

# Project Roadmap: Project Cartesian

## Current Progress & Roadmap

### Phase 0: The Factory (Completed)

- ☒ VirtualBox VM created (EndeavourOS).
- ☒ Rust/Cargo toolchains installed.
- ☒ Repo structure initialized.

### Phase 1: The Core (Completed)

- ☒ [sysinfo](#) integration for Process Monitoring.
- ☒ Signal Injection ([SIGSTOP](#)/[SIGCONT](#)) verified.
- ☒ Multi-threaded Event Loop ([Mutex](#) + [Arc](#)) implemented.

### Phase 2: The Interface (Completed)

- ☒ Iced crate integrated into Cargo.toml.
- ☒ Iced Theme/Styling struct configured.
- ☒ Iced Subscription/Message Loop implemented.
- ☒ **Milestone:** UI turns RED when Firefox is detected.

### Phase 3: Distribution Engineering

- ☒ **Create [PKGBUILD](#):** Script to compile [cartesian-core](#) into [.pkg.tar.zst](#).
- ☒ **Configure [archiso](#):** Add custom repo to ISO build list.
- ☒ **Build ISO:** Generate [cartesian.iso](#).
- ☐ **Test Boot:** Boot the ISO in a nested VM.

## Phase 4: Advanced Architectures (The "Witness" & Audio)

### ☐ The Witness Pipeline:

- Build [witness.rs](#) to manage [/dev/shm](#) ring buffer.
- Implement Path A (NVENC Replay) using ffmpeg bindings.
- Implement Path B (Zero-Copy) using DMA-BUF for AI context.

### ☐ Audio Console:

- Configure PipeWire Virtual Sinks (Game, Voice, System).
- Build Rust wrapper for PipeWire API ([wireplumber](#) integration).
- Create "Mixing Board" UI in Iced .

## Phase 5: The Mind (AI Integration)

### ☐ Inference Engine:

- Implement [inference.rs](#) with [llama-cpp-rs](#) bindings.
- Build "Model Zoo" loader for drag-and-drop [.gguf](#) support.

### ☐ The Hippocampus:

- Integrate ChromaDB (or SQLite-vec) for vector storage.
- Implement "Memory Decay" algorithm ([hippocampus.rs](#)).
- Build "Core Memory" tagging UI.

## Phase 6: Ecosystem & Polish

### ☐ Universal Store:

- Aggregate Flatpak/Steam/System packages into a unified Iced UI.
- Integrate Proton-GE auto-installer for Windows games.

### ☐ Macro Forge:

- Build Iced-Canvas node editor.
- Create the "Permission Gate" (Physical Switch UI) for Red Blocks.

### ☐ The "First Contact":

- Build the Onboarding Interview Wizard.
- Implement "Project Mode" (Context-Aware Workspace) logic.
- ☐ **Refactor Dev Code:**
- PKG Vending