TECHX

Asia's Largest
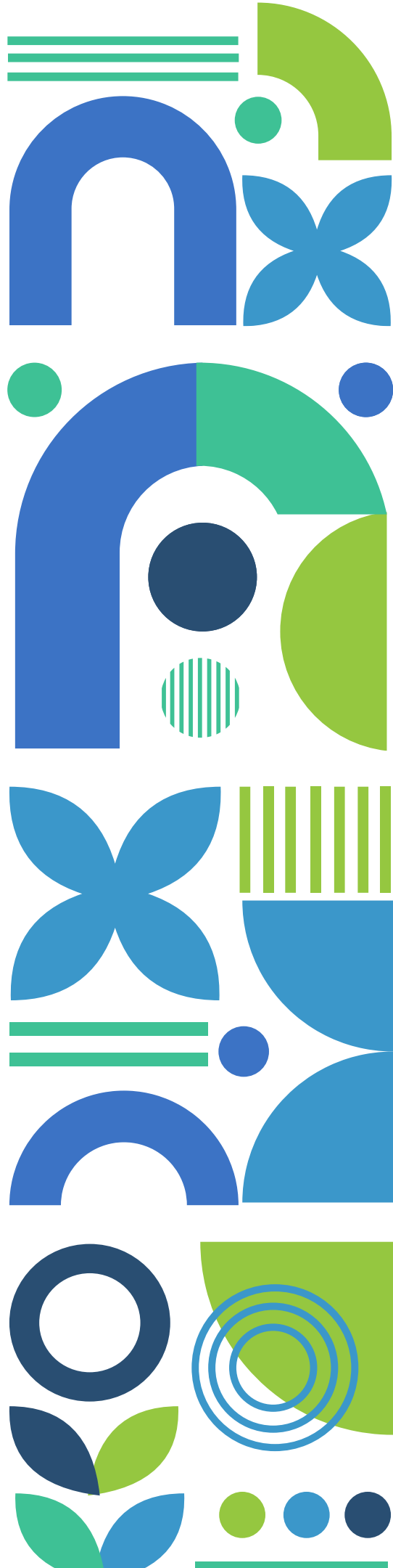
AI & Cloud

Conference 2024

15 – 16, November 2024

Chennai Trade Center, Chennai

Super charge your app dev workflow with GitHub Copilot

Swaminathan Vetri,
TechXConf – Nov 15 & 16, 2024,
Chennai

Swaminathan Vetri

Lead Platform Architect @ Maersk

About Me

Dad of 2 little princess ☺, Cloud Native architect, Former Microsoft MVP (2016-2022), Passionate about communities, continuous learner, public speaker & amateur photographer.

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Agenda

1. **Intro to GitHub copilot - What, Why & How**
2. **Intro to GitHub copilot extensions**
3. **Leveraging GitHub Copilot to supercharge app dev workflow**
4. **Demos**

GitHub Copilot

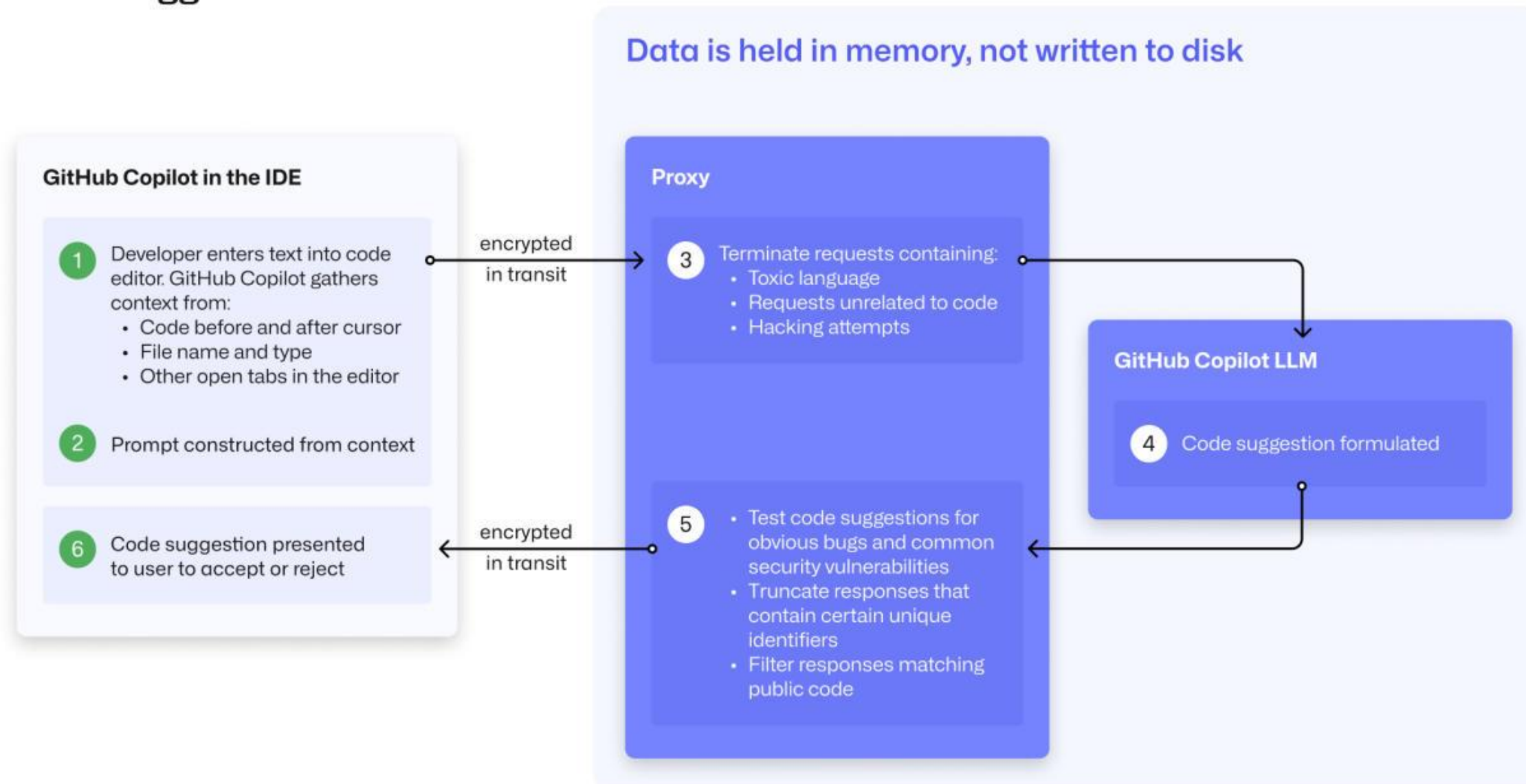| AI Pair Programmer	Provide Code suggestions/completions
	Explain code
	Suggest commands based on Natural language prompts
	Assist with all developer focused queries
	Keep developers in the flow within the IDE
	Increase developer productivity & happiness ☺
	Many more and more …

GitHub Copilot – How does it work?

The life cycle of a GitHub Copilot code suggestion in the IDE

Data is held in memory, not written to disk

GitHub Copilot in the IDE

1. Developer enters text into code editor. GitHub Copilot gathers context from:
   - Code before and after cursor
   - File name and type
   - Other open tabs in the editor

2. Prompt constructed from context

encrypted in transit

Proxy

3. Terminate requests containing:
   - Toxic language
   - Requests unrelated to code
   - Hacking attempts

GitHub Copilot LLM

4. Code suggestion formulated

5.
   - Test code suggestions for obvious bugs and common security vulnerabilities
   - Truncate responses that contain certain unique identifiers
   - Filter responses matching public code

6. Code suggestion presented to user to accept or reject

encrypted in transit

Source: GitHub Copilot Data Pipeline Security - GitHub Resources

GitHub Copilot – For Architects

Creating architecture/design diagrams as code using mermaid, Plant UML etc.,

Creating class diagrams from code

Creating flowcharts from deployment config files

GitHub Copilot – For Dev/QA

Create code from comments

Create codebase from templates

Create unit tests for code

Create documentation for code

Code reviews

Code refactoring

Fixing potential code smells

Editing multiple files at once

Explain existing code

Understand the existing codebase

GitHub Copilot – For DevOps

Suggestions for commands used for troubleshooting deployment issues, k8s issues etc.,

Code suggestions/completions for creating infra as code, deployment yaml etc.,

Demo

GitHub Copilot Extensions

Copilot Extensions are integrations that expand the functionality of Copilot Chat, allowing developers to bring external tools, services, and custom behaviours into the Chat experience.

With Extensions, you can

- Query documentation
- AI-assisted coding
- Data retrieval
- Action execution

GitHub Copilot Extensions

Supported IDEs

Supported clients and IDEs 🔗

Clients and IDEs	GitHub Copilot Extensions support
Visual Studio Code	✓
Visual Studio	✓
GitHub.com	✓
GitHub Mobile	✓
JetBrains IDEs	✕
Vim/Neovim	✕
Copilot in the CLI	✕
Xcode	✕

Source: https://docs.github.com/en/copilot/building-copilot-extensions/about-building-copilot-extensions#supported-clients-and-ides

Demo - Copilot Extensions

GitHub Copilot – FAQs

Does Copilot persist my request prompt?

Does Copilot get trained on my code?

Can I make Copilot to train on my org/enterprise specific code?

Who takes responsibility for the code suggested by Copilot?

GitHub Copilot – Best practices

Provide the right context

- Keep the relevant file tabs open

Start general, and then get specific

Give examples

Break complex tasks into simpler ones

Avoid Ambiguity

Experiment and iterate

Use good coding practices

Always remember YOU are the Pilot

What if …

We can add more functionalities to an existing code base, fix bugs or create new code base with just natural language…

Enter GitHub Copilot Workspace

What if …

We are able to just create a working prototype of an app with just natural language…

Enter GitHub Spark

Recap

GitHub Copilot chat is available in the IDE, Terminal, GitHub.com, GitHub Mobile app

Everyone (Arch/Dev/DevOps) can get benefitted from GitHub Copilot

Copilot extensions helps to bring in external tools under GitHub Copilot chat

Follow the best practices in prompt crafting to achieve the best out of GitHub Copilot

Remember, YOU are the pilot; Use copilot as assistant and review ALL the suggestions

Resources

https://docs.github.com/en/copilot/using-github-copilot/using-extensions-to-integrate-external-tools-with-copilot-chat

https://docs.github.com/en/copilot/using-github-copilot/prompt-engineering-for-github-copilot

https://docs.github.com/en/copilot/using-github-copilot/best-practices-for-using-github-copilot

https://github.com/features/copilot/#faq

THANK YOU!

Swaminathan Vetri

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