The Queen of All Terminals: WezTerm

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A1: Conceptual Architecture Report

Link to the presentation

Group Members

1. Maya Freedman - Group lead
2. Ella St. John - Presenter
3. Pooria Roy - Presenter
4. Elliott Vince
5. Caitlin Roach
6. Michelle Kelly



01

What is WezTerm?

WezTerm is a...

Terminal Emulator

“Supplementary Terminal”

Created by...

Wez Furlong

British Entrepreneur and open-source developer

Known for...

Accesibility, Uniqueness, Customization

Through its features and components

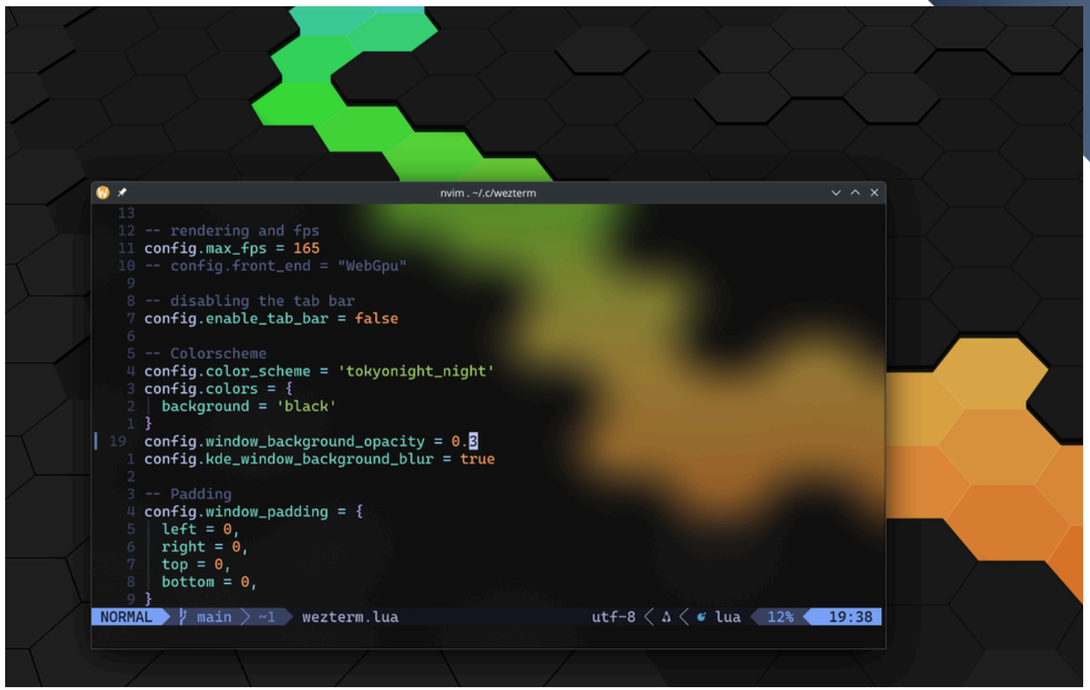
WezTerm comes in many different shapes

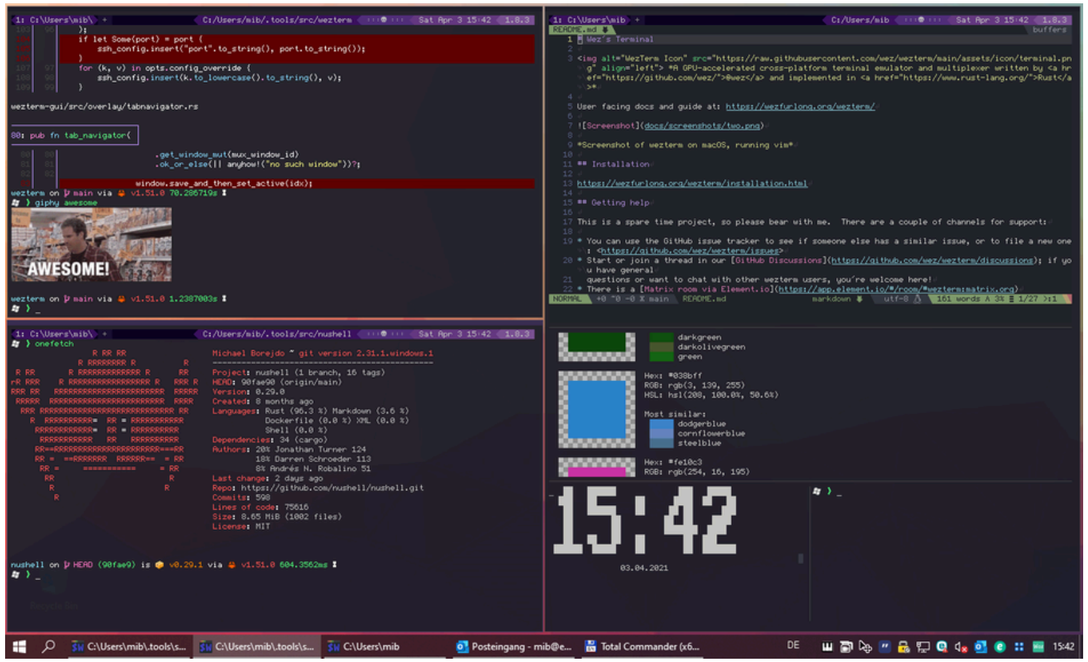
Anyone can configure it from background colour to their cursor width and height.

It adds image rendering & graphical improvements to the boring terminals

Allows for normal workflows while supporting server-client communication

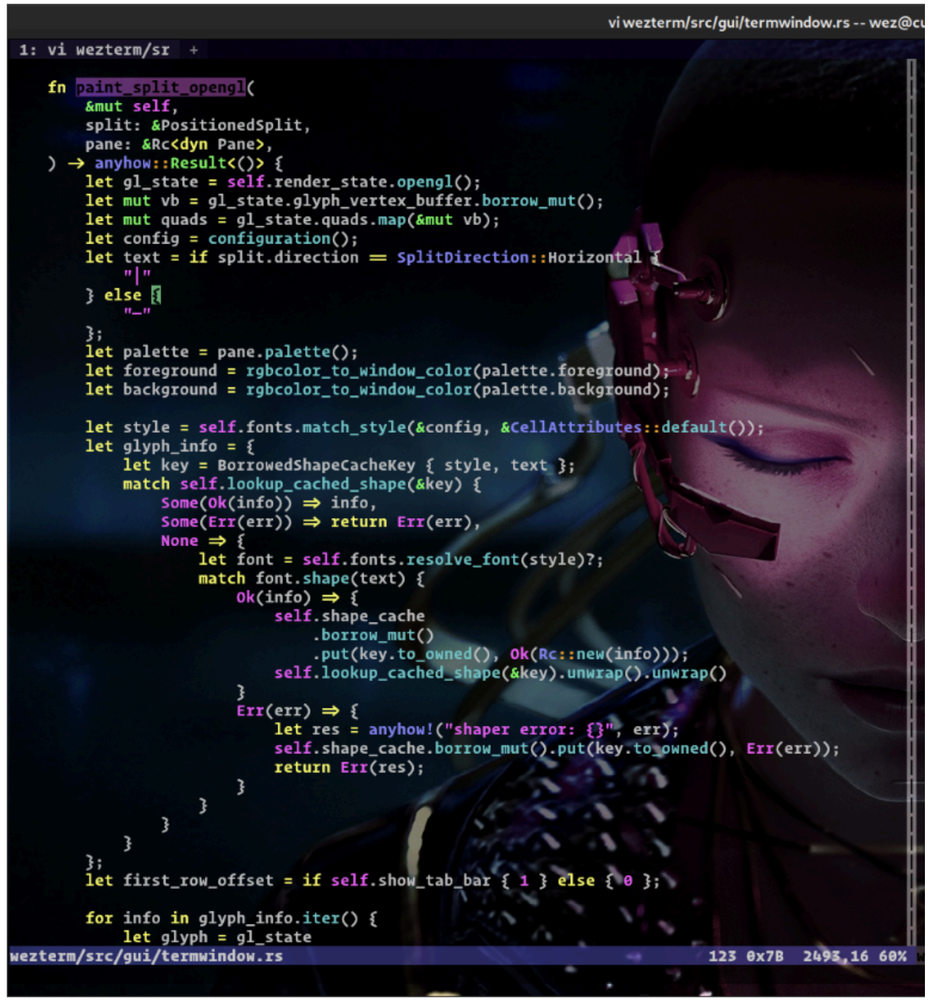
Most importantly, it's *your* terminal



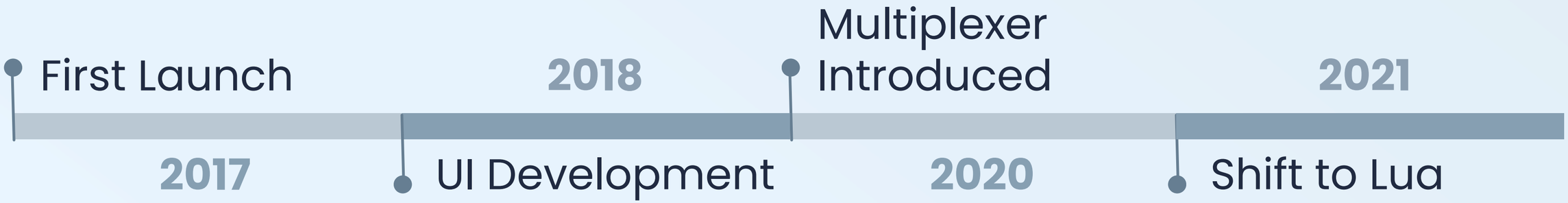


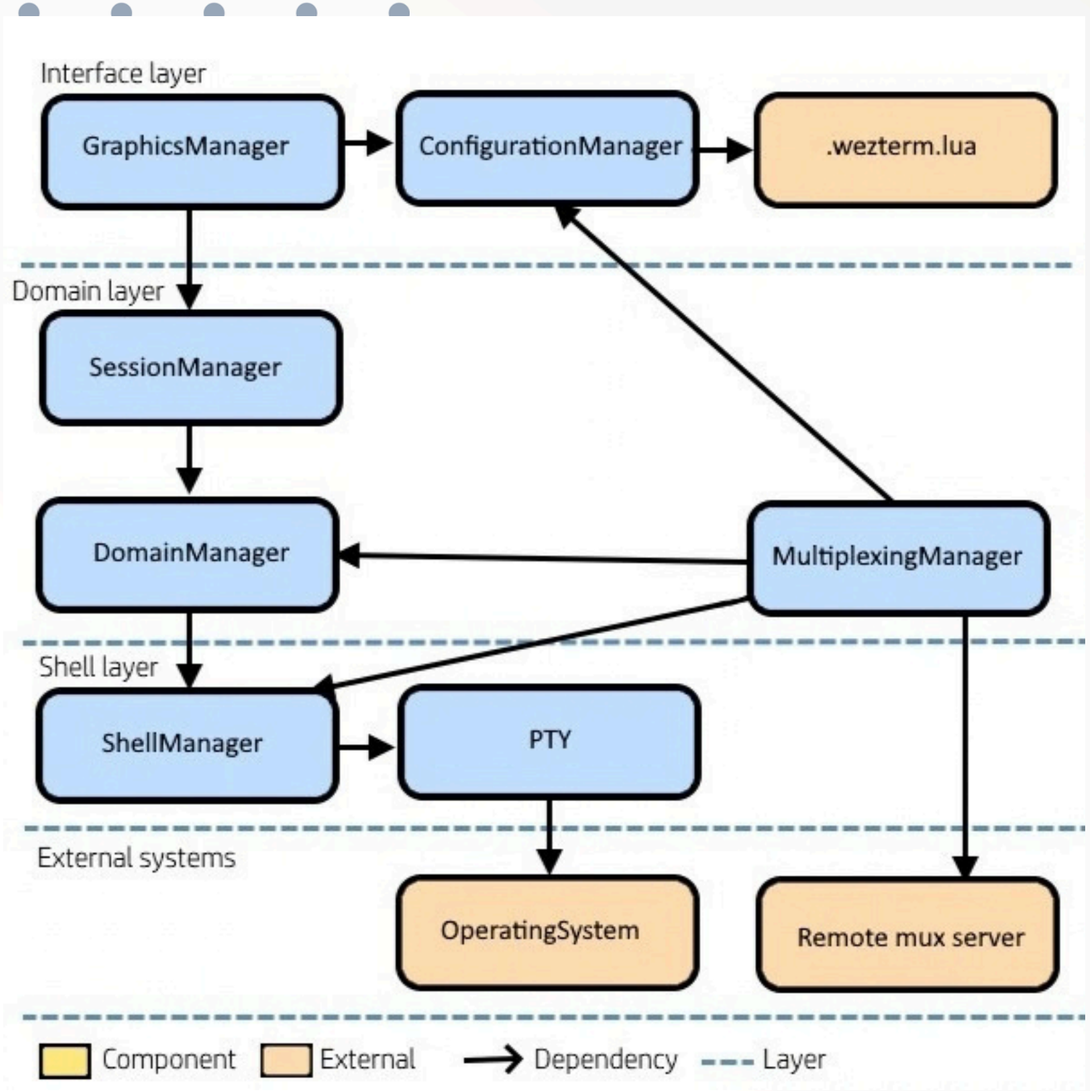
RESEARCH METHODS

- WezTerm documentation through the official website; our primary resource
- GitHub repository; evolution and maitenance
- Competitor analysis



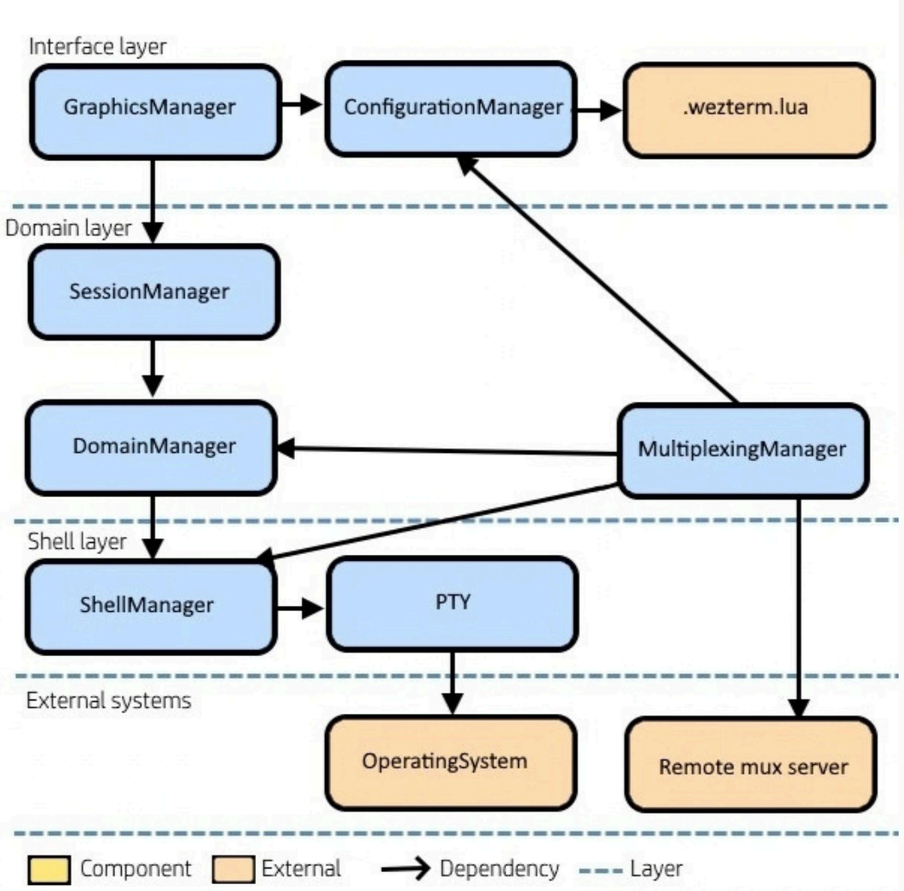
EVOLUTION

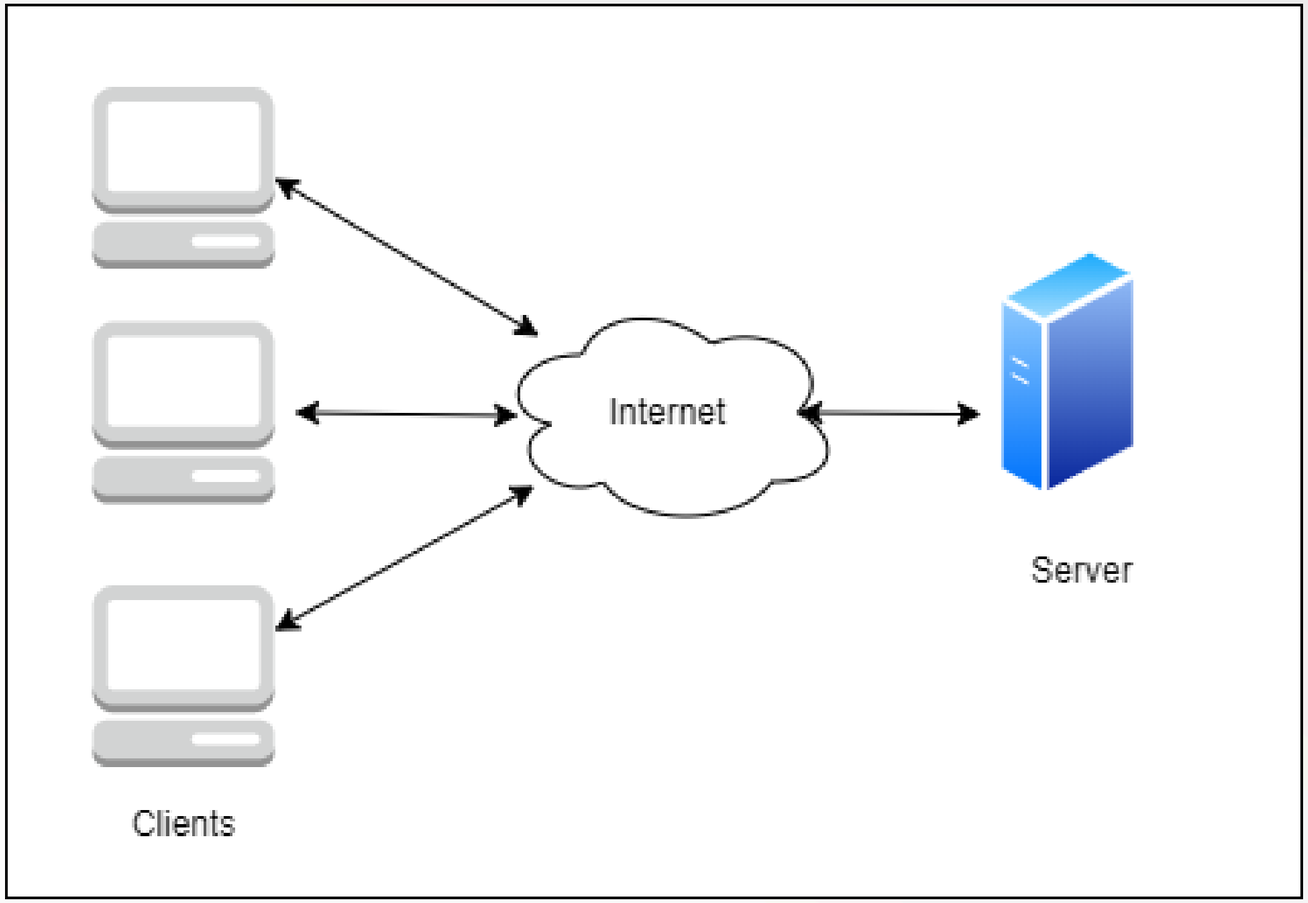

First Launch
2017
2018
UI Development
Multiplexer Introduced
2020
2021
Shift to Lua



02 CONCEPTUAL ARCHITECTURE

ARCHITECTURE STYLE





COMPONENTS



MULTIPLEXER



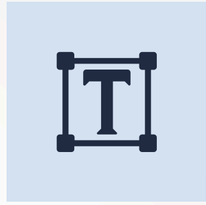
DOMAINS



SHELL INTEGRATION



GRAPHICS MANAGER

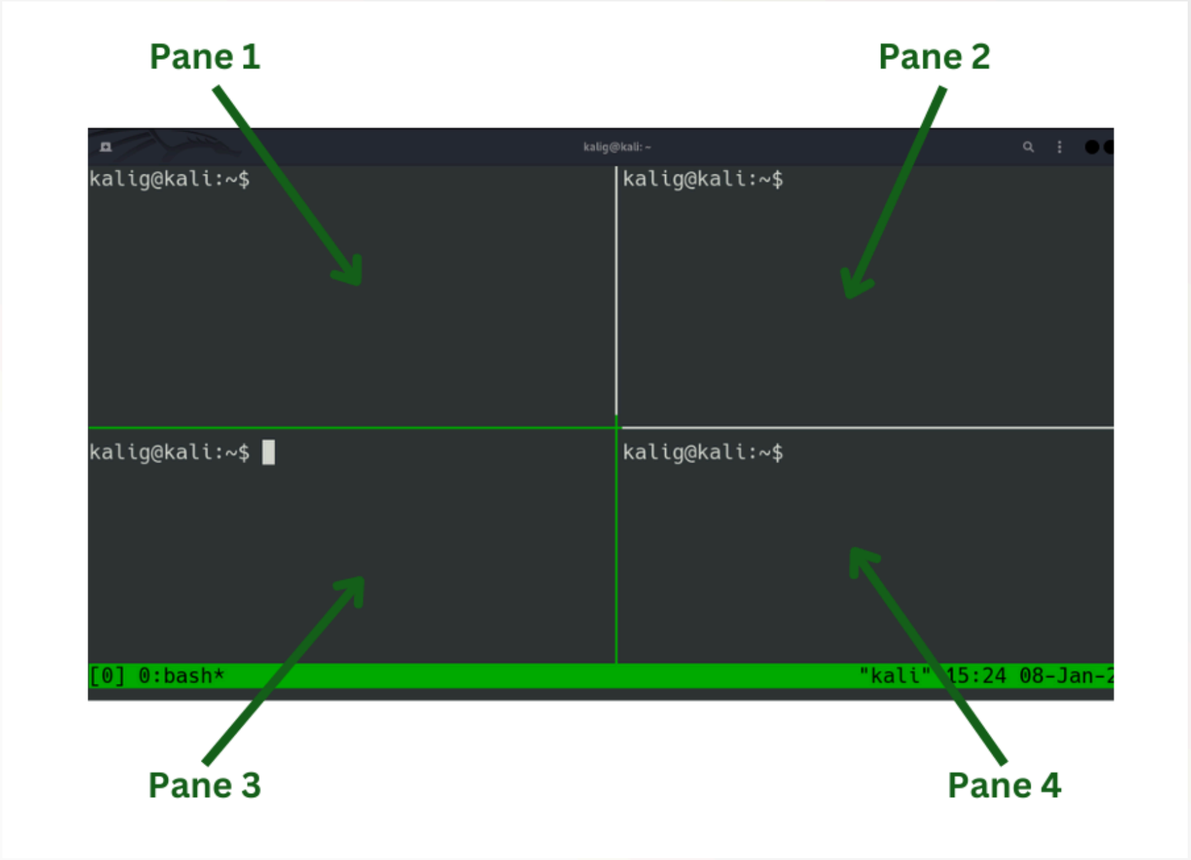


CUSTOMIZATION ENGINE

Multiplexer

A Multiplexer allows for:

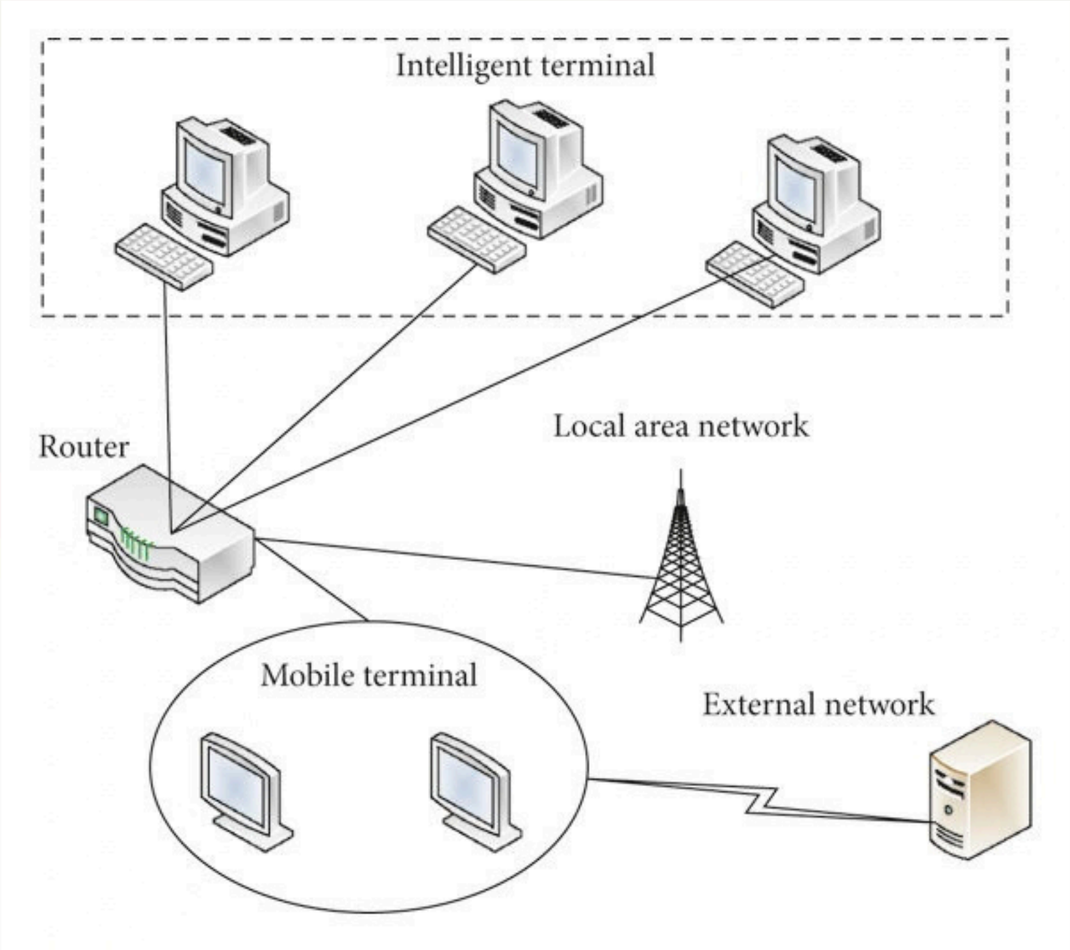
1. Multiple virtual terminals in one terminal
2. Background processes to continue running
3. Separation of work and coding environments
4. Attaching and Detaching from terminals



Domains in WezTerm

Domains in WezTerm allow for:

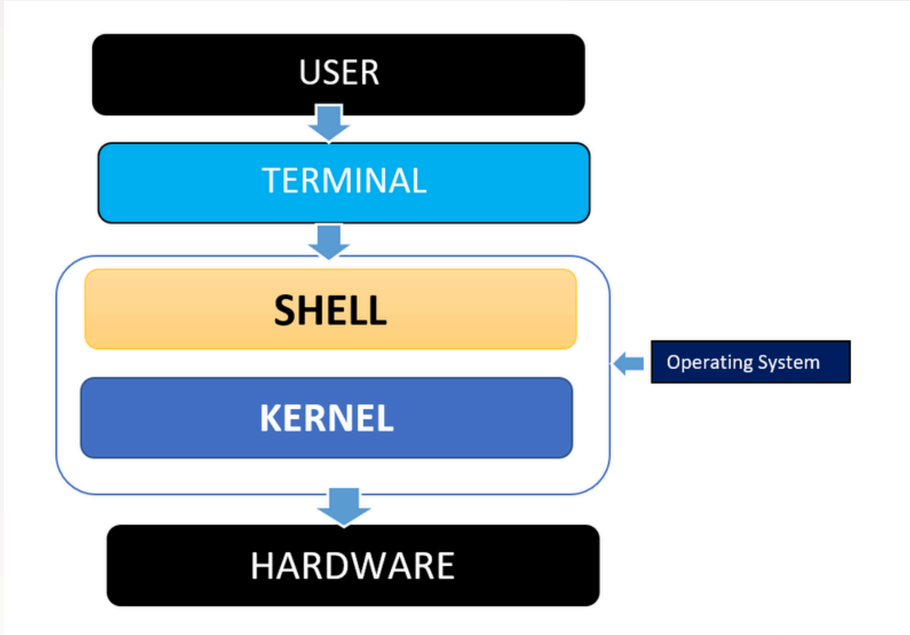
1. Connecting to remote devices and running processes on them
2. Domains unify local vs server implementation. Each WezTerm install treats itself as “Local Domain” and everyone else as “Remote Domain”
3. Domains can connect to each other using SSH



Shell Integration

Shell Integration in WezTerm looks like:

1. A clear, communicative relationship between the terminal and the shell of differnet “domains”.
2. WezTerm adds the ability to render pictures on the terminal
3. Users are able to open new tabs and panes in the same directory



Graphics Manager

WezTerm's Graphics Manager takes care of:

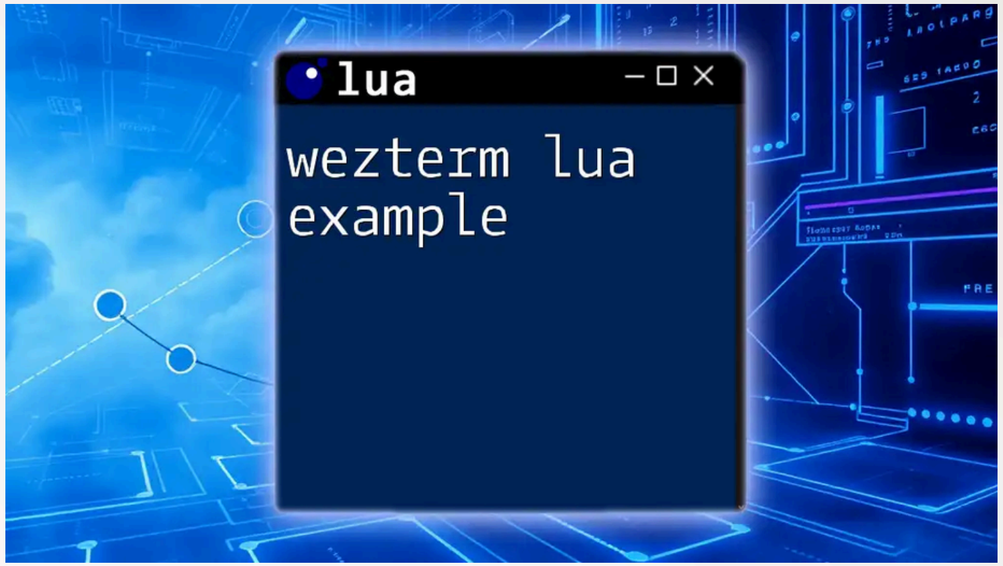
1. Drawing all of the text
2. Drawing pictures and UI effects such as blur, transparency, and colours
3. Supports scroll back
4. Mouse support for terminals



Customization Engine

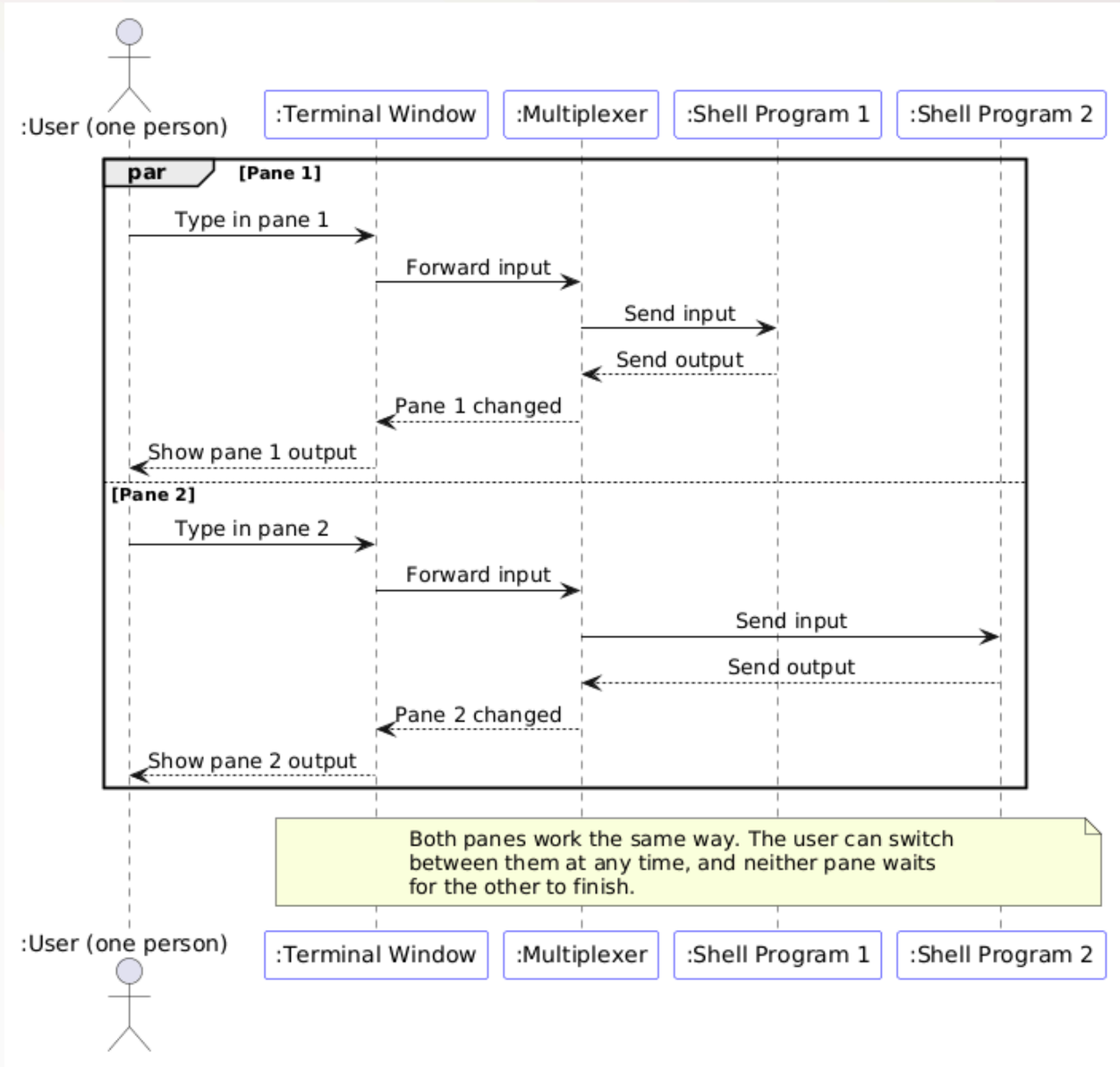
WezTerm’s Customization Engine allows users:

1. Fully customize their configuration through Lua Script
2. Configure their terminal with logic
3. Generates quality documentation through Lua API



CONCURRENCY

1. Built on Tmux and GNU Screen multiplexer ideas
2. Closing the window doesn’t kill processes
3. Adds GPU acceleration and native serial port support
4. Connects to remote hosts via “domains” (local and remote)
5. Panes run programs in parallel, isolated from each other

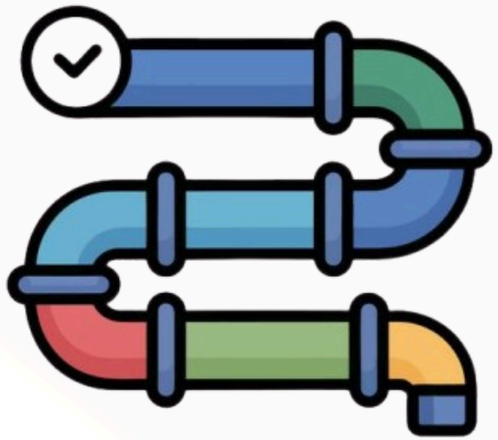


External Interfaces

WezTerm uses multiple data storage methods

1. It uses SQLite to store user information and session IDs
2. Lua config files for any custom modifications
3. Plain text for logs and server logs



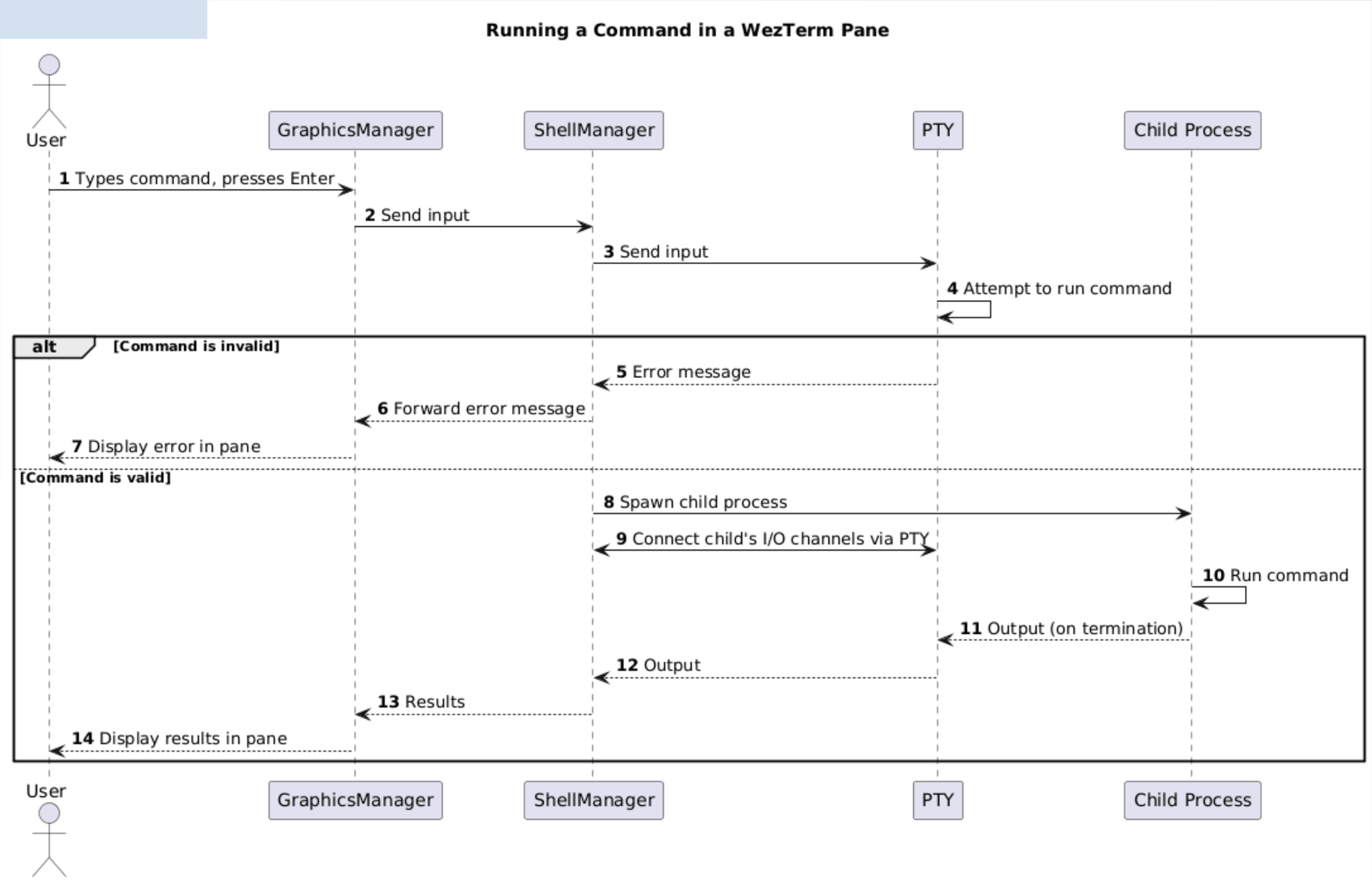


03

DATA & CONTROL FLOW

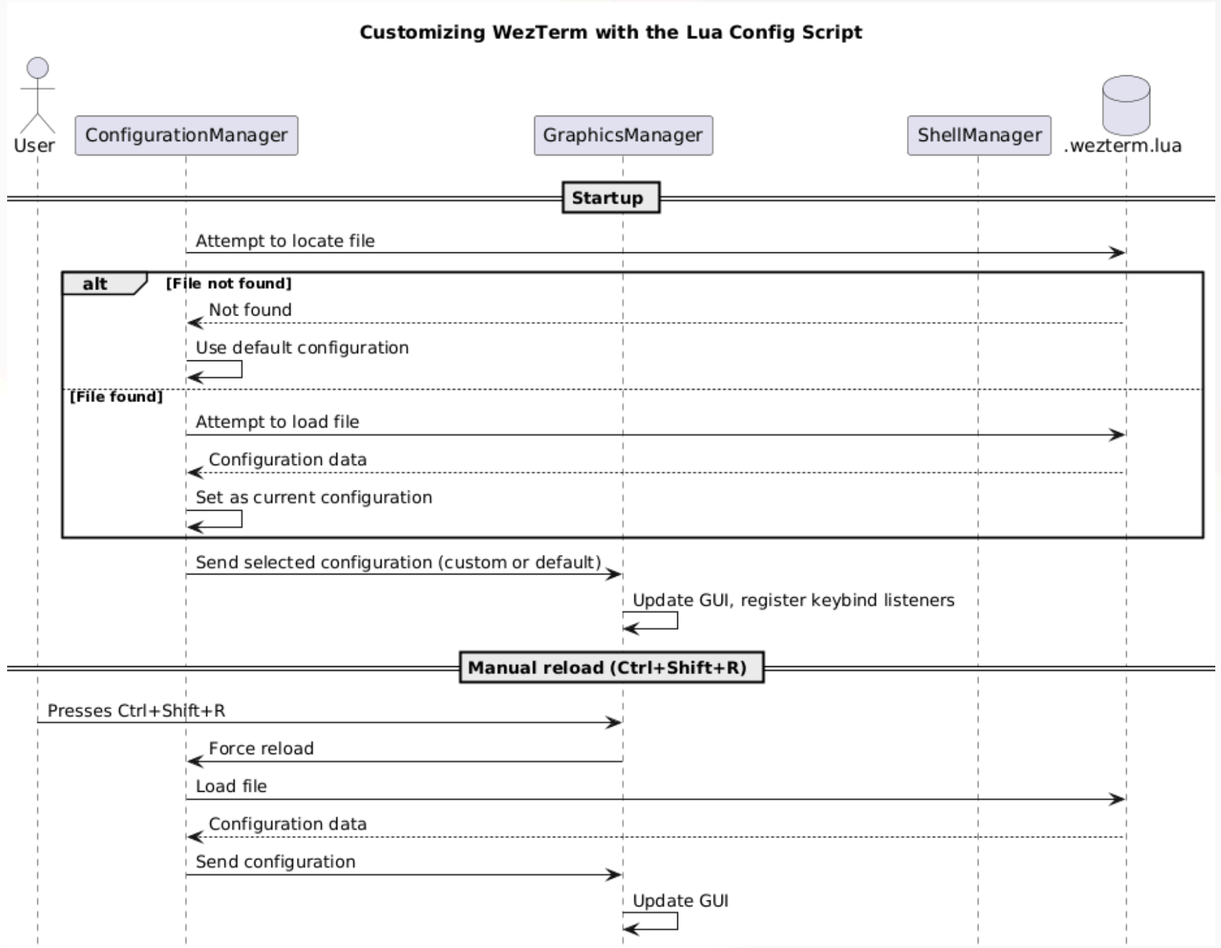
Running a Command in a WezTerm Pane

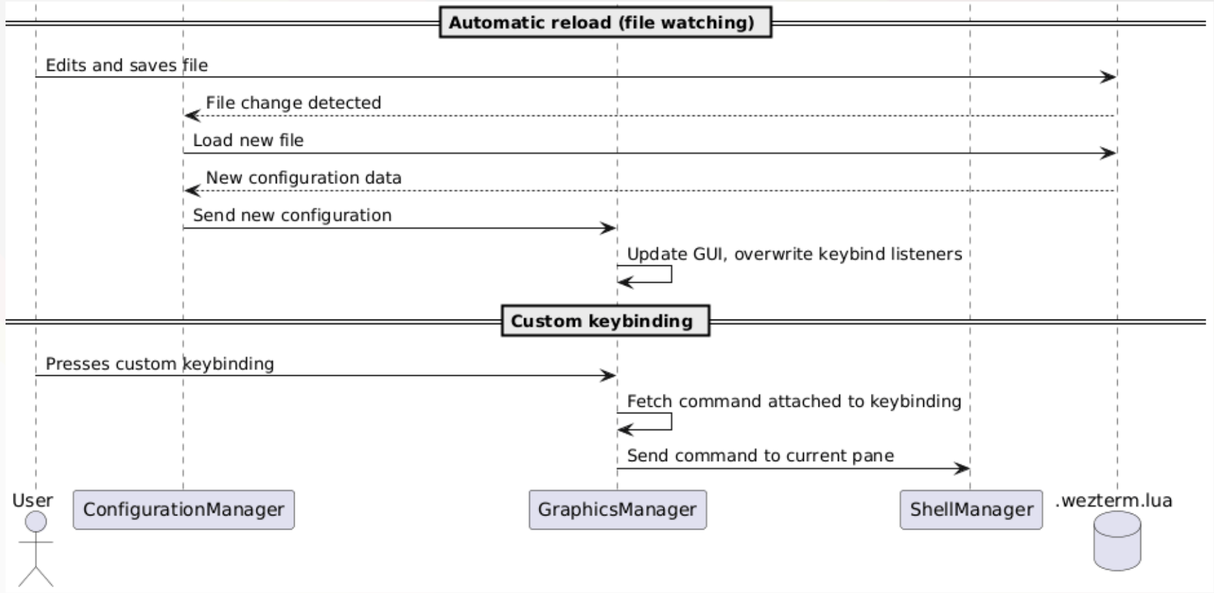
USE CASES



USE CASES

Customizing WezTerm with the Lua Config Script







06
CONCLUSION

CONCLUSION

- **Assumed** WezTerm was a small program
- **Questioned** why separate terminals were neccesary
- **Discovered** the numerous uses its components allowed for
- **Learned** the importance of consistent communication and collaboration when researching
- **Installed** Wezterm ourselves and started using it
- **Determined** that WezTerm uses Layered & client-server architecture style.

THANK YOU