What's New for Visual Studio Code

CMake Improvements and GitHub Copilot Agents

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Microsoft @ CppCon

Tues.	14:00	**What's new in Visual Studio for C++ Developers in 2025**	Augustin Popa & David Li
	14:00	Back to Basics: Code Review	Chandranath Bhattacharyya & Kathleen Baker
Wed.	14:00	LLMs in the Trenches: Boosting System Programming with AI	Ion Todirel
	15:15	C++ Performance Tips: Cutting Down on Unnecessary Objects	Kathleen Baker & Prithvi Okade
	15:50	Connecting C++ Tools to AI Agents Using the Model Context Protocol	Ben McMorran
		Welcome to v1.0 of the meta::[[verse]]!	Inbal Levi
Thurs.	14:00	MSVC C++ Dynamic Debugging: How We Enabled Full Debuggability of Optimized Code	Eric Brumer
	16:45	It's Dangerous to Go Alone: A Game Developer Tutorial	Michael Price
Fri	9:00	Reflection-based JSON in C++ at Gigabytes per Second	Daniel Lemire & Francisco Geiman Thiesen
	13:30	Duck-Tape Chronicles: Rust/C++ Interop	Victor Ciura

Agenda

1. Faster Performance for C/C++ Extension

2. C++ Tooling updates

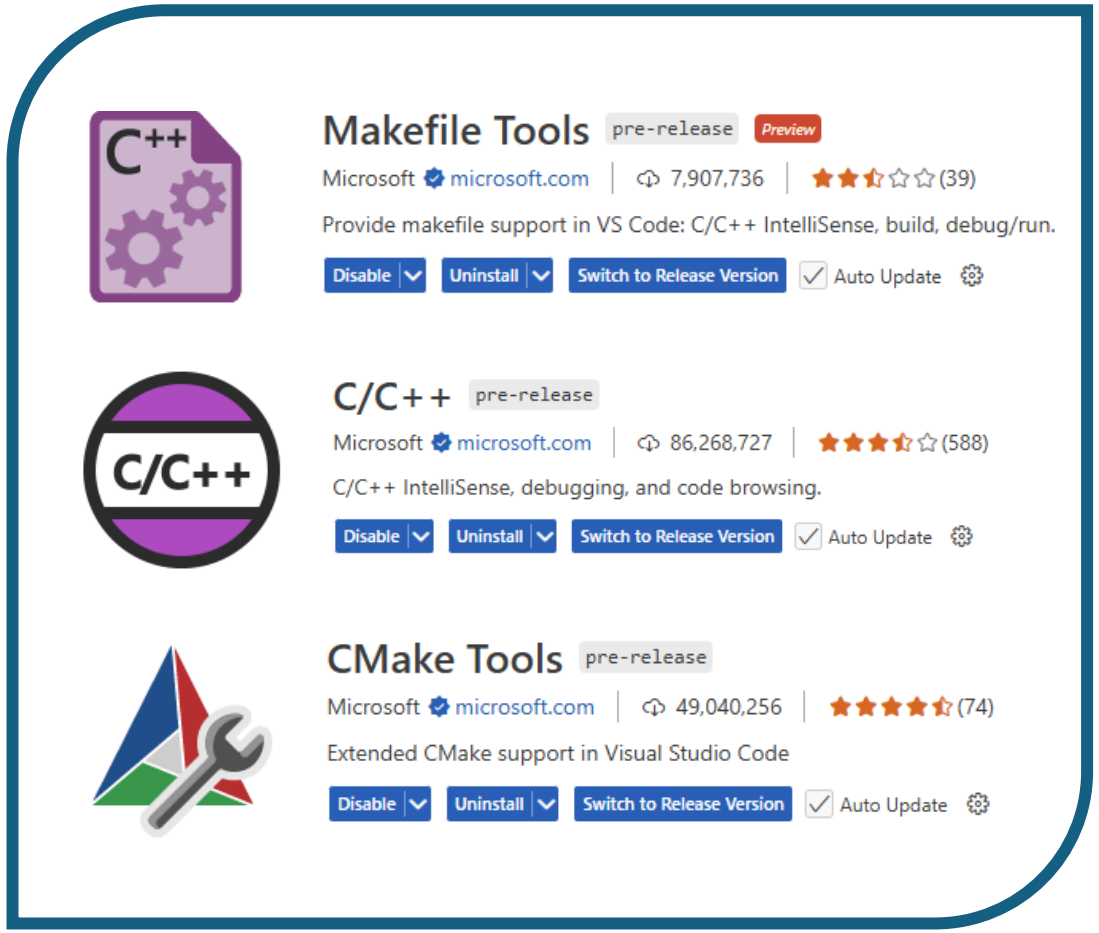
Updating the build scripts in the VCMI repo

3. AI Agents

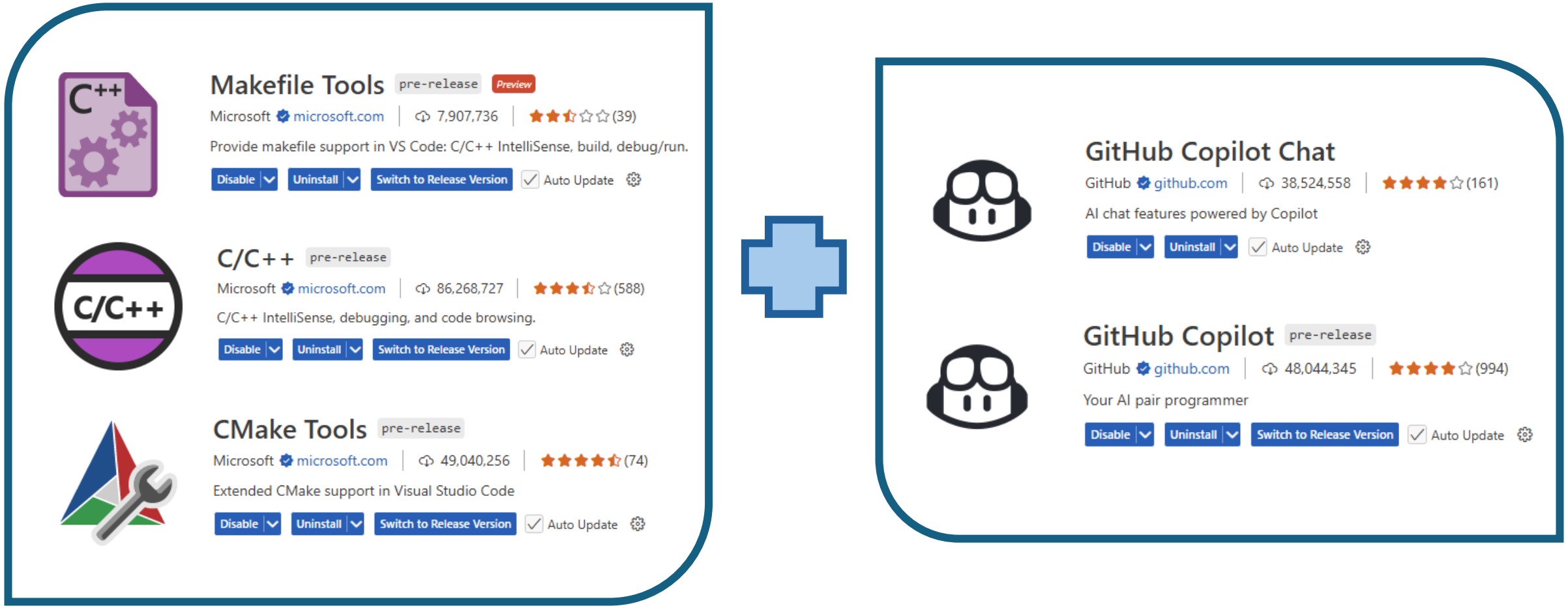
Building a C++ proof of concept from scratch

4. Other VS Code updates

Extensions for C++ Development in VS Code

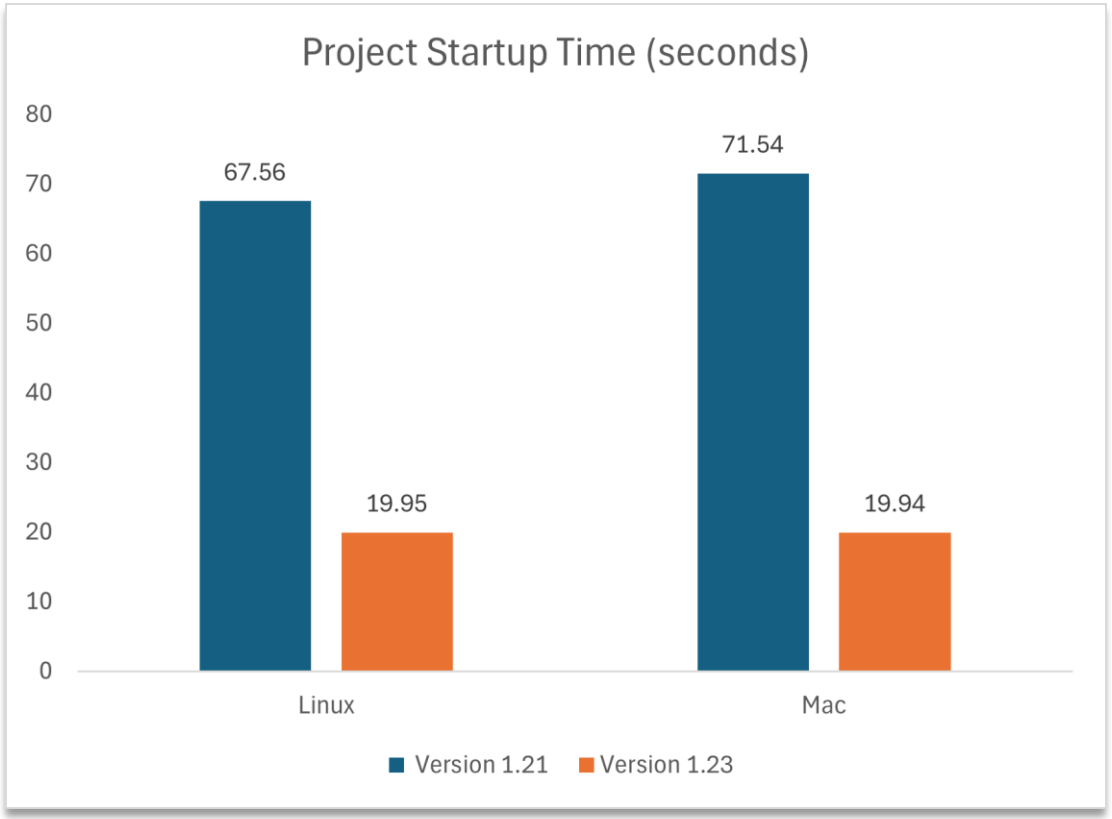


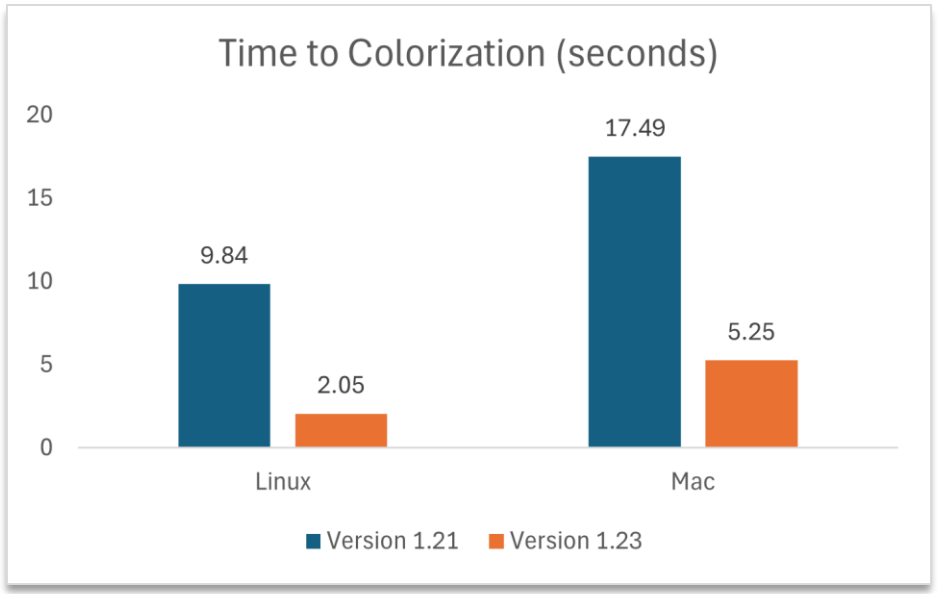
Extensions for C++ Development in VS Code



Performance Gains for large C++ codebases

Faster Colorization & Project Startup





But how?

- Configuration caching
- Better compile_commands.json support, custom config handling, file discovery…

Learn More at aka.ms/cpptools-perf

Performance: Customize recursive #includes

Default:

```
"includePath": [
    "${workspaceFolder}/**"
],
```

GameEngine.cpp

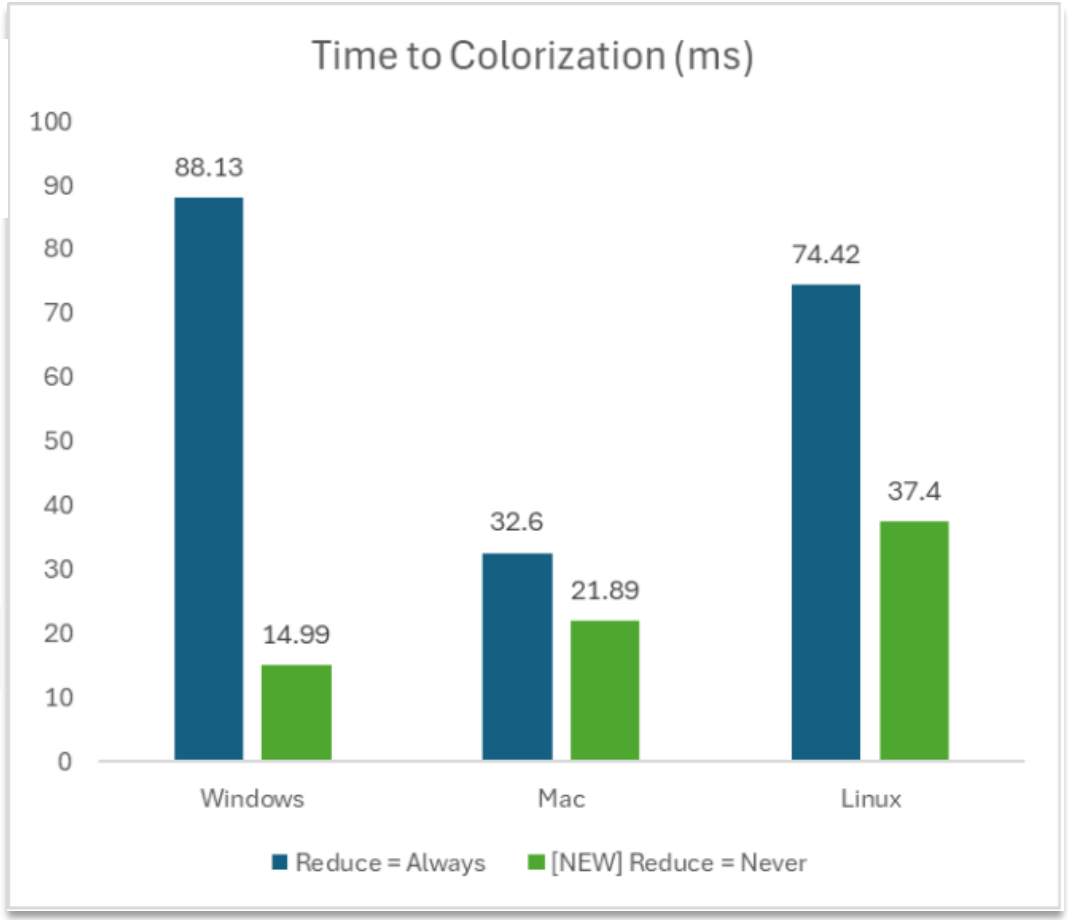
```
#include "render/Canvas.h"
#include "render/Colors.h"
#include "render/IFont.h"
#include "render/EFont.h"
#include "renderSDL/ScreenHandler.h"
#include "renderSDL/RenderHandler.h"
```

```
#include "../gui/TextAlignment.h"
#include "../../lib/Rect.h"
#include "../../lib/Color.h"
```

```
#include "../../lib/Color.h"
```

```
#include "../../lib/Point.h"
#include "../render/IScreenHandler.h"
```

```
#include "../render/IRenderHandler.h"
```

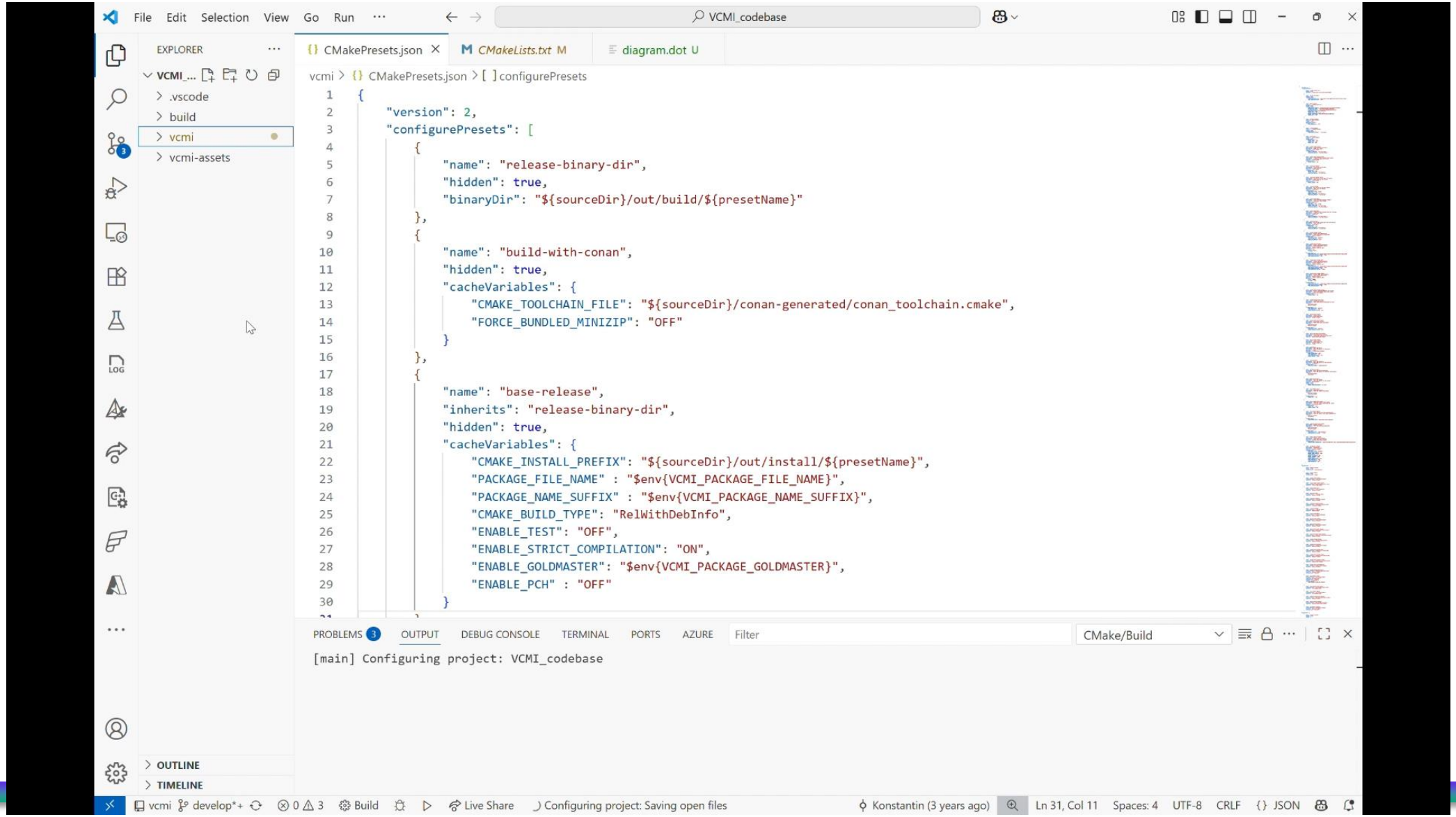


Learn More at aka.ms/cpptools-1.25

Demo: Updating your build process with the CMake Tools Extension

vcmi/vcmi: Open-source engine for Heroes of Might and Magic III

Backup Demo Recording



Recap: Modernizing your Cmake Scripts

CMake Language Services – now provided by CMake Tools extension

```
    set(CMAKE_VS_GLOBALS
```

Add compile definitions to a target.

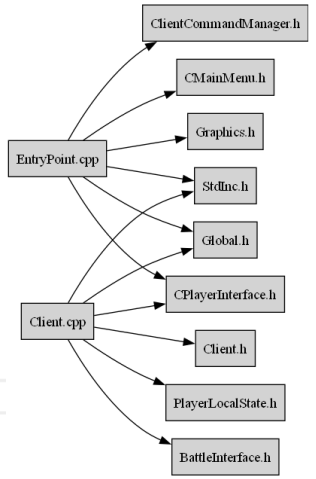
```
    target_compile_definitions(<target> <INTERFACE|PUBLIC|PRIVATE> [items1...]
[<INTERFACE|PUBLIC|PRIVATE> [items2...] ...])
    target_compile_definitions(foo PUBLIC FOO) target_compile_definitions(foo PUBLIC -DFOO)
target_compile_definitions(foo PUBLIC "" FOO) target_compile_definitions(foo PUBLIC -D FOO)
    target_compile_definitions(foo PUBLIC FOO=1)
target_compile_definitions(VCMI PRIVATE
```

Support through **CMake Presets v10**

CMakePresets.json M

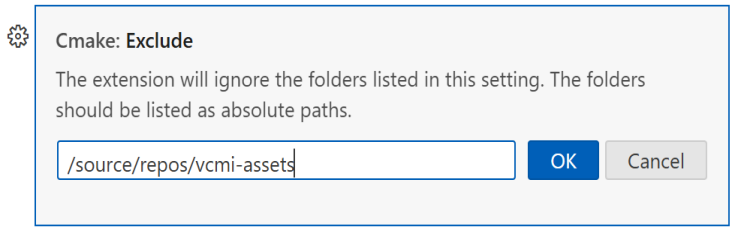
CMakePresets.json > [ ] configurePresets

```
{
    "version": 10,
    "configurePresets": [
        {
            "name": "macos-ninja-release",
            "displayName": "Ninja release",
            "description": "VCMI MacOS Ninja",
            "inherits": "default-release",
            "$comment": "MacOS build with Ninja for better performance"
```

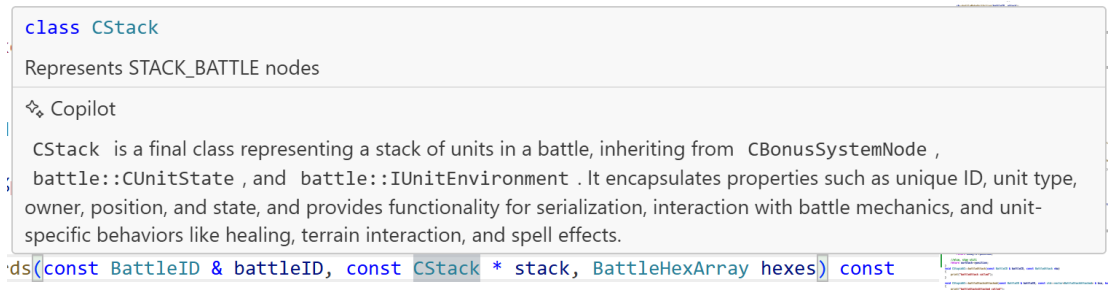


Recap: Improvements to code navigation + understanding

Multi-root configurability for CMake

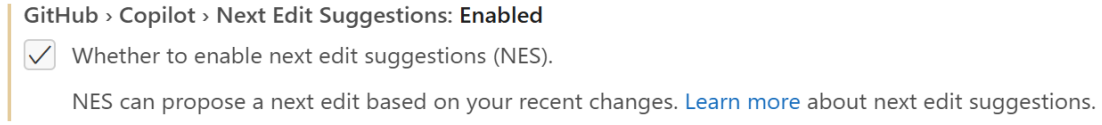


Copilot Hover



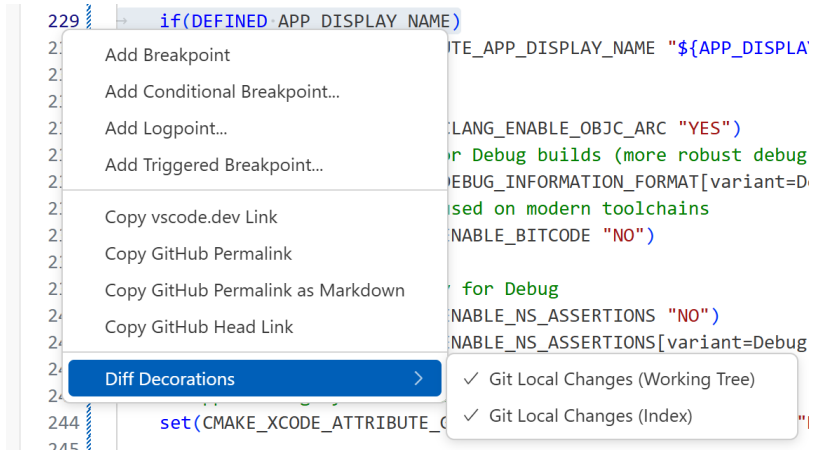
Updates to C++ Completions: more ***context-aware***

- Next-Edit Suggestions predict where and what you need to update next

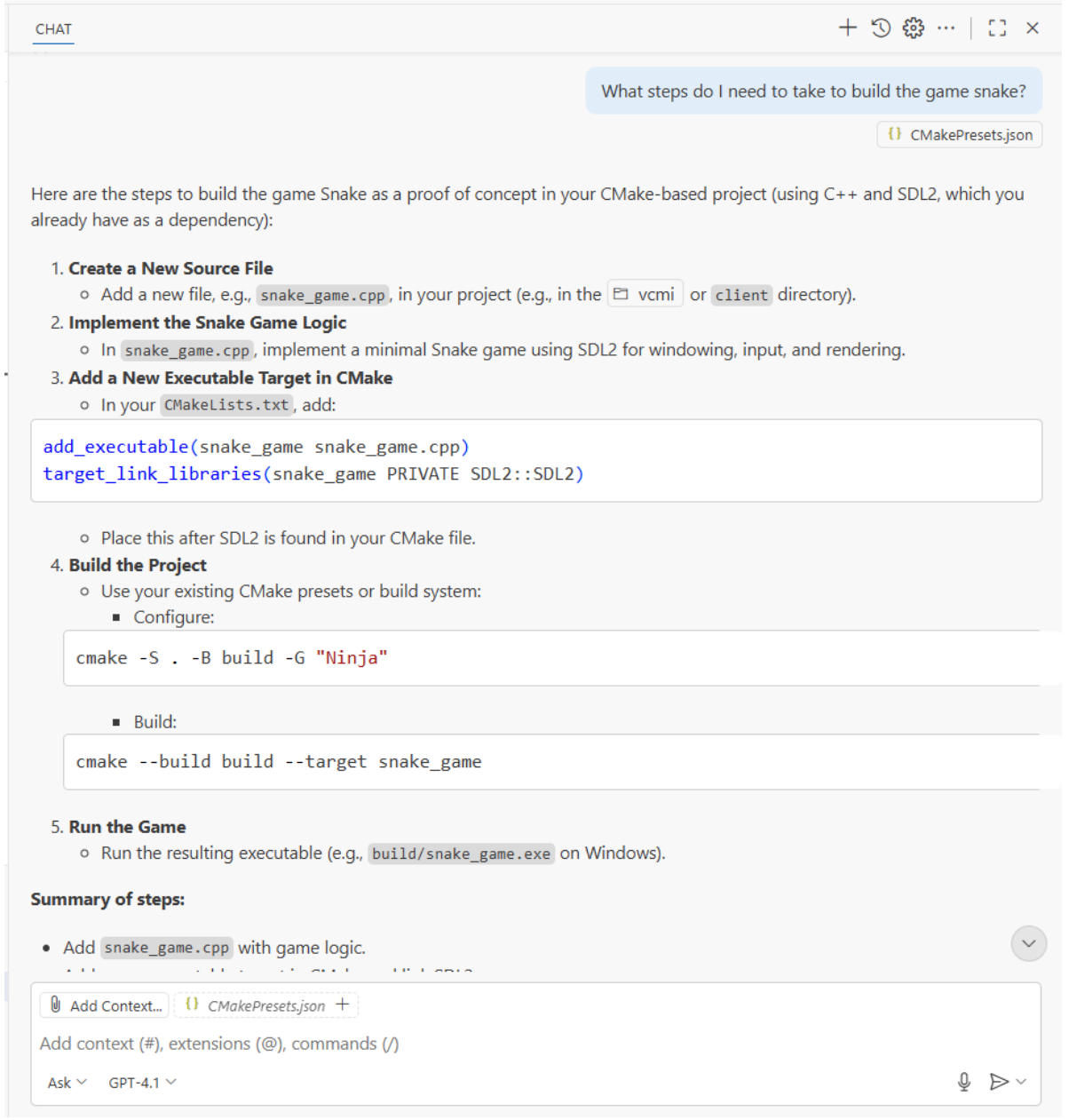


- New, updated models trained on more C++
- Contextual Improvements tailored to C++ coding structure

View your Git staged commits from editor



But what about building from scratch?



Codebase wide changes, powered by Agents

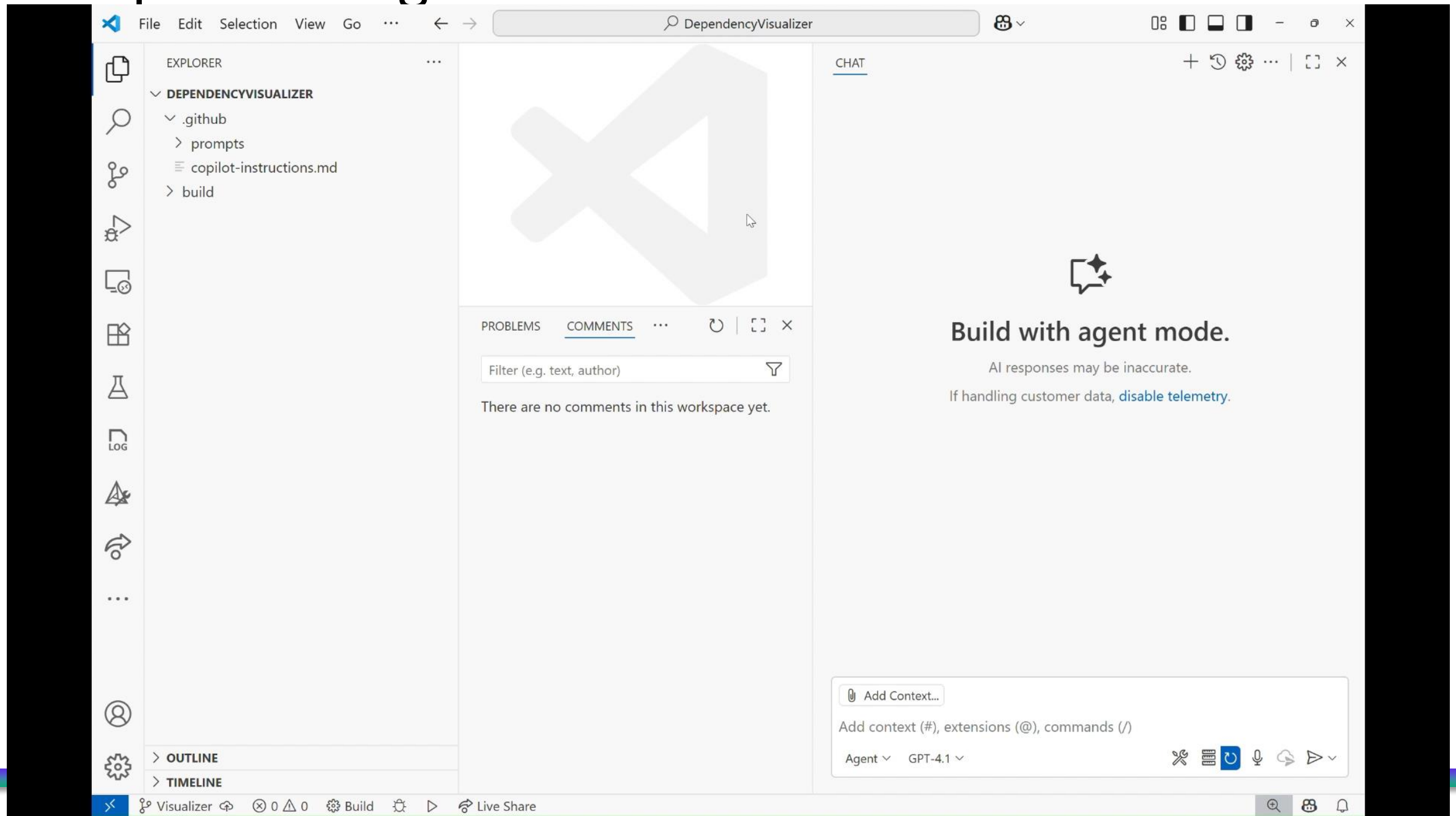
Intelligent systems that

- Accept natural language instead of step-by-step instructions
- Automate complex workflows
- Can invoke tools & commands (compilers, debuggers, etc.)
- Can edit across multiple files

“Add a thread-safe logging utility to this C++ project”

Demo: Building from Scratch with custom instructions

Backup recording



Copilot Coding Agent

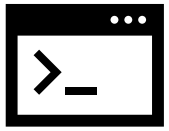
Async & in the cloud

- Integrated into GitHub
- Explores repo, writes code, runs tests, opens a pull request for review
- Works in the background

Example:

- Fix a bug in the codebase & create a relevant PR

Agent Mode in VS Code



Real-time & in VS Code

- Local & interactive for specific task that iterates until successful
- Agent edits your code & invokes tools
- Immediate feedback & control

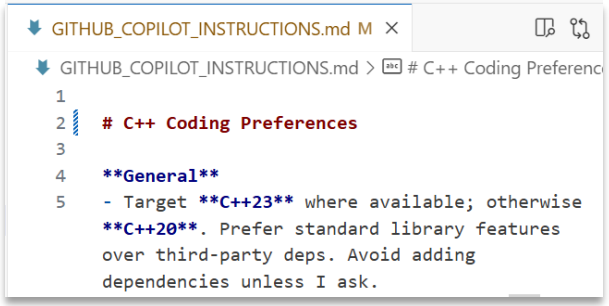
Examples:

- Plan and implement new features
- Refactor parts of your codebase

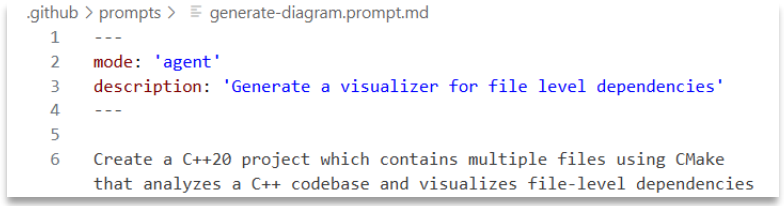
Learn More at aka.ms/agent-mode & aka.ms/copilot-coding-agent

Recap from demo: Customize Copilot

Custom Instructions
Specify coding standards based on your preferences per workspace

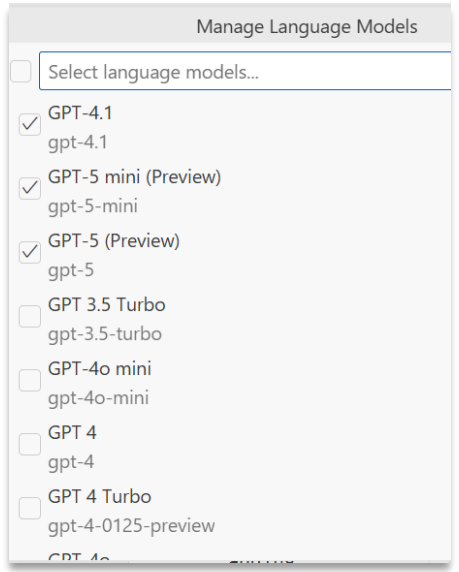


Prompt Files
define reusable prompts for common development tasks



Model Picker
Choose between a variety of different Models

Bring Your Own Key
Add additional models beyond built-in providers



Learn More at aka.ms/customize-copilot

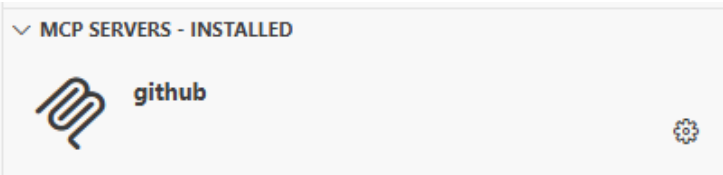
Extensibility for Agent: Tools + MCP

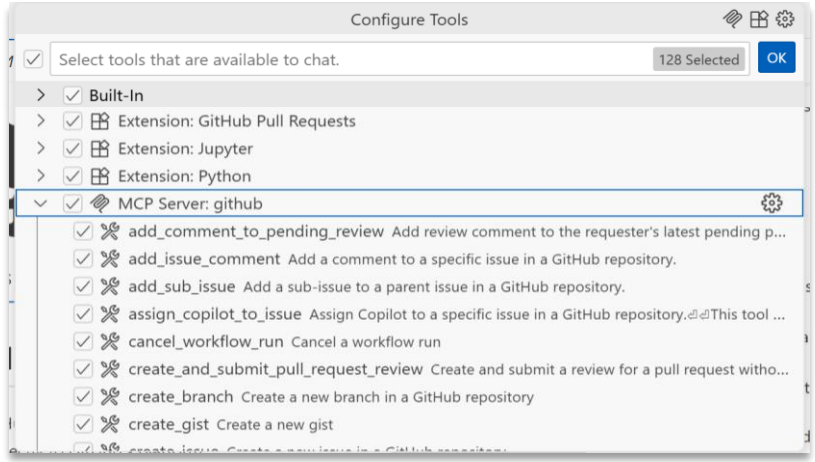
Tools extend the agent's capabilities beyond basic code generation, enabling it to interact with your environment, run commands, and more…

- Invoke manually and/or automatically by agent
- Agent supports tools provided by VS Code ecosystem (built-in and extensions) and MCP server tools
- Can enable/disable

Model Context Protocol (MCP) enables GitHub Copilot to connect with wide range of external tools and data sources

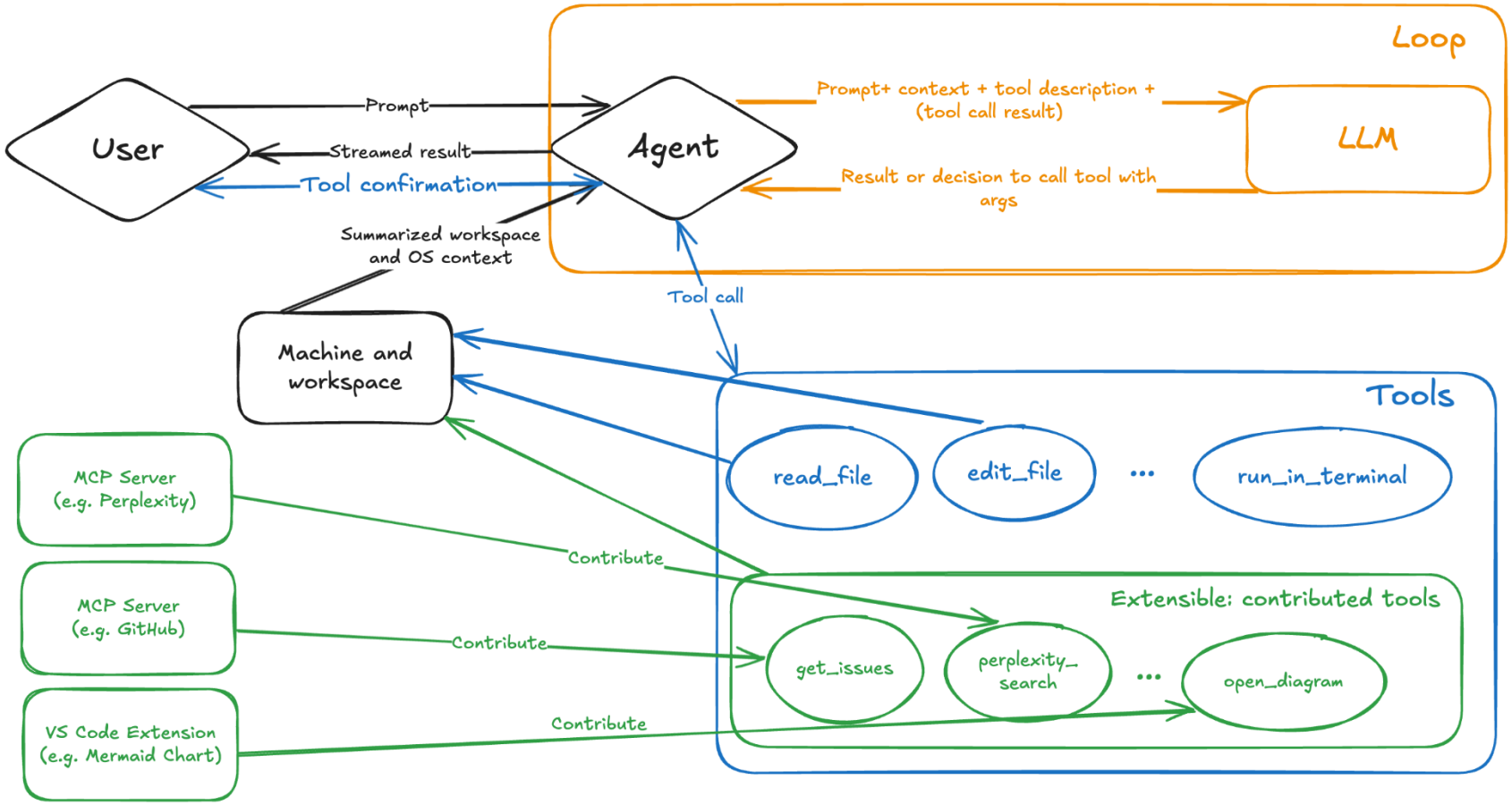
- **MCP tools** are **server-based extensions** that Copilot can invoke in Agent Mode
- Configure enterprise-wide permission policies





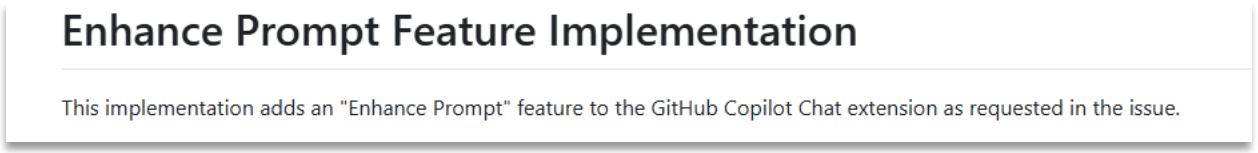
Learn More at the MCP talk on Wed @15:50

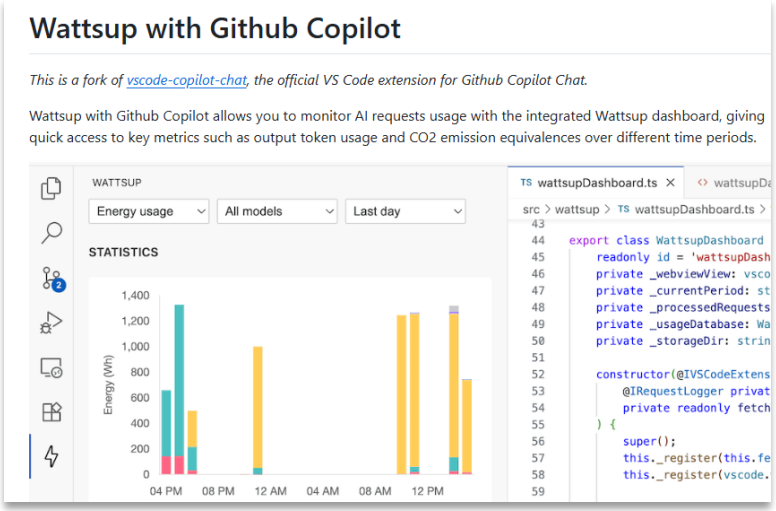
Extensibility for Agents: Tools + MCP

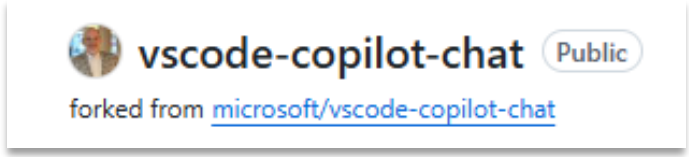


GitHub Copilot: Free + Open-Source

- Copilot Chat Extension is now open source
  - Audit, extend, and customize chat

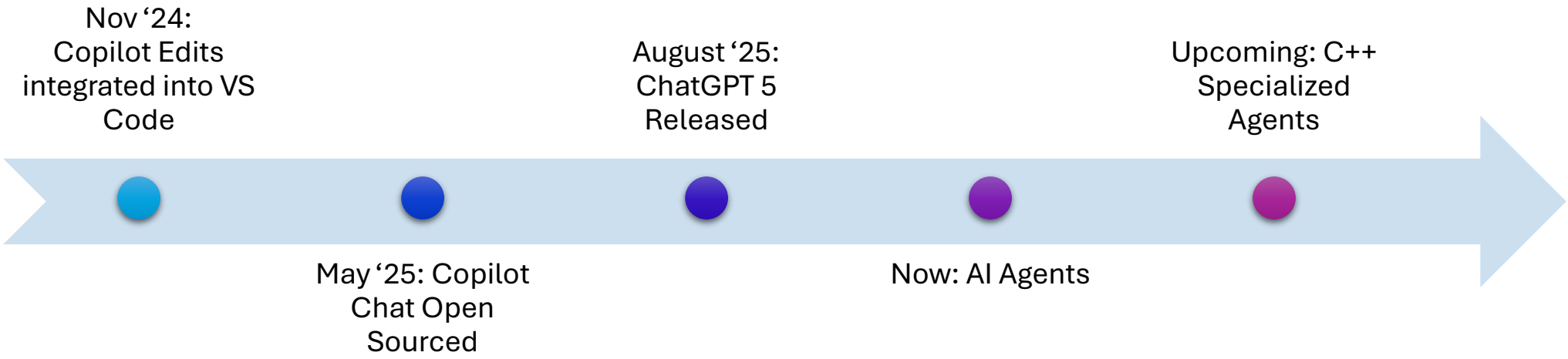






Want to try copilot? GitHub Copilot Free Tier now available, sign up at https://github.com/features/copilot

Where we are now?



Questions?

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