EXECUTIVE OVERVIEW

AI-Native, Domain-Agnostic Pedagogical Engine
Built for Africa. Engineered for the World.

KURAI is an enterprise educational intelligence infrastructure built by **Arson Pixelz (Private) Limited**. Rather than hardcoding a single syllabus or acting as a passive answer-vending chatbot, KURAI decouples pedagogical rigor from subject content through hot-swappable **Curriculum Cartridges**—delivering 1-on-1 Socratic tutoring, 68 interactive STEM simulation engines, and batch optical exam grading orchestrated natively on Google Gemini.

40%	68	6-Gear	< 350ms
GRADING VELOCITY	**STEM ENGINES**	**GEMINI ROUTING**	**EDGE LATENCY**
Reduction in educator marking time	Deterministic parametric labs	Reflex Flash to Frontier compute	Optimized for African networks

PLUGGABLE DOMAIN-AGNOSTIC CARTRIDGE ARCHITECTURE

CONTINENTAL SECONDARY	GLOBAL EXAMINATION	EUROPEAN COMPETENCY	HIGHER EDUCATION
Pan-African National & Heritage 5.0	Cambridge International (IGCSE / A-Level)	Swiss Lehrplan 21 & Multilingual DaZ	University STEM, Engineering & IP Law

THE TRI-PILLAR ECOSYSTEM

1. Socratic Learner OS

Strict non-spoonfeeding engine synthesizing each learner's **Cognitive Shadow** (historical misconceptions), **Cognitive Mastery** anchors, and official rubrics. Includes Full-Duplex Live Voice + 60fps Whiteboard tutoring.

2. Co-Teacher OCR Studio

Multimodal spatial vision pipeline that dissolves handwritten student scripts, extracts LaTeX derivations & diagram bounding boxes, grades against official marking schemes, and computes CTT psychometrics (p-value, D-index).

3. Executive Telemetry

Real-time institutional visibility for Headmasters, Deans & Ministries. Tracks cohort mastery matrices, syllabus drift compliance, zero-trust PII pseudonymization, and threshold cryptographic mock exam escrow.

> *"Standard consumer LLMs act as answer-dispensers that erode critical thinking. KURAI is engineered as sovereign cognitive infrastructure—scaffolding first-principles mastery across every classroom tier in Africa and beyond."*
>
> ARSON PIXELZ ARCHITECTURAL CHARTER · HTTPS://KURAI.IO/HOW-IT-WORKS

FORWARD-COMPATIBLE GOOGLE GEMINI & VERTEX AI ORCHESTRATION

REFLEX COMPUTE TIER	**Latest-Generation Gemini Flash Family (Gears 1–3):** Sub-second Socratic dialogue, active-recall micro-blank evaluation, and low-bandwidth edge streaming across high-concurrency school cohorts.
FRONTIER REASONING	**Next-Gen Gemini Frontier Orchestrators (Gears 4–6):** Forward-compatible model abstraction that continuously adopts Google's newest frontier reasoning releases (including Gemini Pro, Argon & Carbon tiers) for multi-step STEM proofs and Autonomous Exam IDE synthesis without pipeline lock-in.
VISION & LIVE AUDIO	**Gemini Multimodal Vision & Native Live Audio:** High-DPI handwritten script OCR with spatial bounding-box extraction, paired with full-duplex 24kHz voice tutoring synchronized to a 60fps interactive whiteboard.
HYBRID VECTOR RAG	**Google Dense Embeddings + Pinecone Sparse-Dense Hybrid:** Sub-50ms semantic retrieval across atomic syllabus chunks, official marking schemes, and anonymized student Cognitive Shadows.

CASSAVA TECHNOLOGIES STRATEGIC ALIGNMENT MATRIX

COLLABORATION PILLAR	CASSAVA ECOSYSTEM CAPABILITY	JOINT VALUE & COMMERCIAL OUTCOME
1. Sovereign Compute	Cassava Google Cloud & Vertex AI Tier	High-volume enterprise Gemini API consumption; priority quota scaling across African academic terms.
2. Data Residency	Africa Data Centres (ADC Harare / JNB / NBO)	Zero-trust API Gateway PII redaction + local hosting to satisfy national & institutional data sovereignty mandates.
3. Connectivity & Reach	Liquid Intelligent Tech Fiber & WhatsApp Gateways	Bundled school connectivity, educational data zero-rating, and omnichannel WhatsApp study bridges.
4. Co-Selling & Revenue	Enterprise B2B & Public Sector B2G Channels	Joint institutional licensing for private schools, university consortia, corporate CSR funds, and education ministries.

PHASED ENGAGEMENT ROADMAP

Stage 1: Virtual Discovery Call (Google Meet)

- **Scope:** 20-minute executive alignment with Cassava Cloud & Partnerships.
- **Deliverables:** Live walkthrough of KURAI's multi-gear Gemini routing, token volume projections, and Vertex AI onboarding pathway.

Stage 2: In-Person Working Session (Harare)

- **Scope:** Physical session at Green Bridge Eastgate (Start of Next Month).
- **Deliverables:** Live Optical Script Grading & Voice Whiteboard demo, ADC residency topology, and commercial co-selling framework.

Arson Pixelz (Private) Limited
Harare, Zimbabwe • partnerships@kurai.io • https://kurai.io • https://kurai.io/how-it-works

Ian Zibako & Lloyd Machine
Co-Founders · Product & Systems Architecture