

MANSSA®

HPC KETZAL

HPC KETZAL — FOUNDING DOCUMENT v2.1

v0.9 — Translation draft pending native review
steps 2-4

V2.1

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// UPDATE NOTICE

The present Founding Document v2.1 integrates the comprehensive refunding of the MANSSA corpus decided by the Direction in May 2026, in application of Direction Act n°025 – Constitutional Revision Framework Act.

Modifications integrated: bicameral oracle architecture (Act n°027), revised PUE (Act n°027), sequenced GPU procurement trajectory (Act n°027), tri-jurisdictional desolidarization (Act n°029), Moroccan implantation securing (Act n°029), tiered treasury trajectory (Act n°030), triple-scenario projections (Act n°030), MANSSA brand differentiation (NDC n°009).

The corr.1 version of May 2026 is hereby superseded.

«Compute makes sovereignty. Sovereignty makes the project.»

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// DIRECTION ACT · 2026-K01 (revised)

Doctrinal position of HPC KETZAL

STATEMENT OF THE ACT

HPC KETZAL is enshrined as the **cross-cutting technical infrastructure** of the MANSSA Protocol. It is not a fourth pillar. It simultaneously serves the three enshrined pillars – Protocol Foundation (DAO), RWA, LaunchLab – through the eight operational capabilities C1 to C8.

The operation of HPC KETZAL is entrusted to **MANSSA Labs SARL**, under the Casablanca Finance City (CFC) fiscal regime at 8.75%. Operational seat: Casablanca, Kingdom of Morocco.

The present Act enshrines this doctrinal position within the meaning of Direction Act n°017 (decision D3) and renders it opposable to any subsequent protocol production.

NON-NEGOTIABLE DOCTRINE

- **01** KETZAL is cross-cutting infrastructure, not a pillar – definitive enshrinement.
- **02** African technical sovereignty – physical seat on Moroccan soil, operated by MANSSA Labs SARL.
- **03** Tri-jurisdiction: MANSSA Foundation (ADGM, DLT) + MANSSA Ventures Ltd (ADGM, FSRA Cat. 3C) + MANSSA Labs SARL (CFC 8.75%), **operationally desolidarized** by Act n°029.

- **04** ***Bicameral** oracle chain of trust – proprietary HSM + quorum + TEE layer **complemented** by Chainlink OCR bridge layer (Act n°027).*
- **05** *Eight operational capabilities C1 to C8 – dynamic pricing, actuarial modelling, on-chain audits, fraud detection, external oracles, economic simulations, automated reporting, IoT integration.*
- **06** *Compliance with the eight anti-ZiG principles enshrined by Act n°017.*

POINTS SUBMITTED TO THE DIRECTION

- **01** ***Arbitration A** – Primary site: Casablanca CFC or Benguerir UM6P. Status: pending receipt of the HPC engineering report.*
- **02** ***Arbitration B** – Anticipated hardware commitment on H200 GPUs from end of Phase 1. Status: arbitrated – H100 in Phase 1, H200 in Phase 2 via Q3 2026 commitment (Act n°027).*
- **03** ***Arbitration C** – Constitution of the oracles audit committee: internal organ or independent third party. Status: arbitrated – independent third party (RWA Oversight Committee).*
- **04** ***Arbitration D** – GPU diversification strategy. Status: arbitrated – multi-vendor (Act n°027).*

SIGNATURES

FUNCTION

INCUMBENT

// PREAMBLE – Why KETZAL, why now

Africa represents eighteen percent of world population and **less than one percent** of world compute capacity. This asymmetry is not a technical given – it is a strategic lock. A continent that does not master its own compute outsources its digital sovereignty.

MANSSA lays the protocol. **Africa's reserve protocol**. Protocol treasury targeting **ten billion US dollars on a tiered trajectory** (central horizon 2031-2032, high scenario 2029-2030, low scenario 2033-2034) – Direction Act n°030. Three co-equal enshrined pillars: Protocol Foundation (DAO), RWA, LaunchLab.

HPC KETZAL is the technical infrastructure that makes this entire apparatus operational. It **prices** RWA assets. It **audits** on-chain reserves. It **supplies** LaunchLab startups with

mutualized compute capacity. It **provides** the DAO with the economic simulations required to govern \$MANSSA incentives.

// CHAPTER I – Doctrinal position

«KETZAL is not a fourth pillar. It is the infrastructure that serves all of them.»

I.1 – Three co-equal pillars of the MANSSA Protocol

| PILLAR | VOCATION | ENSHRINED SUB-BRANDS |
|---------------------------|---|-----------------------|
| Protocol Foundation (DAO) | Protocol governance, sovereign treasury, First-Holder doctrine, eight anti-ZiG principles | \$MANSSA · sMANSSA |
| RWA | Tokenization of African real-world assets, institutional pricing, physical redemption | \$aAFRICA · \$gAFRICA |
| LaunchLab | Pan-African technological cohorts, Web3 incubation, capital + protocol + network | LaunchLab RWA-Africa |

I.2 – Tri-jurisdiction and operational desolidarization

Act n°029 enshrines the **operational desolidarization** of the three entities:

- 01 **MANSSA Foundation** (ADGM, DLT) – protocol governance, intellectual property.
- 02 **MANSSA Ventures Ltd** (ADGM, FSRA Cat. 3C) – regulated financial activities, LaunchLab.
- 03 **MANSSA Labs SARL** (Casablanca, CFC 8.75%) – technical operations, HPC KETZAL.

Distinct bank accounts. Entity-specific boards of directors. Arm's-length inter-entity contracts. Distinct analytical accounting. Separate premises. Own HR policies. Distinct brand emails (`foundation@manssa.io` , `ventures@manssa.io` , `labs@manssa.io`).

I.3 – Moroccan implantation securing

The Moroccan implantation of Labs SARL is the subject of a **formal legal mandate** with a specialized local law firm (CDC-MMS-2026-002), guaranteeing compatibility with the evolving Moroccan crypto framework.

A **conditional fallback plan** is pre-instructed (ADGM Tech Startups, DIFC, Tunis Financial Harbour) – activable only upon proven incompatibility attested by opposable legal opinion.

// CHAPTER II – Technical architecture

II.1 – Six layers

| LAYER | DESIGNATION | TARGET SPECIFICATION |
|-------|------------------------|---|
| L1 | GPU compute | H100 Phase 1 → H200 Phase 2 → B200 Phase 3 |
| L2 | CPU compute | High-density EPYC, liquid cooling |
| L3 | System & orchestration | Slurm, sovereign Kubernetes, native observability |
| L4 | Data | Lustre 300 TB → 5 PB · Ceph 1 PB → 15 PB · encryption |
| L5 | Application engines | Pricing, audits, oracles, actuarial simulations |
| L6 | On-chain economy | Tokenized layer – pricing, smart contracts, DAO |

II.2 – Eight operational capabilities

| Nº | CAPABILITY | PILLAR(S) SERVED |
|----|---|---------------------|
| C1 | Dynamic commodity pricing – real-time, geographic arbitrage, quality, seasonality | RWA |
| C2 | Actuarial RWA modelling – volatility, stress, collateralization, Monte Carlo | RWA |
| C3 | Automated on-chain audits – token/reserve consistency, alerts | DAO · RWA |
| C4 | Fraud detection – title flow surveillance, anomalous patterns | DAO · RWA |
| C5 | External data oracles – bridge from physical world to tokenized world | RWA · LaunchLab |
| C6 | Economic simulations – DAO governance, incentive modelling | DAO |
| C7 | Automated reporting – regulators, compliance, third-party audits | DAO · RWA |
| C8 | IoT integration – physical assets, traceability, Connected Farm sensors | RWA |

// CHAPTER III – Oracle chain of trust (REFOUNDED – Act n°027)

«The chain of trust constitutes the backbone of the entire MANSSA protocol.»

Direction Act n°027 enshrines a **bicameral architecture**:

III.1 – Proprietary layer (maintained)

- **01** **Level 01 – Hardware signature:** HSM FIPS 140-2 level 3, certified.
- **02** **Level 02 – Quorum 3 of 5:** signature aggregation for on-chain publication.
- **03** **Level 03 – TEE execution proof:** Intel TDX / AMD SEV-SNP, verifiable cryptographic attestation.

This layer executes the **proprietary actuarial models** and the **aggregation of Connected Farm IoT flows** in a sovereign trust environment. It is the price source for \$aAFRICA and \$gAFRICA emissions.

III.2 – Bridge layer (added)

- **01** **Chainlink OCR (Off-Chain Reporting)** – on-chain publication and interoperability with the global DeFi ecosystem (lending protocols, stablecoins, secondary markets).
- **02** **Pyth, RedStone** – alternatives evaluated under dual oversight.

The bridge layer **aggregates and publishes** the outputs of the proprietary layer; it does not **replace** them. In case of external unavailability, the proprietary models execute without interruption.

III.3 – No actor equals this chain

No actor in the current decentralized ecosystem simultaneously combines:

- **01** A proprietary layer with attestable HSM, quorum and TEE.
- **02** A bridge layer for global interoperability.
- **03** A sovereign African infrastructure.

This combination is the technical signature of KETZAL.

// CHAPTER IV – Energy and performance (REFOUNDED – Act n°027)

IV.1 – Revised target PUE

Direction Act n°027 enshrines a **target PUE of 1.30 to 1.45** in Phases 1 and 2 – a sustainable and competitive value in the Moroccan climate for HPC workloads operating 24/7.

A PUE below 1.15 is set as a **Phase 3 aspiration**, conditioned upon:

- **01** Additional investment in free cooling.
- **02** Evolution of the available energy mix (target 60% renewable).
- **03** Technical feasibility study signed by a recognized HPC engineering firm (CDC-MMS-2026-001).

IV.2 – Electrical capacity

Phase 1 power density:

- **01** GPU peak load: $24 \times H100\ SXM \times 700\ W \approx 17\ kW$ per 8-GPU chassis.
- **02** Storage and CPU: 80-120 kW.
- **03** Cooling: 250-400 kW depending on technology.

Dedicated electrical substations required. Redundant backup generator sets. UPS inverters sized for 30 minutes minimum at full load.

The CDC-MMS-2026-001 mandate firm instructs the final dimensioning and ONEE connection lead times.

// CHAPTER V – Service to the three pillars

V.1 – RWA Pillar

KETZAL powers three tokenization pipelines:

- **01** **Carbon & agri pipeline** – traced carbon credits, IoT traceability via Connected Farm sensors, EUDR compliance.
- **02** **Receivables pipeline** – actuarial rating, real-time monitoring of repayment flows, alerts.
- **03** **Energy pipeline** – tokenized green production, on-chain measurement of effective generation.

Enshrined RWA token sub-brands:

- **01** **\$aAFRICA** Phase 1 – Agricultural token: cocoa, coffee, vanilla, cotton. EUDR compliance. Local producer custody. Connected Farm in proof-of-concept.
- **02** **\$gAFRICA** Phase 2 – Gold token: LBMA-certified custody. Physical redemption enshrined. 130-150% over-collateralization, quarterly tier-1 audit.

RWA Oversight Committee – enshrined supervisory organ. Independent third-party composition. Continuous emissions audit. Opposability control on the eight anti-ZiG principles.

V.2 – LaunchLab Pillar

KETZAL supplies the annual LaunchLab RWA-Africa cohort with mutualized compute capacity. Four concrete contributions:

- **01** **Mutualized GPU compute** – no dependence on a foreign hyperscaler.
- **02** **Pre-integrated RWA stack** – oracles, audits, pricing, smart contracts opposable to capabilities C1 to C8.
- **03** **Sovereign ADGM track** – accelerated incorporation under the MANSSA Ventures Ltd FSRA Cat. 3C umbrella.
- **04** **Capital + protocol + network** – investment, stack access, continental mentorship.

Partnership strategy (NDC-MMS-2026-008): KETZAL compute credits exchanged with AyaHQ, Celo Africa DAO, Lisk Incubation Hub against dealflow and co-investment.

V.3 – Protocol Foundation Pillar (DAO)

KETZAL provides the DAO with the tools to exercise the First-Holder doctrine enshrined by Act n°017, reinforced by Act n°028:

- **01** **Capability C6** – economic simulations for \$MANSSA incentive modelling.
- **02** **Capability C7** – automated reporting opposable to holders in a logic of verifiable transparency.

- **03** **Capability C3** – continuous on-chain audits of token/reserve consistency of the protocol treasury.
- **04** **sMANSSA sub-brand** – native staked governance, technical infrastructure supported by KETZAL.
- **05** **Security Council support** – KETZAL hosts the monitoring and emergency suspension tools of the 7-mandatory Security Council (Act n°028).

// CHAPTER VI – Execution roadmap (REFOUNDED – Act n°027)

«Three phases. Thirty-six months. Gradual commitments. Reversibility preserved at each tier.»

Phase 0 – Partner POC (Months 1 → 6)

Partner platform (university campus or research centre), 500 CPU cores and 4 mutualized GPUs. First operational aAFRICA pricing on the Connected Farm case. Marginal investment – thesis validation before hardware commitment.

Phase 1 – Proprietary prototype v1 (Months 6 → 18)

- **01** 24 × NVIDIA H100 SXM (mature generation, negotiable procurement).
- **02** Four servers of 4 × L40S (specific workloads).
- **03** Ten EPYC CPU nodes.
- **04** Storage 300 TB Lustre + 1 PB Ceph.
- **05** Full institutional oracle capacity (proprietary layer + bridge layer).
- **06** Target CAPEX ≈ 3.5 million USD.

Phase 2 – Institutional datacenter (Months 18 → 36)

- **01** 32 to 40 GPU nodes H200 (anticipated hardware commitment Q3 2026).
- **02** Eighty EPYC CPU nodes.
- **03** Storage 5 PB Lustre + 15 PB Ceph.

→ **04** Capacity 12 to 18 PFLOPS FP16 sovereign African.

→ **05** Target CAPEX ≈ 18 to 24 million USD.

→ **06** Progressive insertion of tokenized treasury.

Phase 3 – B200 expansion (Months 36+)

→ **01** 32 incremental B200 nodes as allocations release.

→ **02** Multi-vendor strategy: NVIDIA principal, AMD MI300X second source, AWS Trainium / Google TPU for specific workloads.

→ **03** Target PFLOPS FP16 cap revised as hardware commitment proceeds.

// CHAPTER VII – Protocol Tokenomics

VII.1 – Enshrined allocation (Act n°019, not revised)

| ALLOCATION | SHARE | VOCATION |
|------------|-------|--|
| Treasury | 35% | Sovereign treasury – target 10 Bn USD on tiered trajectory |
| Bonding | 25% | Bonding mechanic – programmed accumulation |
| Team | 15% | Team – long vesting, duration alignment |
| LaunchLab | 10% | LaunchLab Pillar |
| Ecosystem | 10% | Grants, partnerships |
| Community | 5% | Community – initial distribution |

VII.2 – First-Holder doctrine (Act n°017, enshrinement preserved)

«Holders come first, always.»

VII.3 – Revised operational mechanics (Act n°026)

→ **01** Bonding: cliff 30 days + linear vesting 180 days = 210 days total.

→ **02** Dynamic discount: 2% to 15%.

→ **03** *Daily cap: 1% of circulating supply in Phase 1.*

→ **04** *Circuit-breaker: suspension at -20% spot or discount >18%.*

→ **05** *Combustion: 5% of inflows (reduced from 20%), 15 points redirected to operational treasury (7%), bear-market reserve (5%), POL (3%).*

VII.4 – Reinforced governance (Act n°028)

Anti-whale 5% + quorum 10% + timelock 48h/168h + 7-mandatory Security Council + 24h execution delay + anti-proposal-stuffing + annual dual-firm audits.

VII.5 – Eight anti-ZiG principles (Act n°017, non-revisable)

The eight principles frame every token emission and every RWA mechanism. Every KETZAL operational capability – C1 to C8 – is designed to serve them and to make them respected.

// CHAPTER VIII – Financing plan

VIII.1 – Enshrined mix (not revised)

| <i>ITEM</i> | <i>AMOUNT</i> | <i>VOCATION</i> |
|--------------------------------|--------------------------|--|
| <i>Hardware CAPEX</i> | <i>20.7 M USD</i> | <i>GPU H100 / H200 / B200, EPYC CPU, Lustre, Ceph, InfiniBand</i> |
| <i>Datacenter & energy</i> | <i>4.3 M USD</i> | <i>Land, power supply, cooling, target PUE 1.30-1.45 Phase 1-2</i> |
| <i>Personnel</i> | <i>5.5 M USD</i> | <i>HPC engineering, oracles, audits, 24/7 operations</i> |
| <i>Software & audits</i> | <i>1.3 M USD</i> | <i>Licences, TEE attestations, HSM certifications, brand filings</i> |
| <i>Programs</i> | <i>1.2 M USD</i> | <i>Continental training, academic partnerships</i> |
| <i>Total</i> | <i>33.0 M USD</i> | <i>Over thirty-six months</i> |

VIII.2 – Enshrined financing mix

→ **01** *40% tokenized – \$MANSSA bonding and RWA-Pillar-backed emissions.*

→ **02** *30% institutional – capital structured under ADGM via MANSSA Ventures Ltd.*

→ **03** *30% reinvested – oracle revenues, compute services, LaunchLab incubation fees.*

VIII.3 – Protocol treasury trajectory (Act n°030)

| <i>TIER</i> | <i>TARGET</i> | <i>CENTRAL HORIZON</i> | <i>HIGH</i> | <i>LOW</i> |
|-------------|------------------|-------------------------|-------------------------|-------------------------|
| <i>P1</i> | <i>100 M USD</i> | <i>T+12 months</i> | <i>T+9</i> | <i>T+18</i> |
| <i>P2</i> | <i>500 M USD</i> | <i>T+24</i> | <i>T+18</i> | <i>T+36</i> |
| <i>P3</i> | <i>1 Bn USD</i> | <i>T+36</i> | <i>T+24</i> | <i>T+48</i> |
| <i>P4</i> | <i>3 Bn USD</i> | <i>T+48</i> | <i>T+36</i> | <i>T+60</i> |
| <i>P5</i> | <i>10 Bn USD</i> | <i>T+72 (2031-2032)</i> | <i>T+48 (2029-2030)</i> | <i>T+96 (2033-2034)</i> |

T = TGE.

VIII.4 – Triple-scenario Phase 1 projections (Act n°030)

| <i>SCENARIO</i> | <i>RWA AUM</i> | <i>GROSS REVENUES</i> | <i>ACQUISITION COSTS</i> | <i>NET MARGIN</i> |
|-----------------|-----------------|-----------------------|--------------------------|--------------------|
| <i>High</i> | <i>75 M USD</i> | <i>1.1 M USD</i> | <i>2.5 M USD</i> | <i>(1.4) M USD</i> |
| <i>Median</i> | <i>40 M USD</i> | <i>0.6 M USD</i> | <i>2.0 M USD</i> | <i>(1.4) M USD</i> |
| <i>Low</i> | <i>20 M USD</i> | <i>0.3 M USD</i> | <i>1.5 M USD</i> | <i>(1.2) M USD</i> |

Phase 1 recognized as an **investment phase** with negative net margin, consistent with the doctrine of viability (Act n°025).

Detailed capitalistic conditions, valuations, nominative allocations: **Annexe Z** confidential, strictly restricted distribution.

// CHAPTER IX – Contribution to Africa

«A continent that computes is a continent that prices its own value.»

«Sovereignty = material anchoring + legal anchoring + human anchoring.»

HPC KETZAL brings to Africa:

→ **01 Material anchoring** – datacenter on Moroccan soil, operated by MANSSA Labs SARL, equipped with institutional GPUs available on the continent.

→ **02 Legal anchoring** – secured CFC regime, ADGM intellectual property, pre-instructed fallback plan.

- 03 **Human anchoring** – continental training, academic partnerships (UM6P, ENSA, ARIPO/OAPI schools), brand filings with both African IP organizations.
- 04 **Pricing capacity** for the continent’s real assets, without recourse to non-sovereign oracles.
- 05 **Independent audit** of on-chain reserves by a third-party committee.
- 06 **Mutualized compute capacity** for LaunchLab startups, without hyperscaler dependence.

// CHAPTER X – MANSSA differentiation (NEW – NDC n°009)

«The name is set. The name is enshrined. The brand is defended by the signature, not by the change.»

MANSSA® – registered trademark. **Two S**. Token: **\$MANSSA**. Canonical domain: **manssa.io**.

Filings underway: OAPI, ARIPO, WIPO/Madrid, USPTO, EUIPO. Sub-brands: KETZAL, \$aAFRICA, \$gAFRICA, sMANSSA, LaunchLab RWA-Africa.

MANSSA is unaffiliated with any other entity using a similar name.

// CLOSING

HPC KETZAL is a **doctrinal as much as technical decision**. It is the step that makes the three pillars of the MANSSA Protocol operational. It is the African material anchoring of the protocol treasury targeting ten billion USD on a tiered trajectory, central horizon 2031-2032.

The present Founding Document, version v2.1, enshrines the revised doctrinal position, the bicameral technical architecture, the bridge-DeFi chain of trust, the sequenced GPU roadmap, the financing plan, and the full set of arbitrations decided by the Direction. It is fully aligned with the `REF-MMS-2026-001` Reference Framework v2.0 (in consolidation) and with `CLAUDE.md` v2.0.

«Precise plan. Held budget. Non-negotiable doctrine. Integrated refunding.»

Signatures of Direction Act n°2026-K01 v2.1

| FUNCTION | INCUMBENT | SIGNATURE | DATE |
|----------|-----------|-----------|------|
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Confidential annexes not attached

→ **01 Document A** – nominative annex: team composition, nominative partnerships, nominative competitive mapping.

→ **02 Annexe Z** – sensitive annex: capitalistic conditions, valuations, detailed allocations, commitment calendar.

Restricted distribution upon prior nominative signature, in accordance with Article VII of the REF-MMS-2026-001 Reference Framework.

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Refunding integrated into Direction Act n°025 – Constitutional Revision Framework Act.