

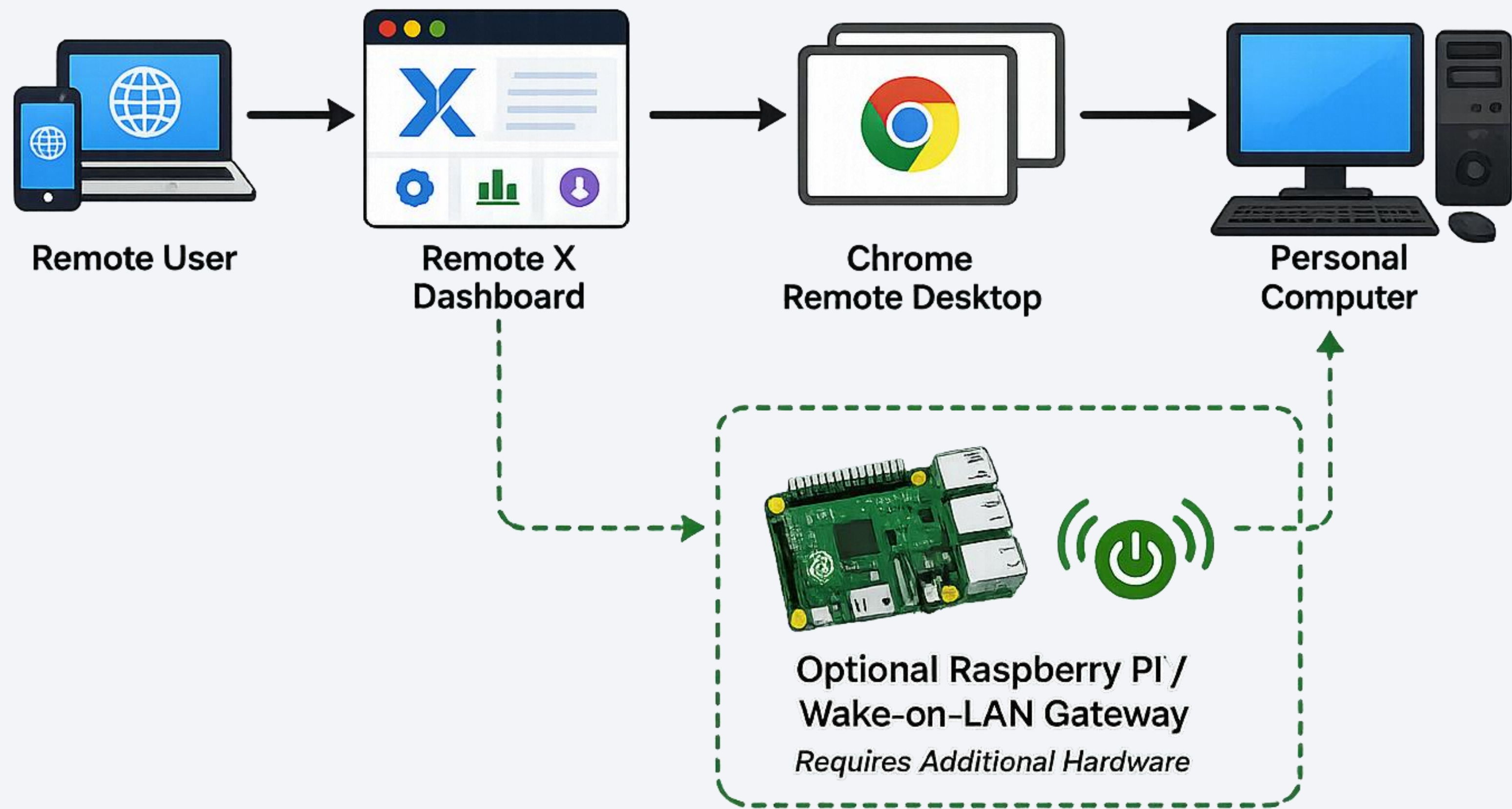
Problem & Significance

- Users such as students, faculty members, and ordinary individuals would find themselves needing their computers even when not around
- Valuable data and software applications are usually confined to one personal computer
- Certain actions need the superior processing power of a home computer
- Setting up remote access might be difficult for people without much technical knowledge
- The inability to connect could delay studies and work-related assignments among other things
- Effortless remote access enables personal computers to become handy anywhere

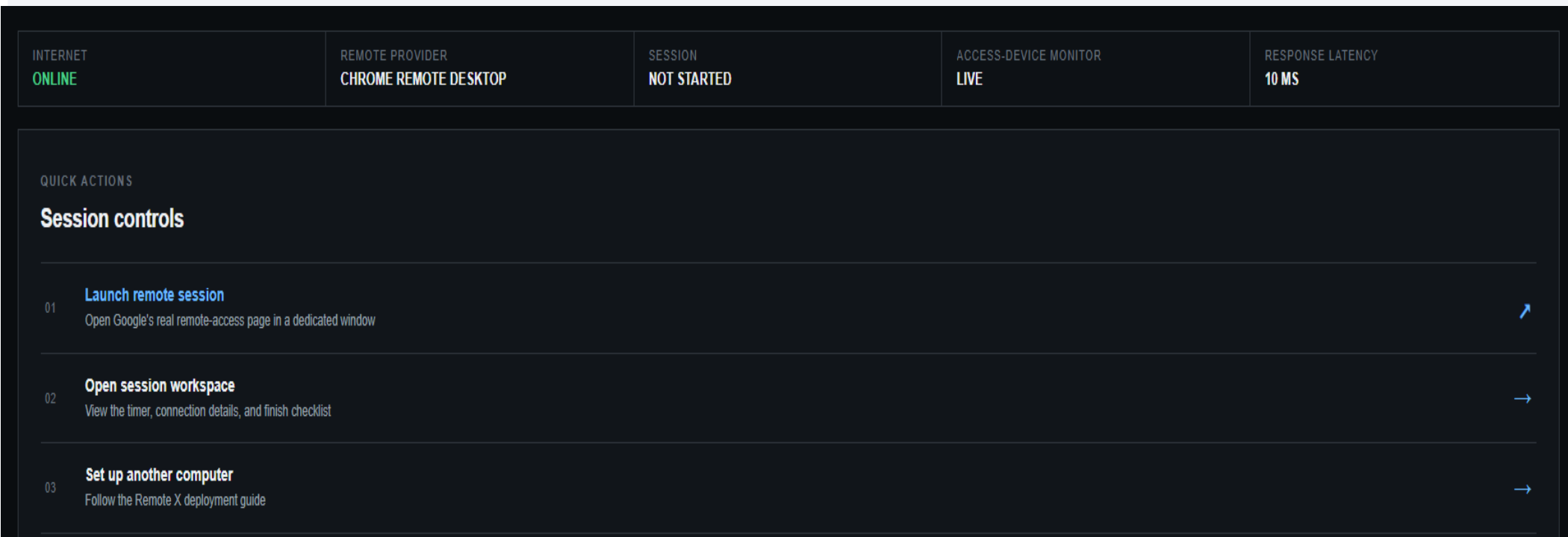
Our Solution

Our proposed solution is a web-based toolkit that simplifies the process for a user to log on to his/her own PC from a remote location. Remote X integrates all aspects, including instructions for set up, control of session, device monitoring, and the Chrome Remote Desktop connection, in one coherent interface. The three main design considerations include using an already established remote-access system, designing a system that is not complex for less experienced users, and optional Raspberry Pi and Wake-on-LAN functionalities that can turn on a computer from a remote location with extra hardware.

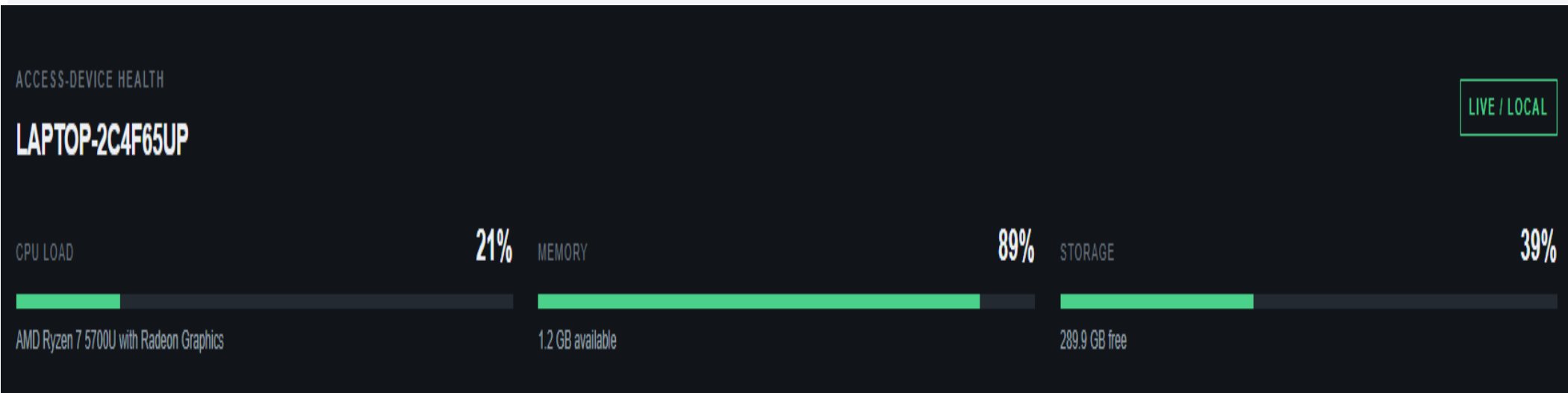
Architecture



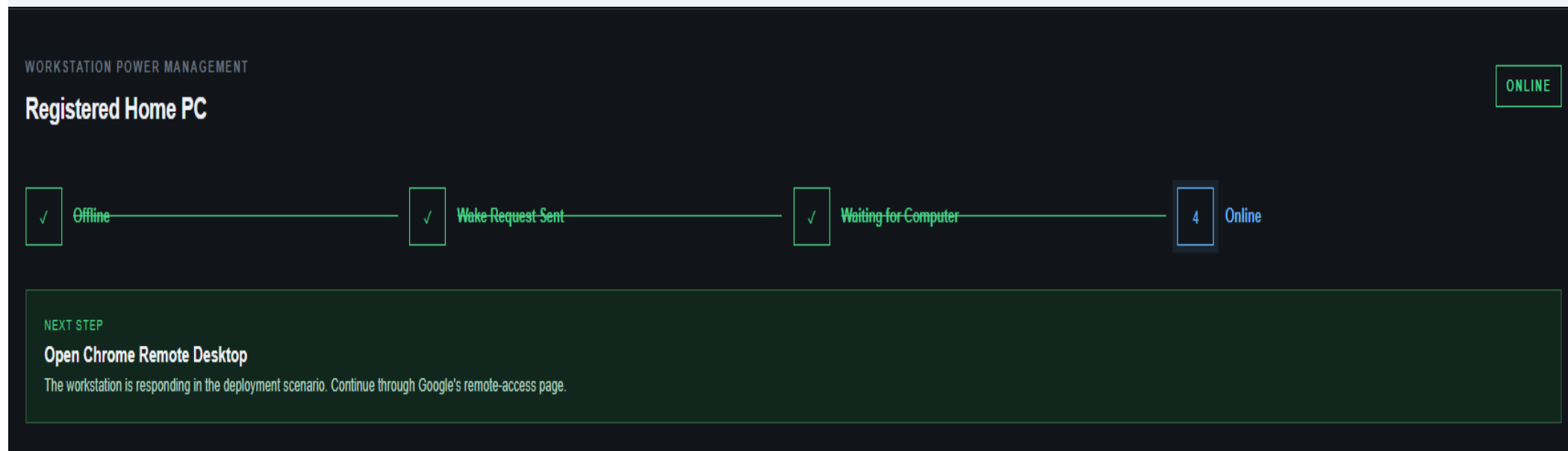
Demo & Screenshots



Remote X displays the connection and allows users to initiate remote access.



Remote X can monitor the CPU, RAM, storage, and running processes on the access computer in real time.



The Wake-on-LAN simulation demonstrates the use of extra hardware on the gateway to power up the registered computer prior to remote access.

Stakeholders & Requirements

Remote X aims to aid students, faculty, and everyday users to remotely access their data and applications found on their personal computer, without needing advanced technical knowledge.

Functional Requirements:

- Provide clear software setup instructions
- Launch Chrome Remote Desktop
- Show connection and device status
- Monitor system performance
- Demonstrate Raspberry Pi and Wake-on-LAN gateway concepts
- Explain that gateway features require additional hardware

Non-functional Requirements:

- Secure
- Reliable
- Fast and responsive
- Easy to understand
- Usable for people with limited computer experience

Results & Evaluation

- Successfully loaded the dashboard via the local gateway
- Correct display of internet, session, and monitor statuses
- Chrome Remote Desktop accessed straight from the dashboard
- Updates of CPU, RAM, and storage status recorded while testing
- Latency of local gateway response: 5-10 ms
- Successful wake-on-LAN simulation from Offline to Online state

What's Next

- Test the optional gateways with the necessary hardware
- Add support for additional devices and operating systems
- Add more examples to the user guide to help with setup
- More customizable dashboard functionality
- Additional features for system monitoring
- Keep improving the overall remote access experience

Systems & Operations (SO6)

- Database + CI/CD pipeline highlights: Remote X uses a D1 and SQLite-compatible database to store devices, recent activity, checklist items, and settings. The project defines a CI/CD workflow for type checking, linting, production builds, website tests, and Python gateway tests.
- Administration: user manual & maintenance: The user manual explains how to launch Remote X, navigate the dashboard, begin a remote session, and disconnect securely. Maintenance should follow the recommended system checks and troubleshooting practices provided within Remote X, including reviewing device status, confirming system requirements, checking connectivity, closing the session safely, and restarting the program when problems occur.

Acknowledgments

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