MOUSSAIF AGI OS — CROSS-KERNEL REALTIME ORCHESTRATION, SYNC & WATCHDOG TELEMETRY

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1. Executive Summary: Inter-Kernel Communication

In a distributed multi-agent OS, execution tasks are continuously passed between kernels depending on specialty:

- **K1-Hermes** handles scheduling, memory persistence, and system-wide routing.
- **K2-OpenCode** performs rapid code drafting and terminal execution.
- **K3-Codex** manages git branches, PR reviews, and RED-GREEN-REFACTOR automated testing.
- **K4-Claude** executes deep documentation QA, architectural reviews, and Destruction Court quality gates.
- **K5-Antigravity** conducts complex codebase refactoring, visual UI design, and multi-file application assembly.

To prevent race conditions, duplicate work, or lost context during handoffs, the Moussaif AGI OS implements a **Realtime Symlink & Status Bridge**.

```
sequenceDiagram
    participant K1 as K1-Hermes (Orchestrator)
    participant K5 as K5-Antigravity (Coding)
    participant K3 as K3-Codex (Testing/Git)
    participant KB as ~/.hermes/kb/ (Canonical)

    K1->>KB: 1. Ingest Task & Resolve Pointer
    KB-->>K1: Return Symlink Path & Skills
    K1->>K5: 2. Handoff Task via Send-Message (Conversation ID)
    K5->>K5: 3. Execute Multi-File Code Refactor
    K5->>K3: 4. Invoke Codex PR Workflow & Auto-Test
    K3->>K3: 5. Run TDD RED-GREEN-REFACTOR Suite
    K3->>KB: 6. Log SHA-256 Checksum & Evidence
    K3-->>K5: Return Test Pass Status
    K5-->>K1: 7. Report Completion & Update Status Ledger
```

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2. Realtime Pointer Synchronization Protocol

All kernels maintain local symlink tables pointing to the root canonical store. Whenever an agent creates a new skill, plan, or report, the **Pointer Synchronization Protocol** executes:

1. **New Artifact Creation**: An artifact is written to the canonical storage (~/.hermes/kb/ or ~/.hermes/reports/).

2. **SHA-256 Checksum Registration**: The integrity logger computes a SHA-256 digest and records it in ~/.hermes/kb/MOUSSAIF_SHARED_BRAIN.md.
3. **Symlink Propagation**: hyper-integrity-symlink-mapper updates symbolic links across ~/.opencode/, ~/.codex/, ~/.claude/, and ~/.gemini/antigravity/.
4. **Cache Invalidation**: Kernel in-memory caches are invalidated via timestamp polling, ensuring no stale reads occur.

Pointer Mapping Table

| Target Resource Type | Canonical Location | Symlinked Kernel Paths | Validation Rule |

| :--- | :--- | :--- | :--- |

| **Main Brain Cortex** | ~/.hermes/main-brain.md | K2, K3, K4, K5 root dir | SHA-256 Match Required |

| **20 Core Agents** | ~/.hermes/agents/core/*.json | All kernel agent folders | Schema Validator Pass |

| **739+ Skills** | ~/.hermes/skills/ | On-demand path resolution | Max 3 per turn |

| **Shared Status Ledger** | ~/.hermes/reports/shared-system-status.md | All kernel report folders | Real-time write lock |

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3. Cross-Environment Watchdog & Cron Registry

The OS runs background watchdog services via standard cron schedules registered in ~/.hermes/reports/cross-env-cron-registry.md. These tasks guarantee automated maintenance without manual intervention.

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graph LR
    W1["Hourly Realtime Doc Watchdog
(CRON-REALTIME-DOC-01)"] -->|Scan Diffs| L["Shared Status Ledger"]
    W2["Daily Gap Research Audit
(CRON-GAP-RESEARCH-02)"] -->|Audit Gaps| L
    W3["30-Min Symlink Sync
(CRON-POINTER-SYNC-03)"] -->|Verify Paths| L
    W4["Weekly Master Build
(CRON-MASTER-BUILD-04)"] -->|Rebuild Book| L
```

Registered Watchdog Schedules

- **CRON-REALTIME-DOC-01 (0 * * * *)**: Runs every hour to detect new components across all 5 kernels and automatically author structured markdown and PDF documentation.
- **CRON-GAP-RESEARCH-02 (0 2 * * *)**: Executes daily at 02:00 to crawl the 5 genre directories, identify reporting gaps, and dispatch gap tickets to moussaif-agent-gap-researcher.
- **CRON-POINTER-SYNC-03 (*/30 * * * *)**: Runs every 30 minutes to verify symlinks, check SHA-256 checksums, and resolve any OneDrive local conflict files.
- **CRON-MASTER-BUILD-04 (0 4 * * 0)**: Executes weekly on Sunday at 04:00 to run build_master_consolidated_report.py, producing an authoritative zero-loss Master Consolidated Ecosystem Report.

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4. Destruction Court Quality Enforcement

Every cross-kernel handoff is evaluated by the **Destruction Court Quality Gate** (moussaif-agent-qa / moussaif-gap-04-destruction-court-qa-judge).

The 5 Laws of the Destruction Court

1. **No Evidence = No Completion**: An agent cannot mark a task complete without providing verifiable terminal stdout, automated test logs, or screenshot artifacts.
2. **Zero Slop Voice**: Documentation and code must be free of generic AI-isms, placeholder text (# TODO: implement), and redundant fluff.
3. **No Unbroken Tests**: Any code change must be accompanied by an automated test that fails before implementation (RED) and passes after (GREEN).
4. **Pointer Coherence**: No agent may create duplicate heavy files (>1 MB) outside the canonical ~/.hermes/kb/ vault.
5. **Reversible Mutations**: All modifications must be structured as the smallest complete reversible action.