

Tensor Networks, Inc.

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Cuttlefish Edge AI Runtime

Revision 9. Uncompromising Safety. Microsecond Speed.

Principal Systems Architecture and Edge Safety Engineering

The demands of the physical edge are absolute.

Speed

Decisions in fractions of a millisecond. Delivering guaranteed execution under 200 microseconds.



Safety

Zero margin for error. 100% reliability with zero terminal hardware faults.



Reliability

Cryptographic truth. A revolutionary approach to cooperative decision-making and immutable identity.

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Nature’s ultimate edge computer.

Distributed Intelligence
5 system roles processing reality simultaneously.

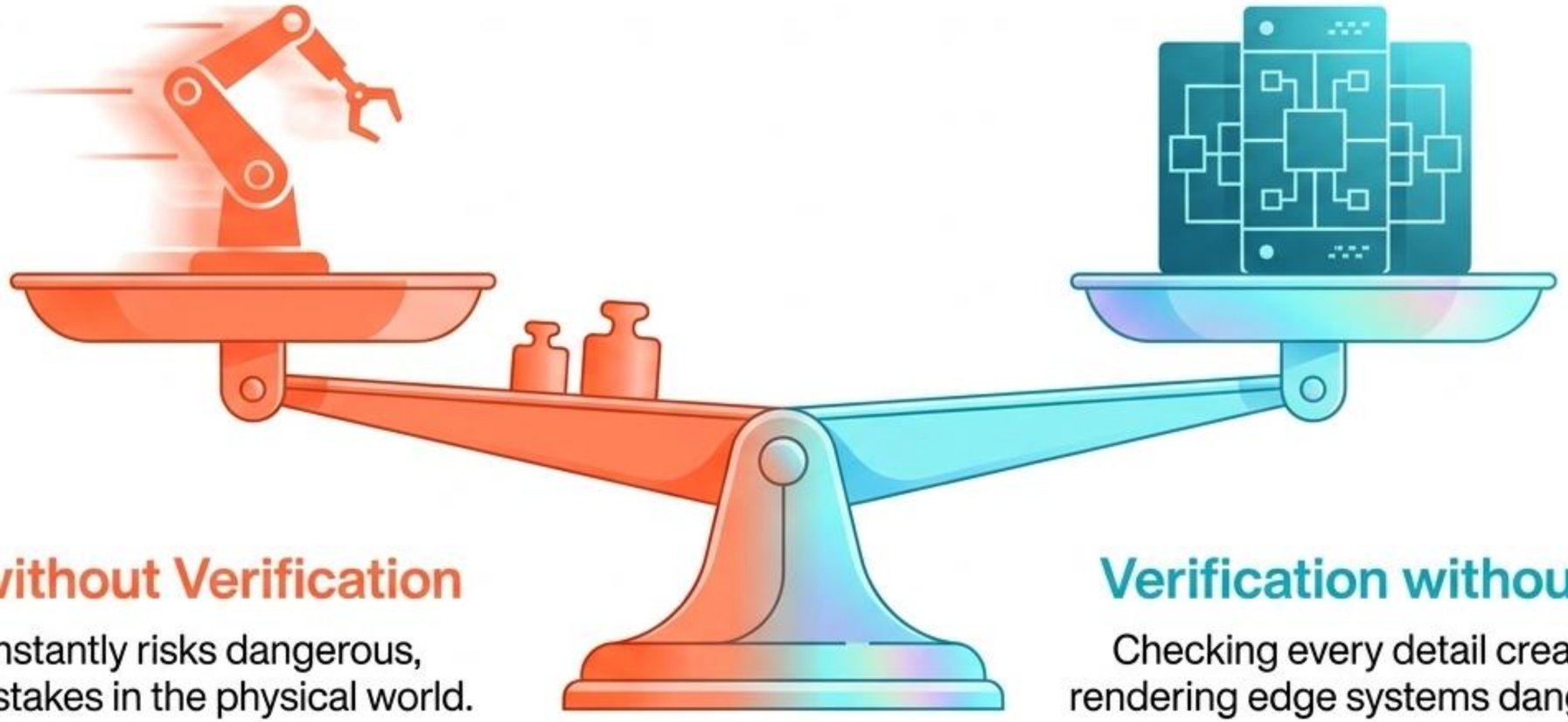
Microsecond Reflexes
Reacting to the physical world instantly, without hesitation.

Energy-Smart Awareness
Adapting and pacing energy use, waking only when required.

Tensor Networks built Revision 9 to mirror this biological perfection in silicon and software.

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The paradox of physical automation.



Action without Verification

Reacting instantly risks dangerous, unverified mistakes in the physical world.

Verification without Speed

Checking every detail creates latency, rendering edge systems dangerously slow.

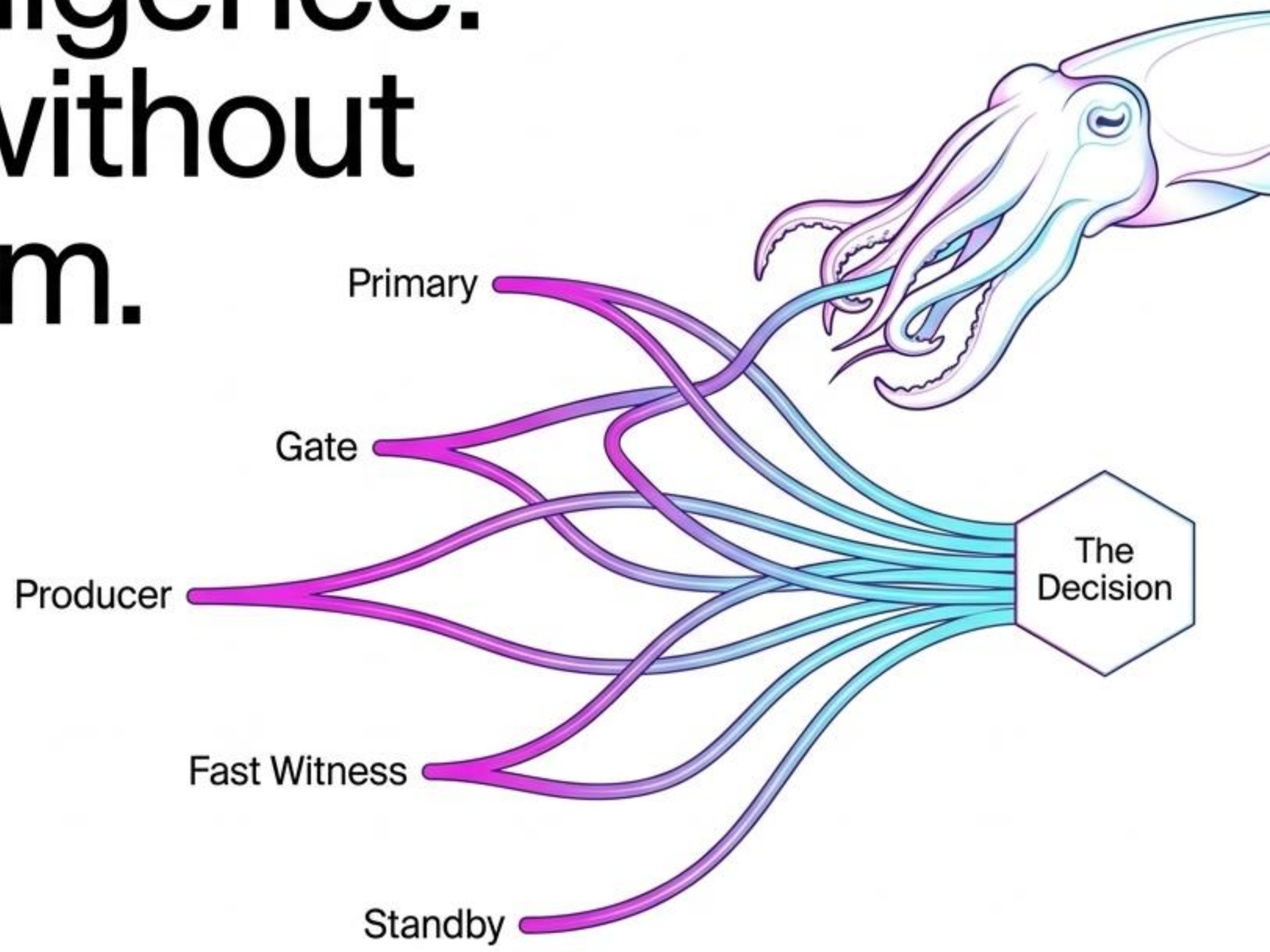
Traditional systems force a choice. Revision 9 eliminates the compromise.

Swarm Intelligence: Teamwork without the traffic jam.

Overcoming the edge bottleneck. Revision 9 introduces Cooperative Observation.

Instead of one part of the system checking a decision and slowing everything down, all 5 system roles observe and verify the data simultaneously.

Complete systemic agreement without duplicate output or sequence corruption.



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Energy-Smart Awareness: Resting intelligently, reacting instantly.



Bounded Pause Hints

The system no longer burns endless energy continuously polling “are we there yet?” Background workers (audit, monitor, sensor) pace themselves intelligently.



Microsecond Wake

The instant action is required, fast-witness preparation wakes the system eagerly, utilizing precise positive cutoffs (e.g., 34us for primary).

Zero-Trust Reflexes: Only acting on the absolute freshest reality.

In the physical world, old data is dangerous data.

Revision 9 strictly enforces Acoustic Freshness.



If a sensor's data exceeds its micro-second freshness budget, or the Ed25519 signature is invalid, safety authority is instantly revoked.

Decisions are based purely on the exact, cryptographic cryptographic reality of right now.

The Testing Crucible: Flawless Execution by the Numbers.

10,000 / 10,000

Timed campaign cycles completed perfectly.

0

Terminal hard faults.

1,172

Regression tests passed perfectly.

10 / 10

Core qualification gates passed.

Strict acceptance exit: 0. Uncompromised validation.

The Anatomy of 83 Microseconds.



Blink of a human eye
~100,000 to 400,000 microseconds

Camera flash
~1,000 microseconds

The strict engineering limit
<200 microseconds

Revision 9 Actual Receiver Maximum
83.068 microseconds

1 microsecond = 1 millionth of a second.
Unfiltered, uncompromised speed.

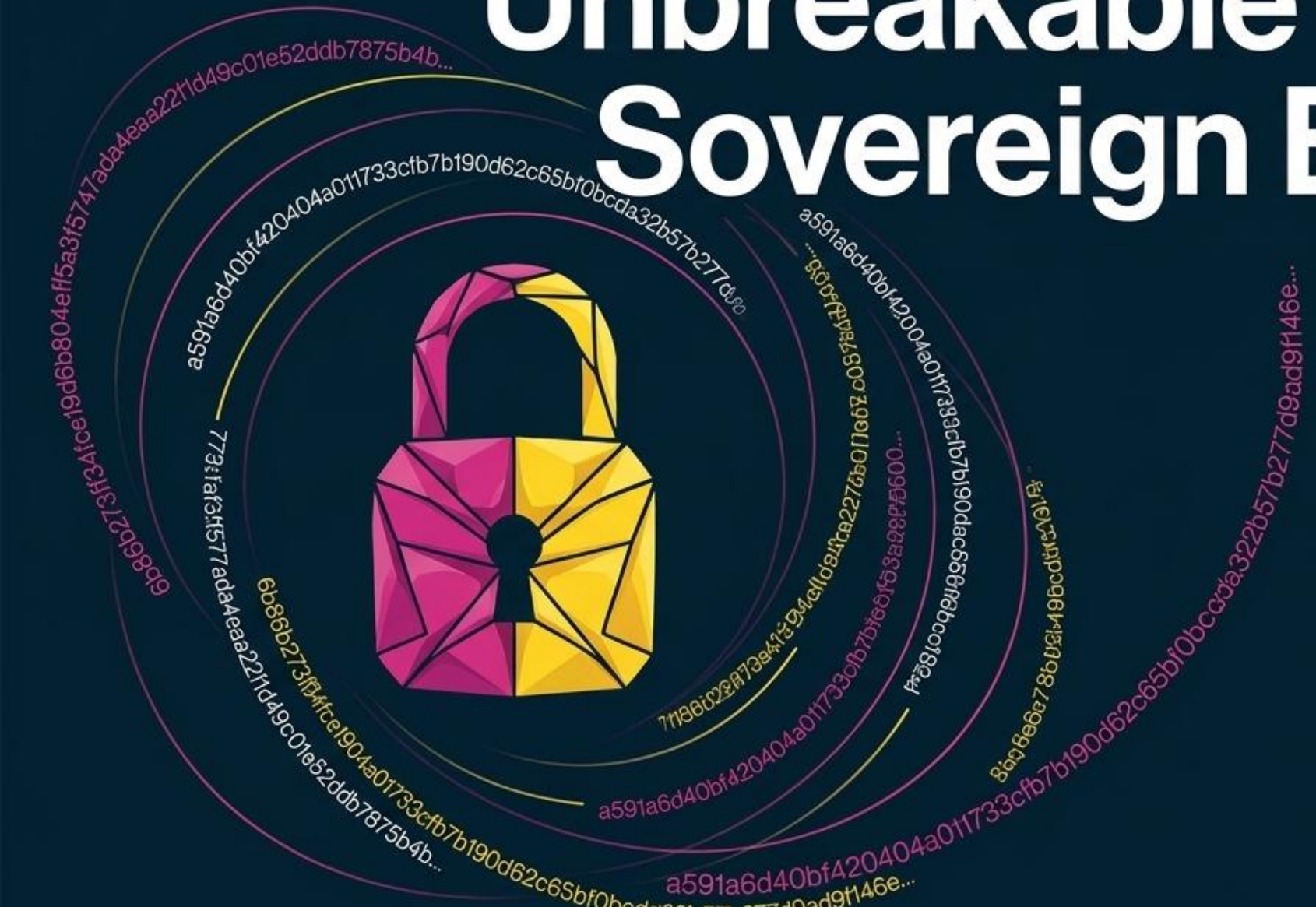
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The Edge Redefined.

Traditional Edge AI	Cuttlefish Rev 9
Sequential verification Slow and blocking	**Cooperative observation** Instant and unified
Polling exhaustion Energy-heavy	**Bounded pause hints** Energy-smart pacing
Assumed trust Vulnerable to stale data	**Cryptographic freshness** Ironclad Ed25519 signatures

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Unbreakable Identity & Sovereign Execution



Built entirely on cryptographic truth.

Every piece of source code, binary, and profile is frozen and cryptographically hashed (SHA-256 / Ed25519).

The local safety monitor verifies signed sensor identity and physical invariants independently before any physical action is permitted. No external remote message can violently expand local physical bounds.

Real-World Domination at the Physical Edge



Sovereign Edge Robotics
Flawless mission containment and intent execution



Autonomous Defense Capabilities
MAVLink v2 native integration for airborne safety



Bounded Industrial Supervision
Modbus integration with strict electrical response limits



Public-Sector Infrastructure
Sovereign local reporting and anomaly observation

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The Seamless Deployment Lifecycle.



1. Verify

Authenticate engineering public-key fingerprints and external checksums.



2. Commission

Pin physical bounds, unit identities, and safety key custody.

3. Supervise

Run trusted ingress and independent physical guard execution.

4. Act

Flawless physical actuation guided by microsecond cooperative observation.



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Synthesis: The Complete Edge Mind

Revision 9 is more than a software update; it is a fundamental paradigm shift for physical automation.



By seamlessly combining swarm-like cooperative observation, zero-trust cryptographic freshness, and strict microsecond execution, execution, Tensor Networks has created a truly sovereign, flawless edge mind.

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Cuttlefish Edge AI Runtime v1.0.0 Rev 9

Certified. Qualified. Ready to transform the physical edge.



Available Now. For sovereign edge deployments and bounded industrial supervision.