

# 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 Vendoring