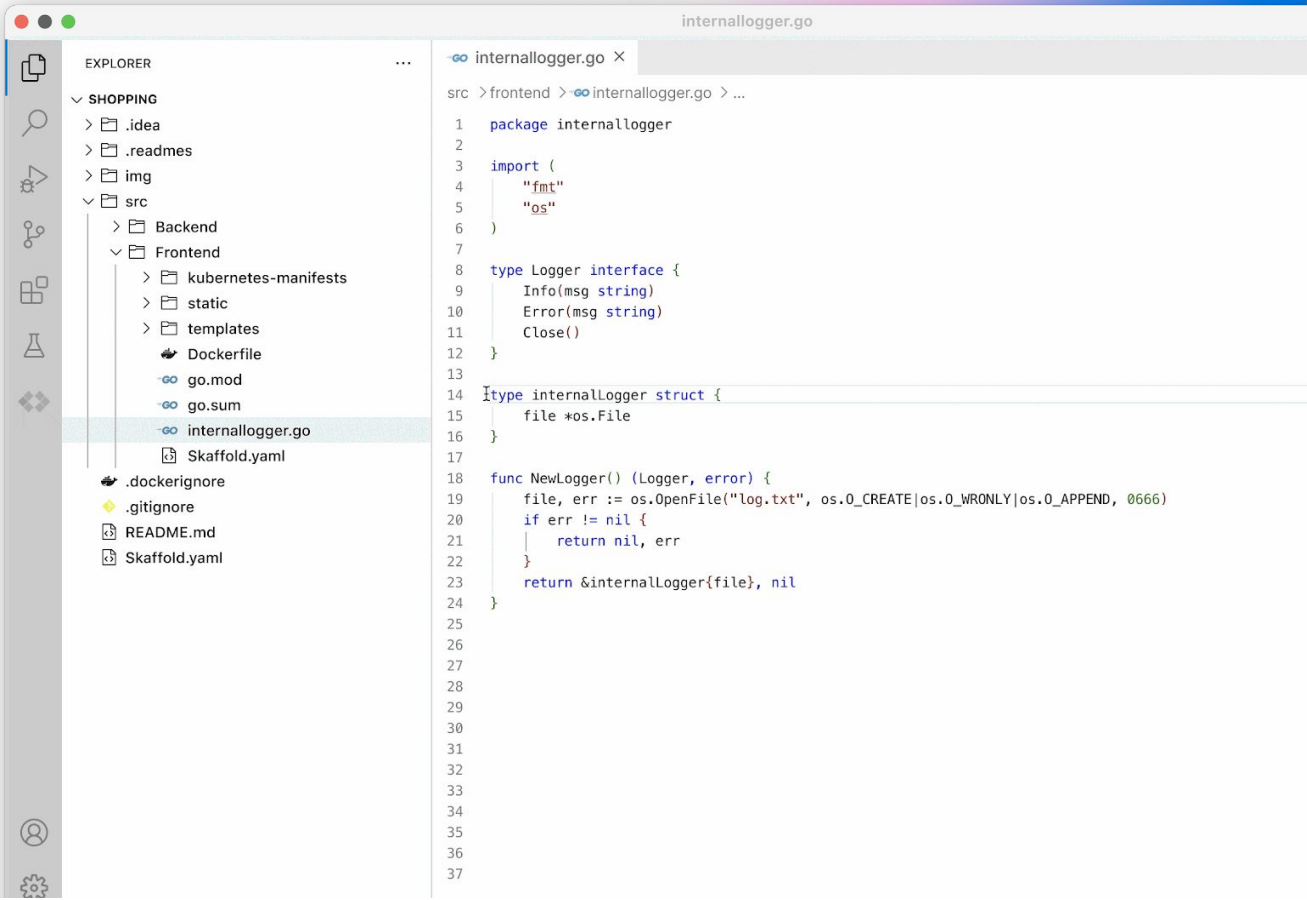


Explain code (Chat)

Assistive development

To improve test coverage for a code base a developer is not familiar with, they can ask Gemini Code Assist to **explain the code** to quickly and effectively understand how to start testing it.

IDE Coverage

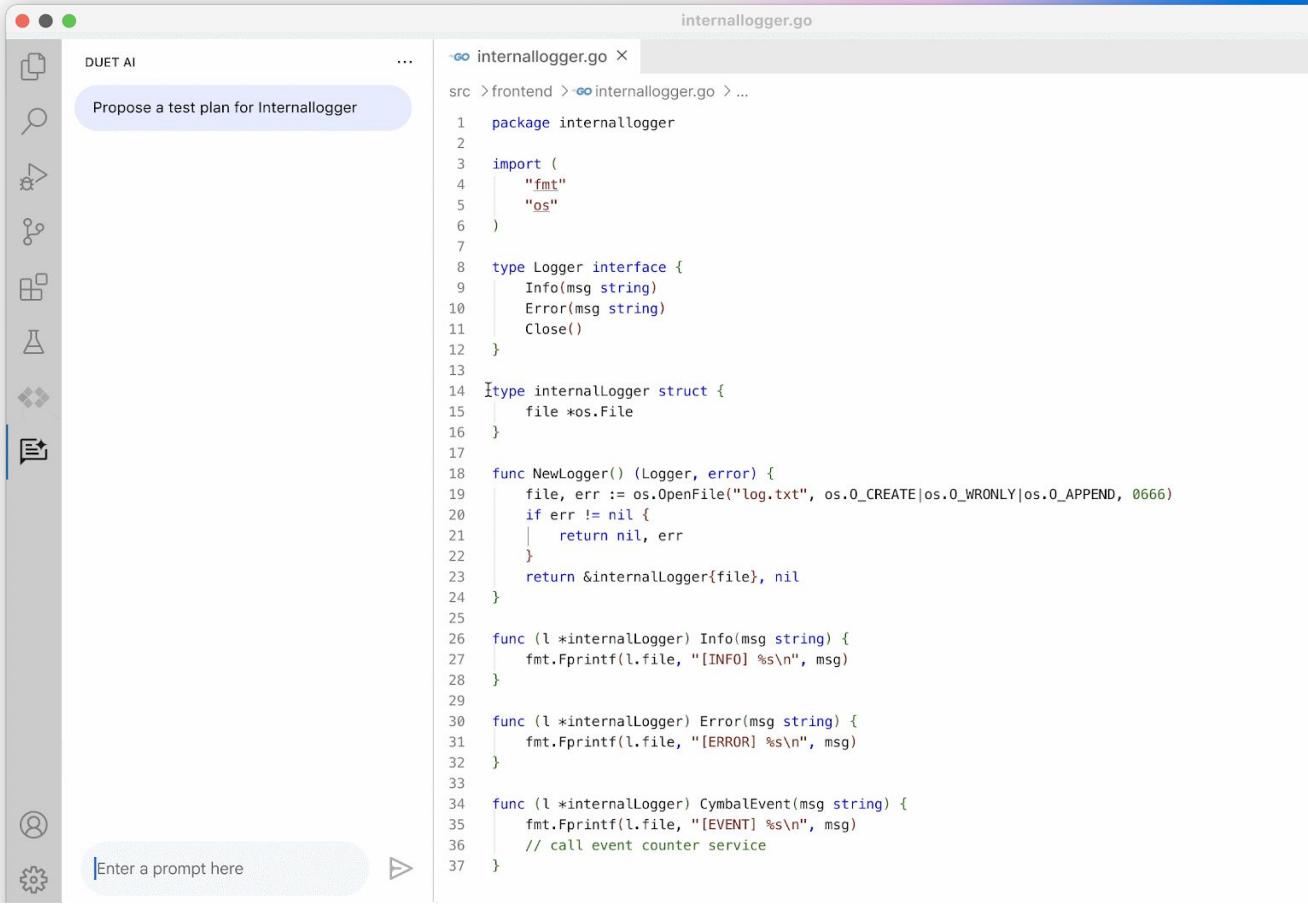


Test generation - Suggest a test plan (Chat) - 1/2

Assistive development

To define a test plan to ensure the code works as intended. Devs can ask Gemini Code Assist to **suggest a unit test plan** for the code, and iterate on it to ensure good coverage of edge cases.

IDE Coverage

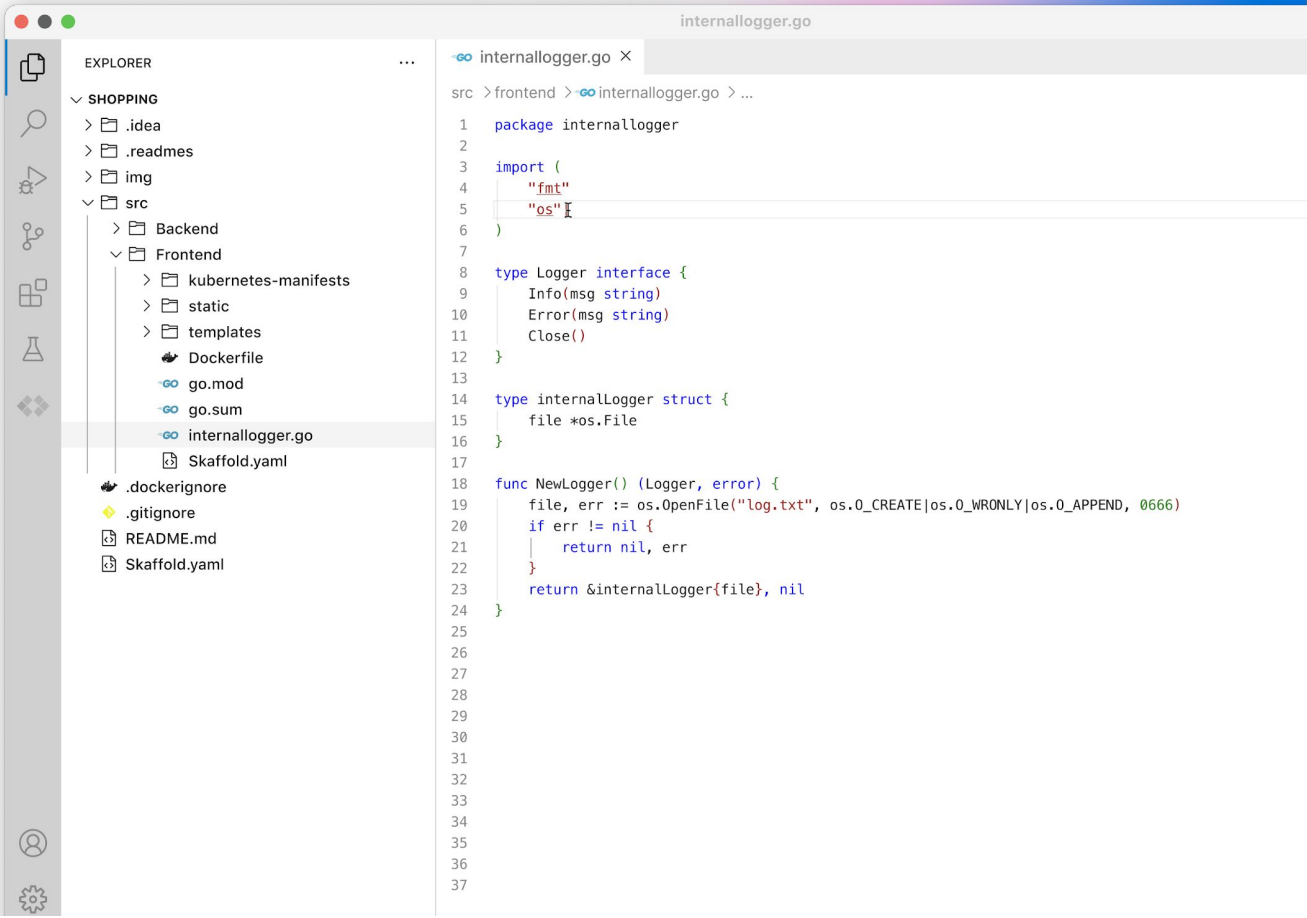


Test generation - Suggest a test plan (Chat) - 2/2

Assistive development

Once the test plan looks good, Devs can ask Gemini Code Assist to **implement the test plan defined**

IDE Coverage



Code Assist Agent Mode

Reimagined chat experience in Code Assist **powered by the Gemini CLI.** It expands the capabilities of **command-response** interactions inside Code Assist chat by providing support for multi file edits, full project context, built-in tools and integration with ecosystem tools (using MCP)

Evolution of Chat

Interactive Chat

Answer questions
Cite trusted sources
Generate code based on a given prompt

Agent Mode

Solve more complex problems through **multiple steps**
Implement **proposed solutions** on behalf of the developer
Amplify impact through **integrations with developer tools**
Extensibility to support a **rich tooling ecosystem**

Code Assist Agent Mode

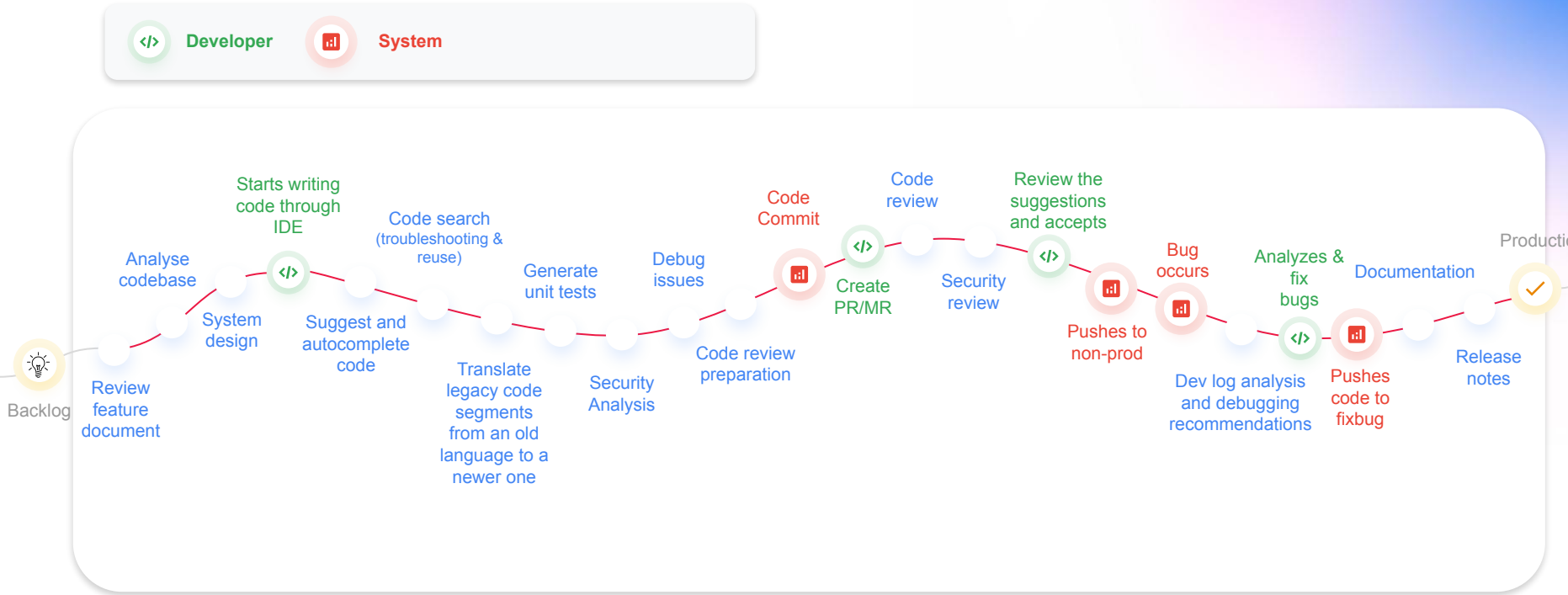
Code Assist Agent Mode (Preview)

- Initial release for VSCode
- Powered by Gemini CLI (for similar experience)
- Use with Gemini Code Assist license (all tiers with existing quotas and limits).
- MCP Support (for local servers & remote servers [url])

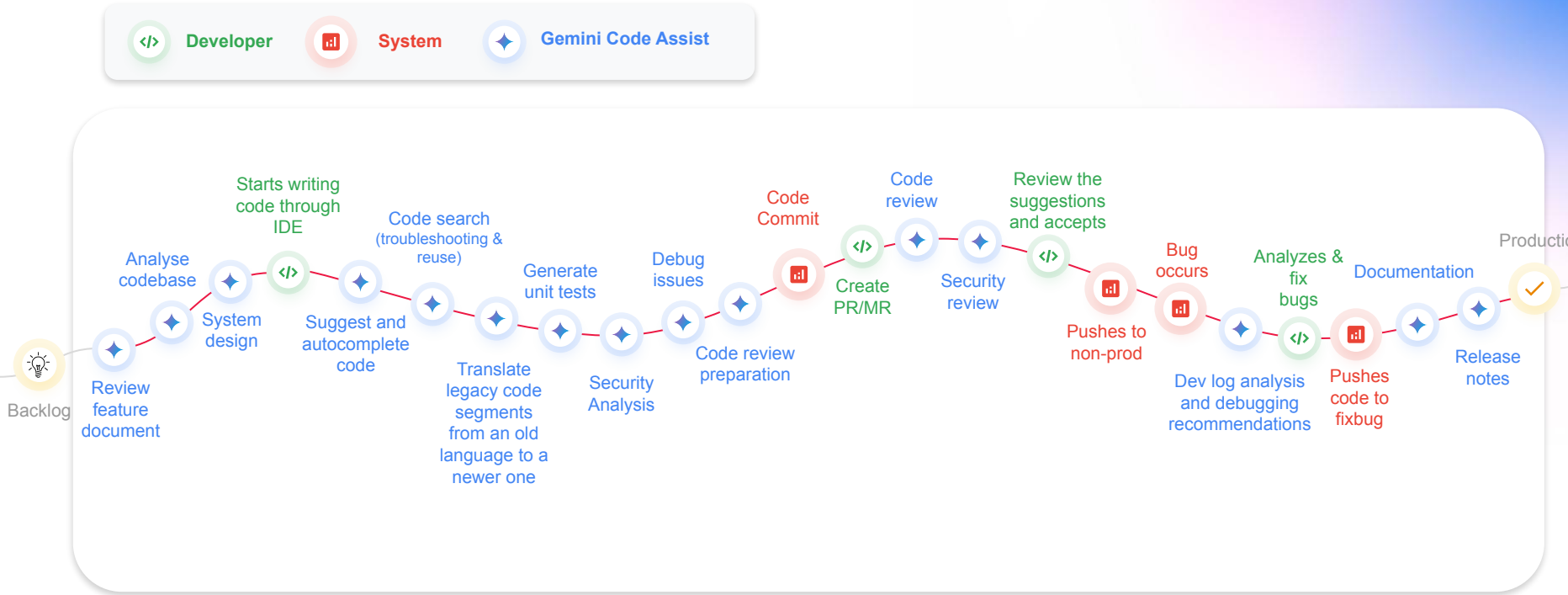
Gemini CLI (Preview)

- Open source CLI tool
- Accessible anywhere
  - Use with Gemini Code Assist license (all tiers with existing quotas and limits)
  - OR Bring your own Gemini API key
- MCP Support (local servers, remote servers [url])

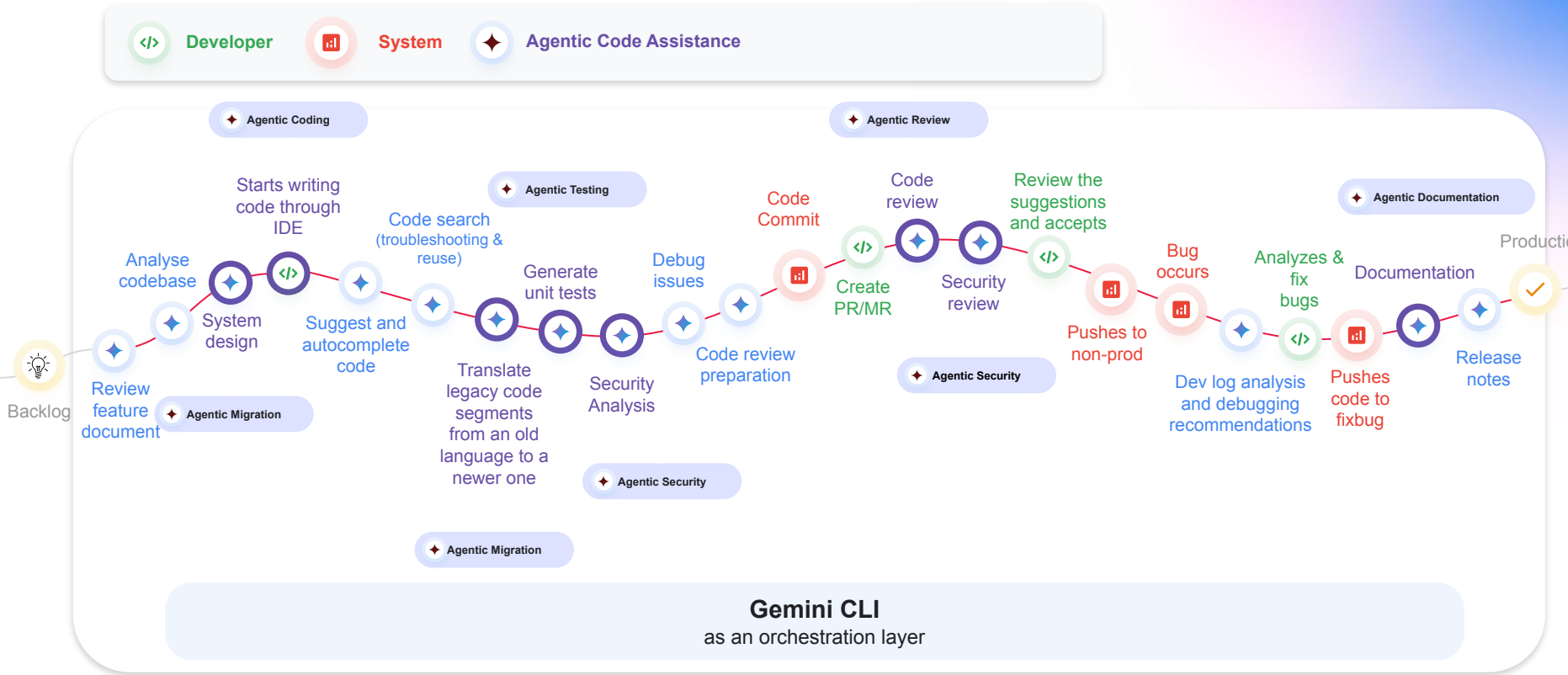
Typical Workflow



Typical Workflow with AI Assistance



Agent Mode and SDLC



From *Prompting* to *Coaching*

Techniques

The Prompting Spectrum

Basic Prompting
Asking the LLM to perform simple tasks like **“write a function to compute the sum of two numbers in Python”**. These are not complex, have explicit instructions (“in Python”) and do not assume much from the LLM.

Context-Aware Prompting
Give the LLM some knowledge of your project by giving it specific context such as: **“modify @app.py so that it uses functions from @../my/library.py instead of writing them from scratch and use documentation from @https://m3.material.io/ for any CSS”**

Meta Prompting
Instead of writing the prompts by hand, coach the agent on how to write the prompts for the tasks it needs to execute. **“You need to write a basic web app to serve a guestbook with a scalable database.”** Context is inferred and a plan is created.

Prompting Demo!

Google Guide

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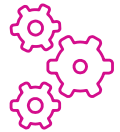
Working with Tools + Context

Supercharge your Agentic Peer Programmer



Tools
Agents can use predefined tools (readFile, writeFile, bash, etc) and user-defined tools (custom code).

MCP
Connect agents to other systems to get information and/or take action.

Local Context
Repo awareness plus specific references to local files and folders.

Controlling your Agent

Gemini Code Assist Agentic Architecture

Understanding how Agents Behave

RTFM!

GEMINI.md

The primary orchestrator for all agentic behavior. Better understood as the agent's "memory". This is where everything stems from.

\+ settings.json

DESIGN.md

- Which design libraries (public and private) to use
- Design philosophy
- Guidelines, templates, images

DATABASES.md

- Preferences and design approach
- Existing data landscape, schemas, data dictionaries, etc.
- Platforms and choices

DEPLOYMENT.md

- Deployment pipeline guidance
- Security requirements
- Infrastructure / Platform information

Agent Setup Workshop!

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Planning + Executing

PLAN.md
Edit the plan
New and existing code

Planning + Executing Workshop!

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Thank you!