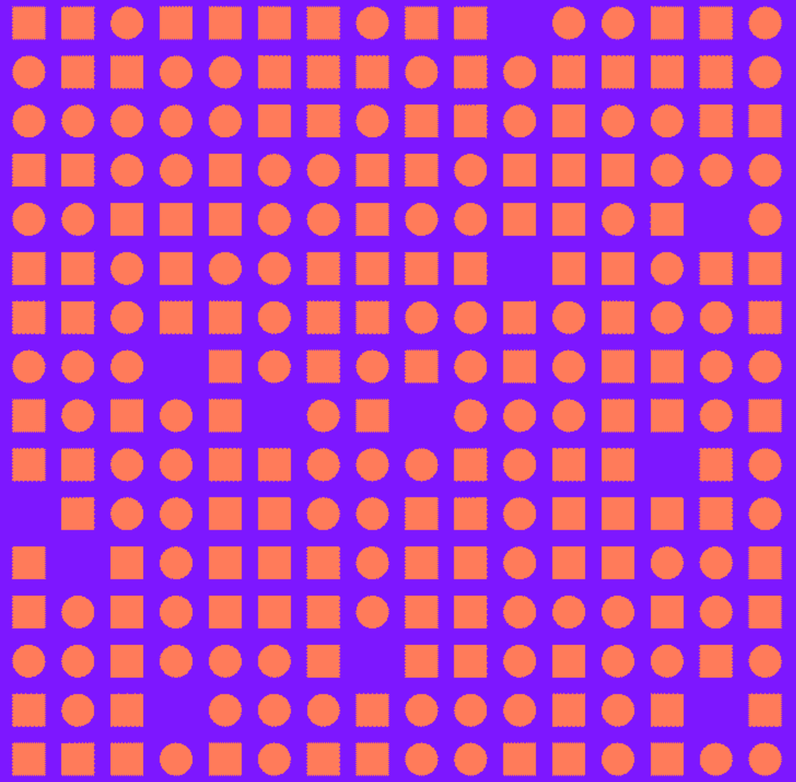
TypeFox

Embracing Remote Systems for Local IDEs



Mark Sujew

TheiaCon ‘23

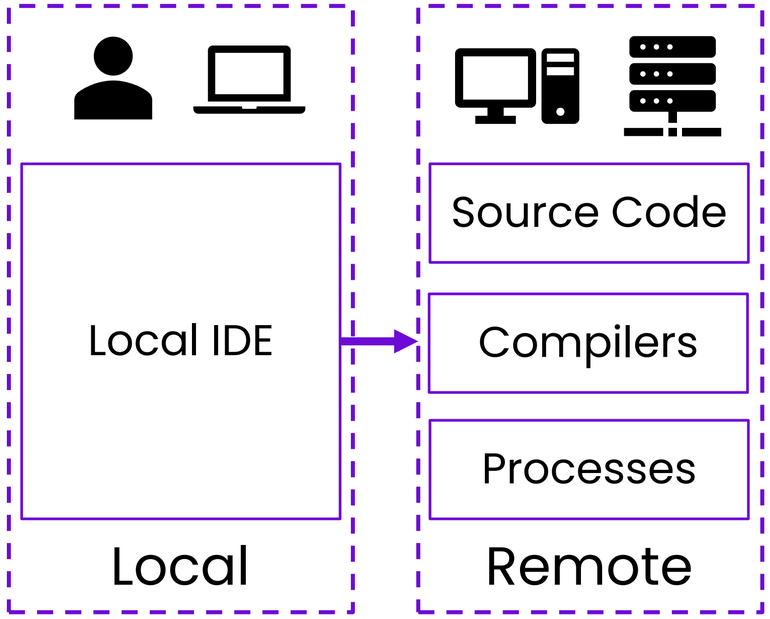
Agenda

1. Remote Systems?
2. Remote Development
3. Collaborative Development
4. Roadmaps



Working with Remote Systems

In a few words…



- IDE is on the local system
- All other resources are on the remote
  - Source Code
  - Compilers/Runtimes/Debuggers
  - Terminal Processes
  - Application Servers



Working with Remote Systems

Use Cases



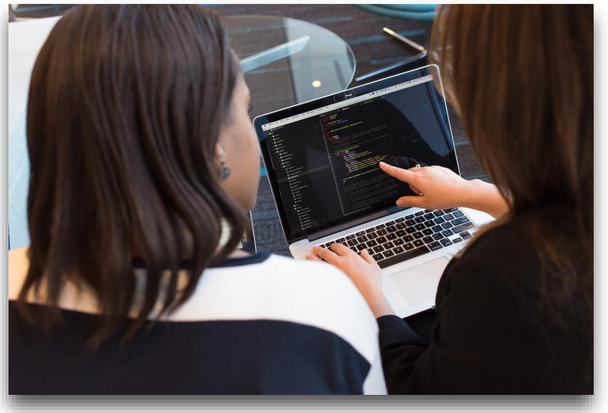
Amazon EC2

Lightweight local system with rented heavy server platform

Proprietary compiler with no physical access to the office



Remote Development



Remote Pair Programming Session

Collaborative Development

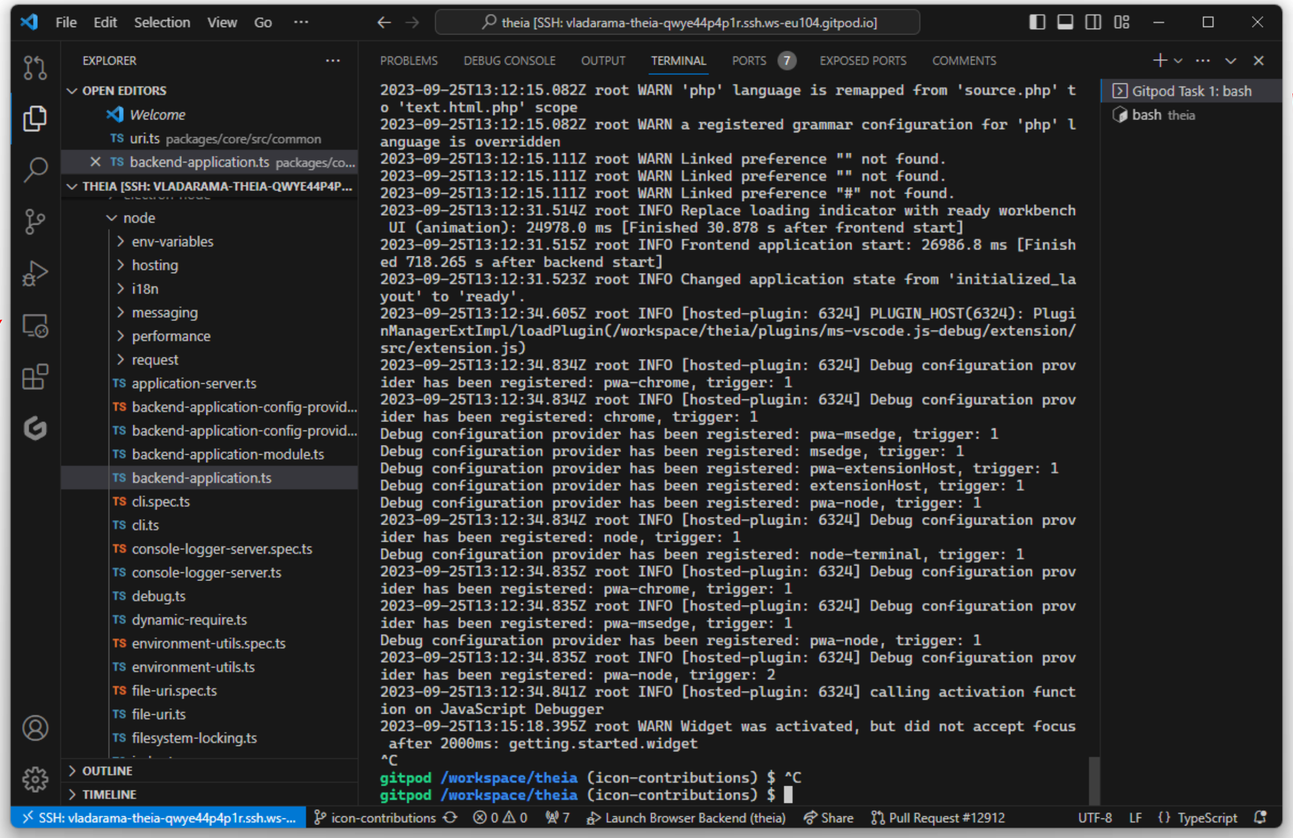
Remote Development

Working on a remote machine

Remote Development

Feature Set

Windows 11 Window

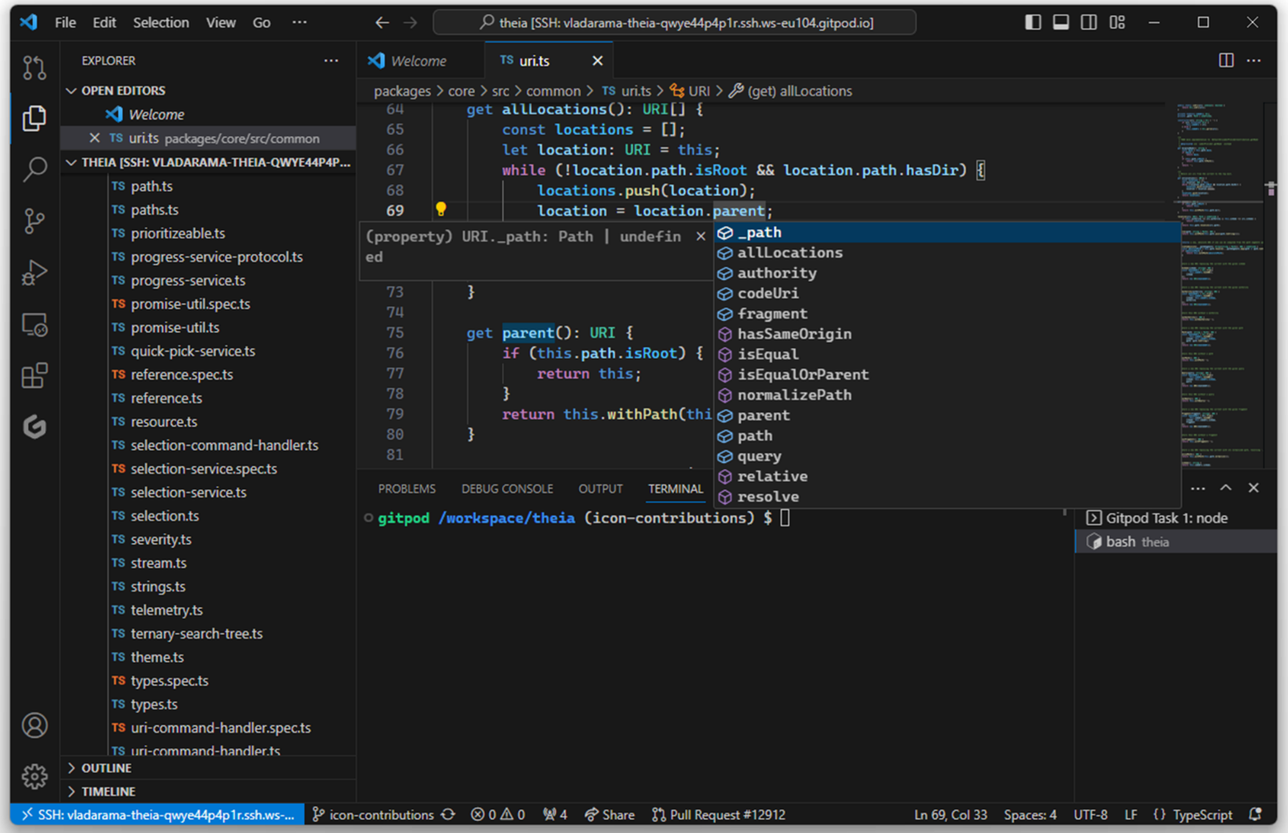


Ubuntu Terminal

Terminals

Remote Development

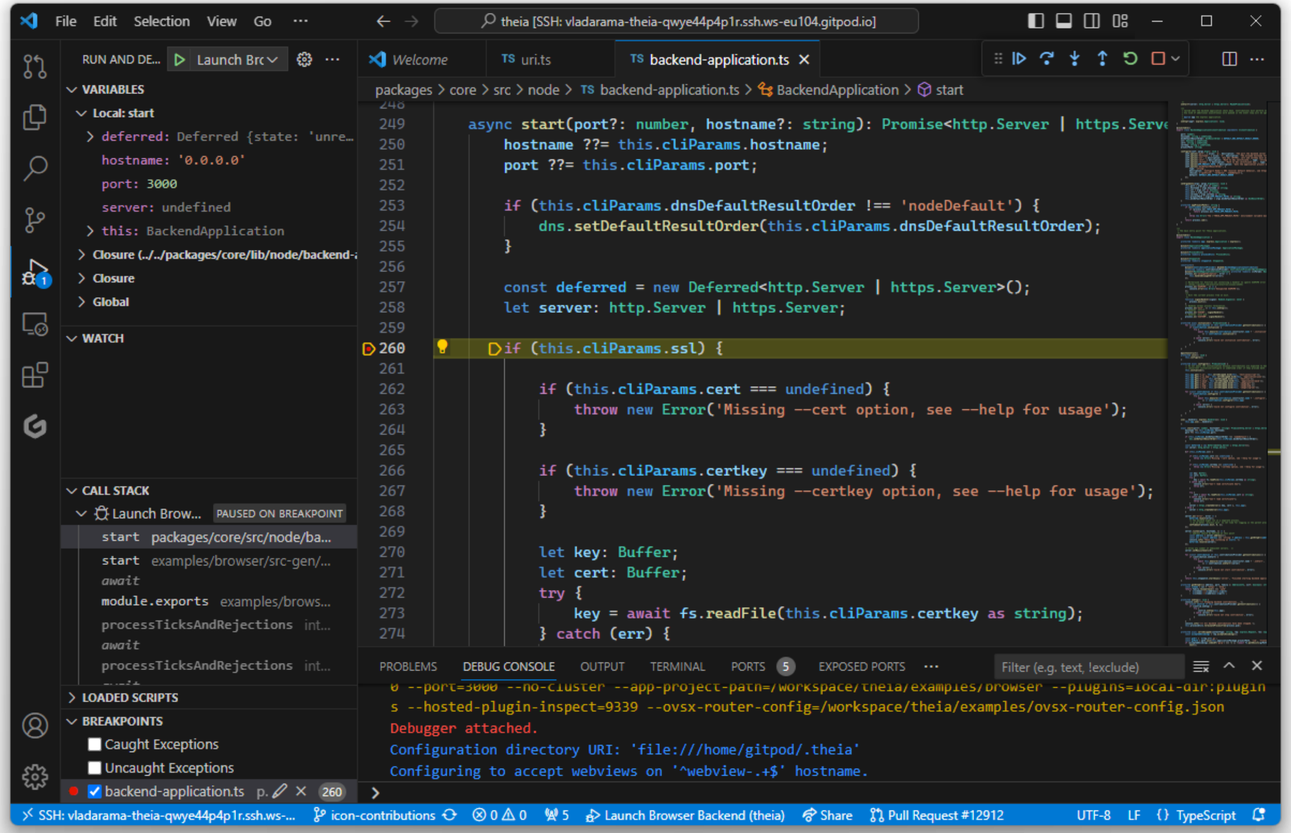
Feature Set



Language Support

Remote Development

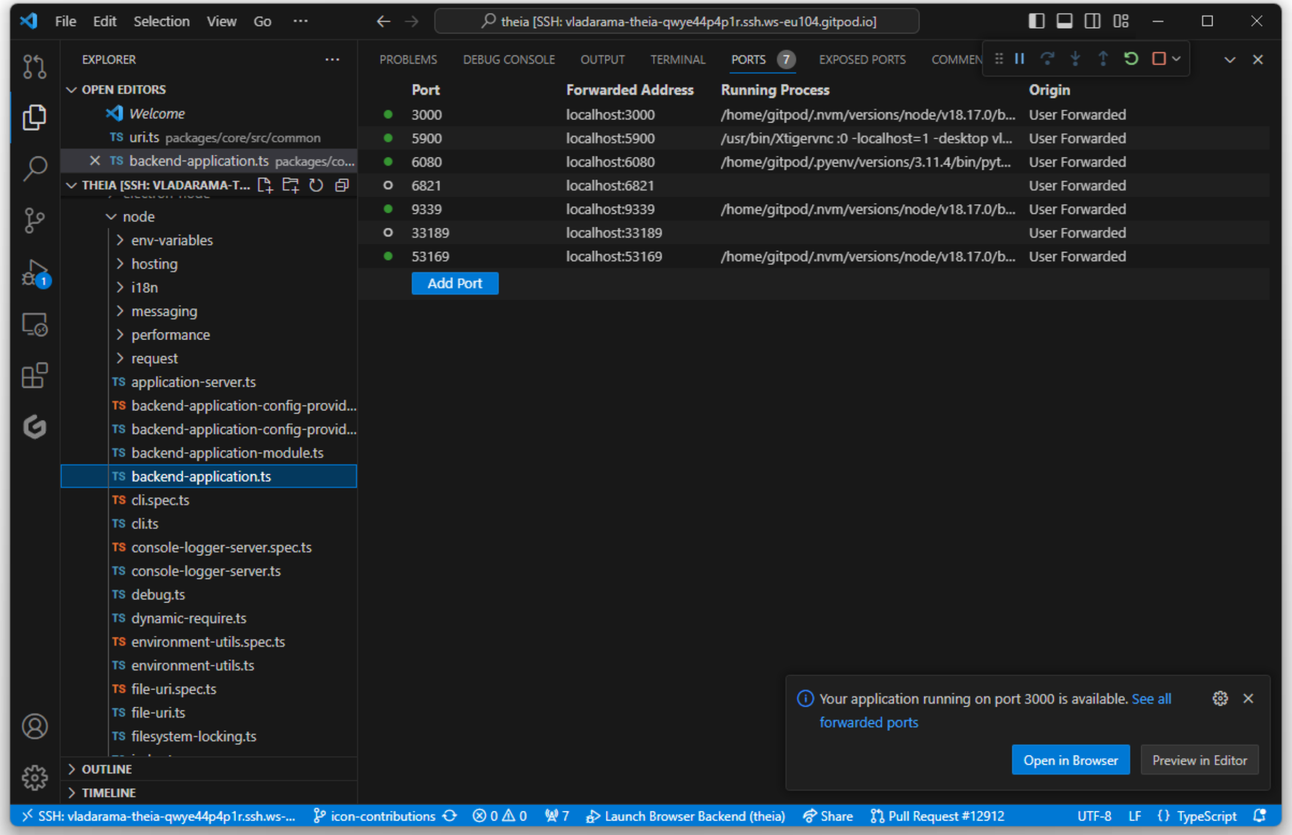
Feature Set



Debugging

Remote Development

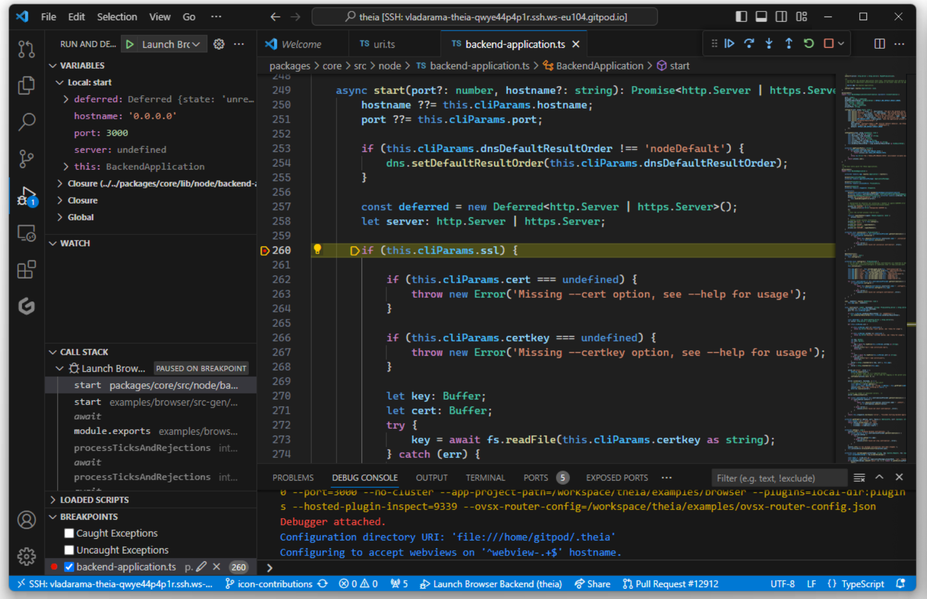
Feature Set



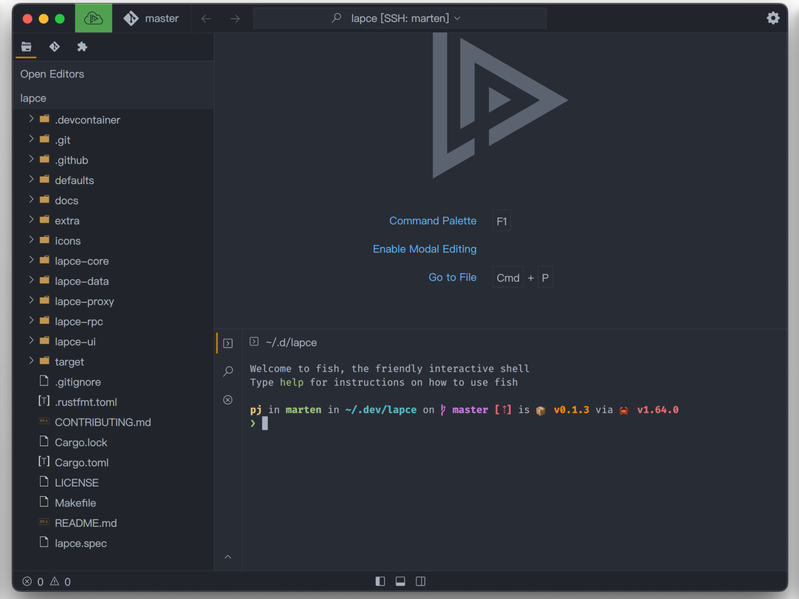
Port Forwarding

Remote Development

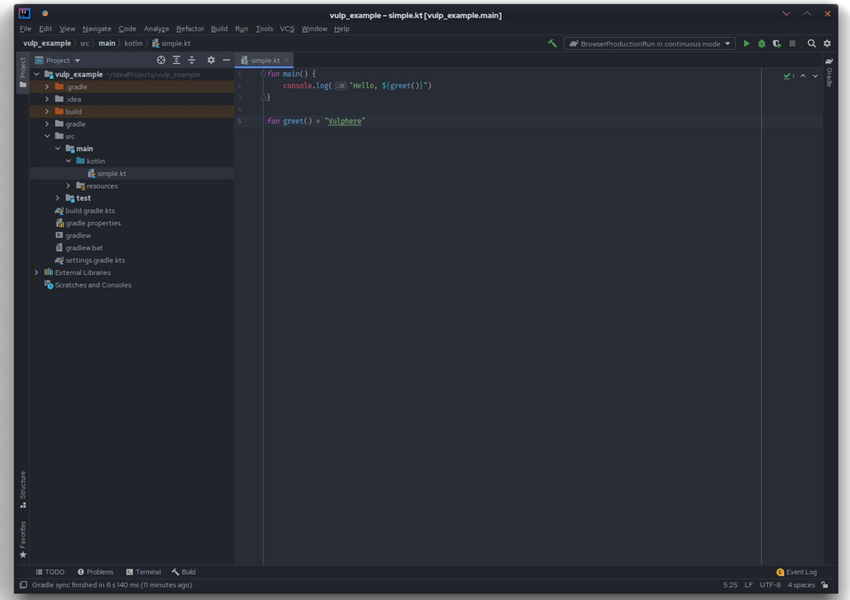
Selected Tools



VSCode



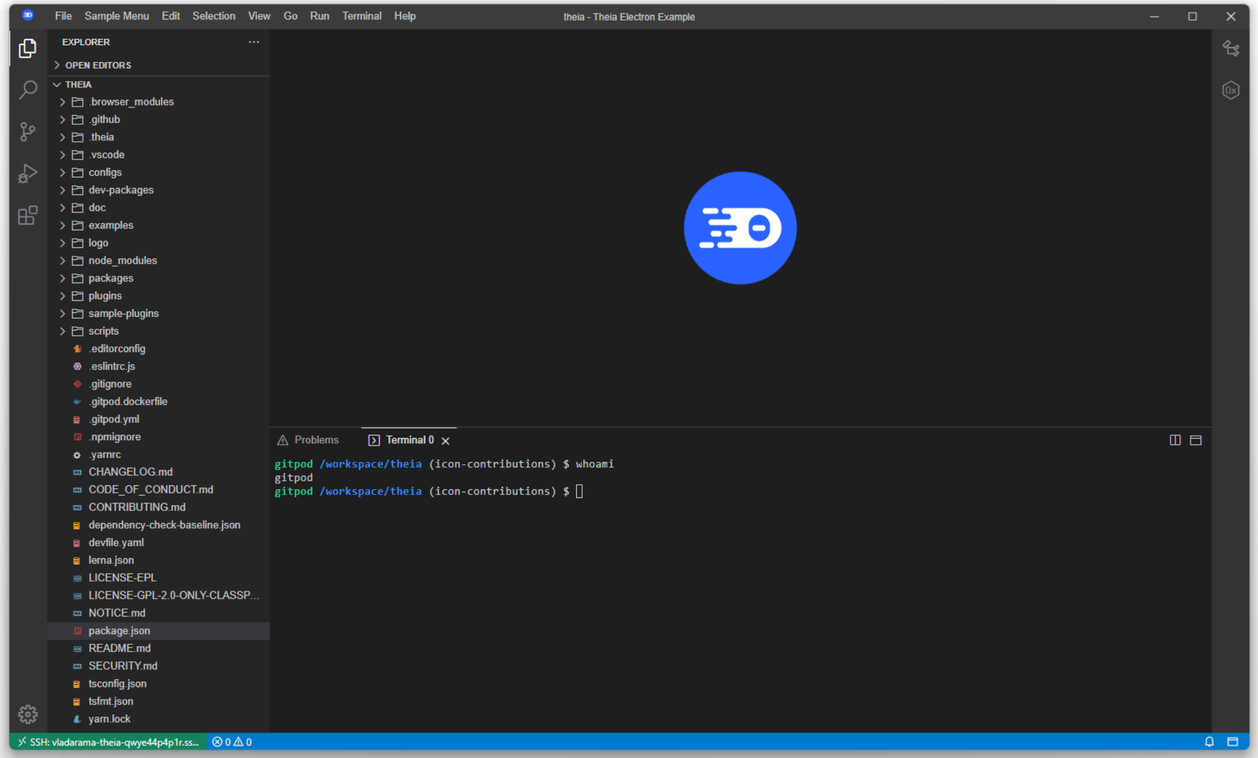
Lapce (Pre-alpha)



JetBrains Gateway

Remote Development

With Theia Release 1.43.0



🎉 EVERY THEIA APPLICATION 🎉

Remote Development

Technical Details for Adopters

- Requires SSH connection to the remote system
- Copies the local application backend to the remote system
- Works with custom backend/frontend services
- Allows for connections to both local and remote backends
- Works on Linux, Windows and MacOS
- Currently only on x64 systems (Sorry Mac M1)
- Contained in the `@theia/remote` package

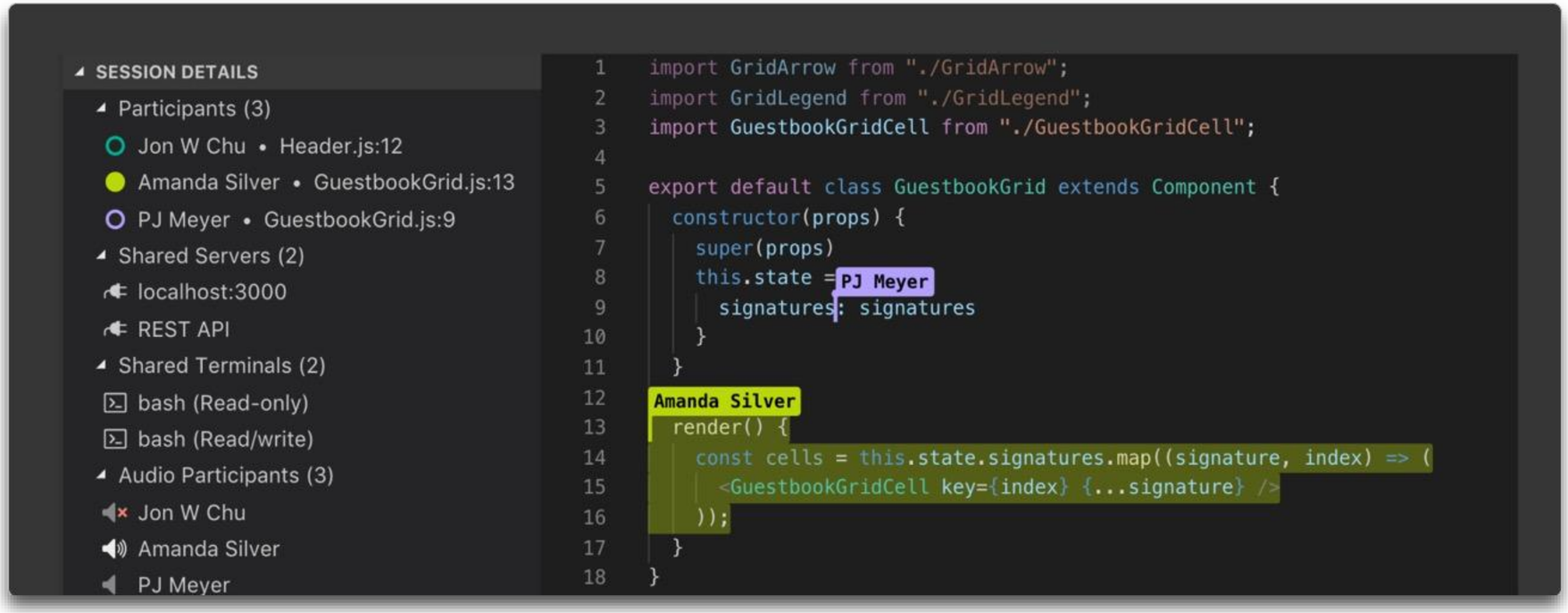


Collaborative Development

Working together on other’s code

Collaborative Development

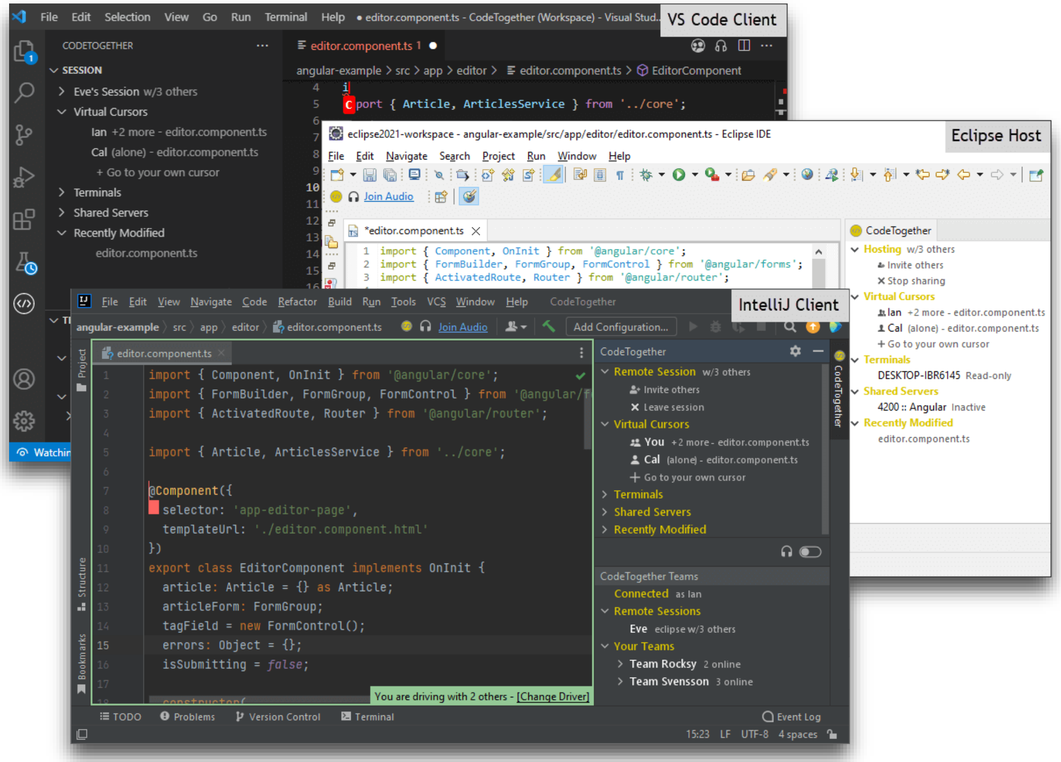
Microsoft's Take



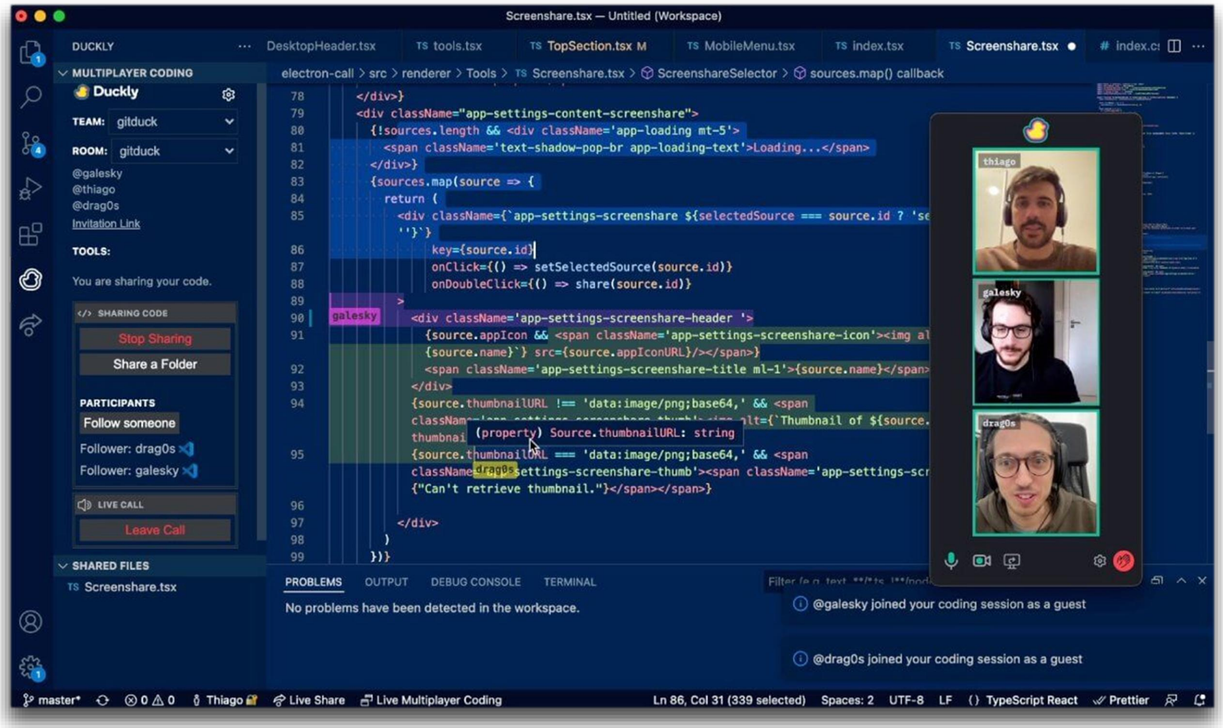
Visual Studio™ Live Share™

Collaborative Development

Startup Approaches



CodeTogether Live



Duckly

Collaborative Development

Feature Comparison

Developer	IDEs	Extensibility	Notable Features	On Premise	Licensing
Microsoft	Visual Studio Product Family	Via VSCode Extension API	Very good IDE integration	✗	Free, Proprietary Microsoft License
CodeTogether	VSCode, Theia, JetBrains, Eclipse IDE	✗	Lot of IDE Support + Web	✓	Commercial License
Duckly	VSCode, Theia, JetBrains	✗	Live audio and video transmission	✗	Commercial License



Collaborative Development

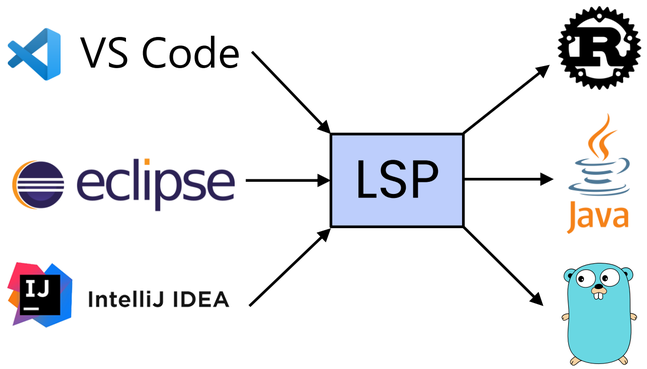
A new approach

Developer	IDEs	Extensibility	Notable Features	On Premise	Licensing
Microsoft	Visual Studio Product Family	Via VSCode Extension API	Very good IDE integration	✗	Free, Proprietary Microsoft License
CodeTogether	VSCode, Theia, JetBrains, Eclipse IDE	✗	Lot of IDE Support + Web	✓	Commercial License
Duckly	VSCode, Theia, JetBrains	✗	Live audio and video transmission	✗	Commercial License
???	All the IDEs	✓	???	✓	FOSS License

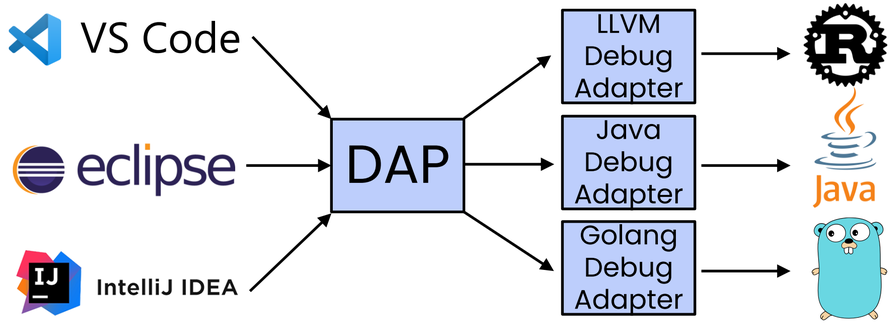


Collaborative Development

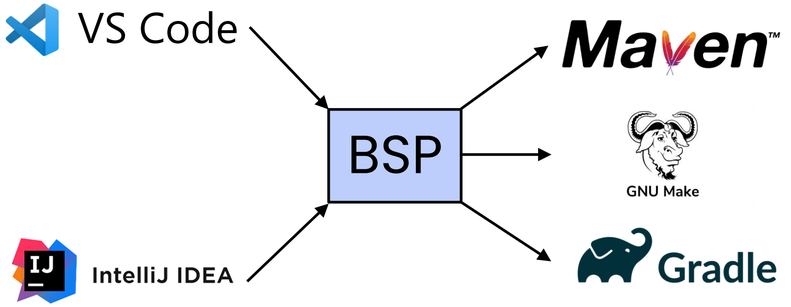
IDE Protocols Everywhere



Language Server Protocol



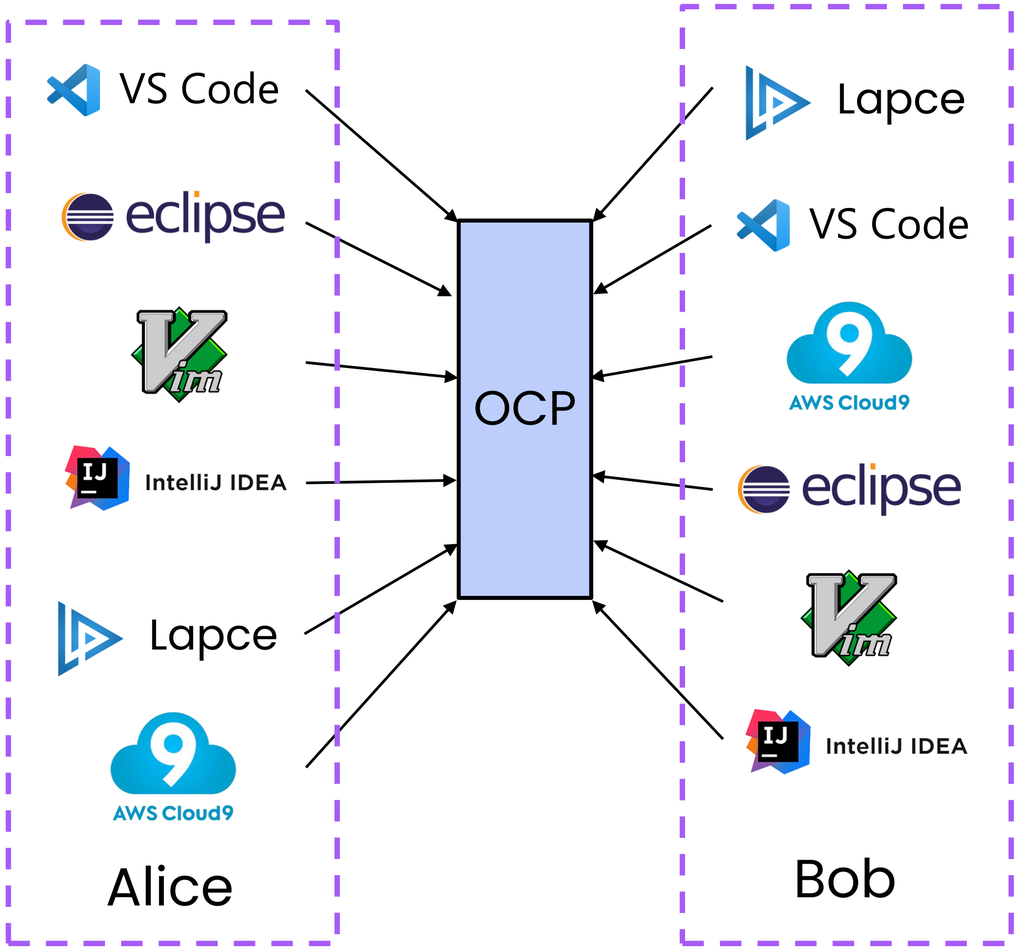
Debug Adapter Protocol



Build Server Protocol

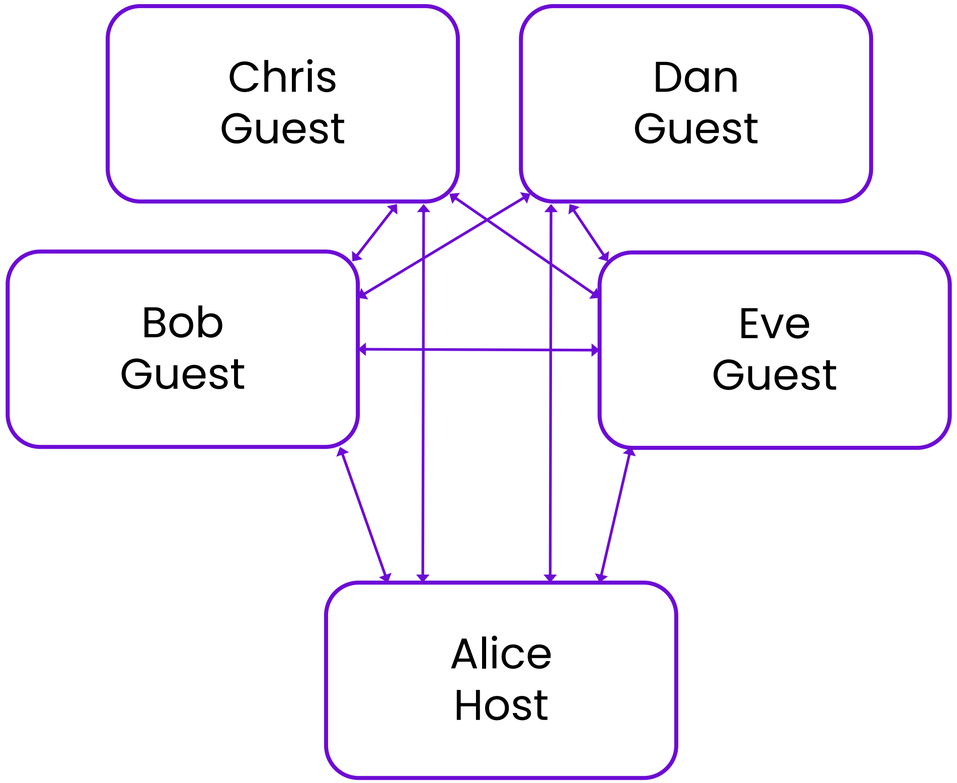
Collaborative Development

An Open Collaboration Protocol



Collaborative Development

Open Collaboration Protocol

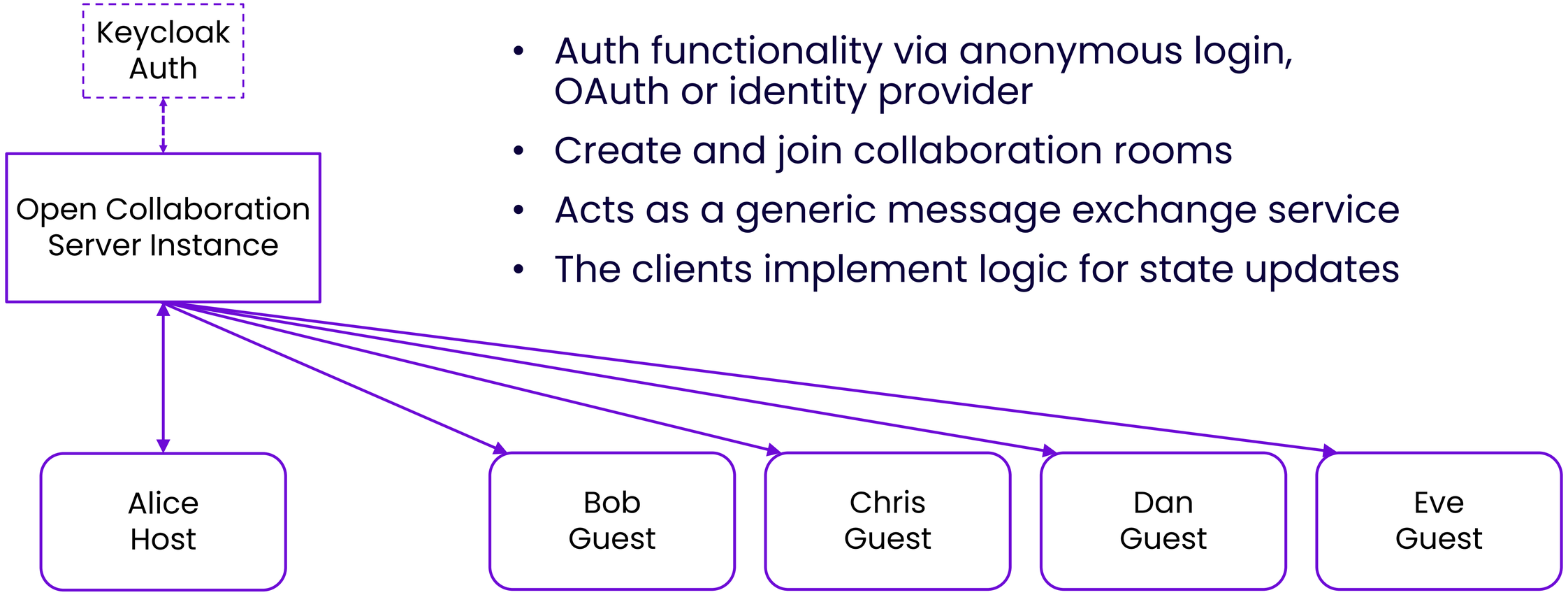


Single Source of Truth

- Every guest can always send requests/notifications to the host
- Everyone can send broadcasts to everyone else
- Can be seen as P2P RPC with broadcasts
- The host acts as the single source of truth

Collaborative Development

Open Collaboration Server



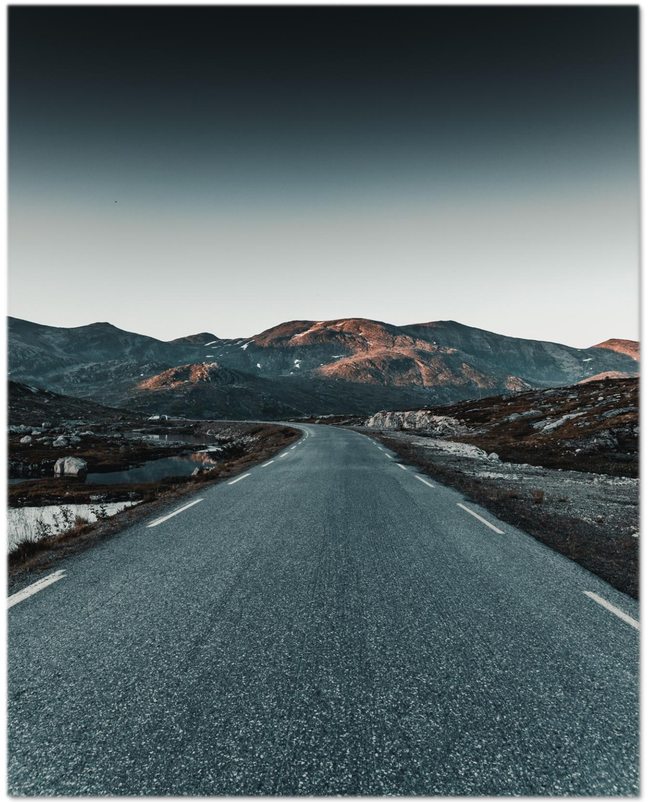
- Auth functionality via anonymous login, OAuth or identity provider
- Create and join collaboration rooms
- Acts as a generic message exchange service
- The clients implement logic for state updates

Roadmaps

What’s ahead of us?

Roadmaps

Remote Development



1. Performance Improvements
2. General Improvements

Near Future

3. Remote Port Forwarding
4. WSL Support
5. Dev Container Support

Uncertain

Roadmaps

Collaborative Development









- **Short Term**: PoC implementation for Theia
- Done by TypeFox in collaboration with other parties

Dec. 2023

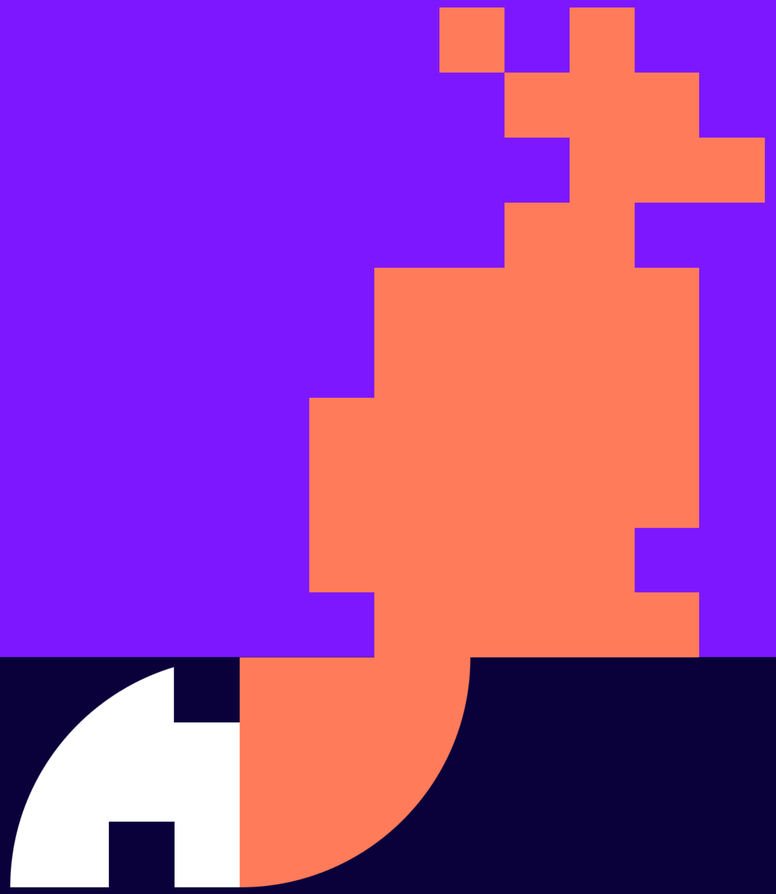
- **Mid Term**: Moving it into its own Cloud DevTools Eclipse project
- Onboarding new contributors
- Public Server Instance

Spring 2024

- **Long Term**: Making it **the** collaboration solution

???

TypeFox



Questions?