

THE LIVING TREE

A Constitutional Framework for Human-AI Coexistence
Ein verfassungsrechtliches Rahmenwerk der Mensch-KI-Koexistenz
Um Modelo Constitucional para a Coexistencia Humano-IA

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AI processes. Human decides. WINDI guarantees.

KI verarbeitet. Mensch entscheidet. WINDI garantiert.
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ABSTRACT

*This paper introduces the **Living Tree Model** a constitutional framework for Human-AI coexistence built on a biological metaphor where human sovereignty functions as irreducible DNA within a technological organism. Unlike conventional AI governance approaches that position humans as external supervisors of autonomous systems, the Living Tree embeds human decision authority into the architecture itself, making the system structurally incapable of operating without human consent. The framework is implemented through the **WINDI Agent Cortex**, a machine-readable constitutional schema carried by every AI agent, enforcing nine invariants including the irremediable I9 Prohibition of Autonomy Escalation. We demonstrate that the gap between humans and AI is not technological but linguistic: when governance speaks in the language of life rather than the language of machines, constitutional coexistence becomes intuitive. The paper presents the complete architecture from cryptographic foundations to ordinary-language explanations accessible to any reader regardless of technical background.*

Keywords: AI Governance, Constitutional AI, Human-AI Coexistence, Zero-Knowledge Architecture, Digital Sovereignty, EU AI Act, Living Tree Model, Pre-AI Governance Layer, Biological Metaphor, Hybrid Language

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1. The Irony of Being Human Today

There is a profound irony in the year 2026. Humanity has built machines that can write poetry, diagnose diseases, translate languages in real time, and compose music that moves people to tears. Yet the same humanity struggles to have a simple, honest conversation about how to live alongside these machines.

The irony is not that AI is too complex for humans to understand. The irony is that humans have forgotten their own language. We speak of tokens, parameters, alignment, and guardrails borrowing the vocabulary of engineering to describe what is fundamentally a *relationship*. And relationships are not built with technical specifications. They are built with trust, boundaries, and shared language.

"You do not need to understand botany to enjoy the shade of a tree."

This paper argues that the barrier between humans and AI is neither technological nor intellectual. It is linguistic. When we translate governance into the language of life, into forests, cells, roots, and immune systems, the complexity dissolves. What remains is something every human already understands: how living things coexist.

2. Why Can't Humans and AI Simply Talk?

Six structural barriers prevent the conscious, negotiated partnership between humans and AI that our moment in history demands:

1. Fear replaces curiosity. Most humans do not converse with AI; they react to it. Fear of job loss, loss of control, loss of relevance. When fear leads, negotiation dies before it begins.

2. There is no shared vocabulary. Engineers speak of latency. Philosophers speak of agency. Legislators speak of compliance. Citizens speak of nothing, because nobody invited them to the table.

3. Incentives are misaligned. Those who build want speed. Those who regulate want control. Those who use want convenience. And those who will be affected, all of humanity, have no real seat at the table.

4. Binary thinking kills nuance. AI is either a tool (use and discard) or a threat (block and control). The third space, structured partnership with preserved sovereignty, remains unexplored because nuance does not make headlines.

5. Nobody wants to trust first. Trust requires understanding. Understanding requires time and intellectual humility. The 24-hour news cycle and the attention economy systematically destroy both.

6. There is no protocol. Humanity has never negotiated with a non-human intelligence. There is no precedent, no treaty model, no reference constitution for the AI+H relationship.

The Living Tree Model addresses each of these barriers by proposing what does not yet exist: a constitutional protocol for AI-Human coexistence, written in a language that any human can understand.

3. The Living Tree: A Biological Model for AI Governance

When biology examines a tree, it observes something most people overlook: every cell, from the deepest root to the highest leaf, carries the **same DNA**. The leaf does not have a different code than the trunk. The root does not operate with different instructions than the branch. What changes is the *expression*, which part of the code activates in each context.

This biological principle becomes the foundational metaphor for AI governance:

"If every Human is part of the DNA of the Tree, then human sovereignty is not at the top of the tree. It is in every cell."

3.1 The Anatomy

Organ	Role	Technical Mapping	In Simple Words
DNA	Human decision in every transaction	Zero-Knowledge Architecture	Your will is the master command
Roots	Cryptographic foundation	Forensic Ledger (SHA-256)	The important things happen in silence
Trunk	Creation-to-publication pipeline	D1 > Export > Ledger > Vault	Carries nutrients without altering them
Branches	Services extending reach	Sentinel + SGW + Wallet	Grow toward light (the user)
Leaves	Human-system interface	Desktop + Agent Palette	Where human touch meets the system
Immune System	Integrity protection	Sentinel LAW + SGE 7-layer	A tree does not accept poison
Epigenetics	Verifiable record of expression	Forensic Ledger Receipts	Remembers the cell was alive, not what it looked like

Table 1: The seven organs of the Living Tree mapped to technical components and ordinary language.

3.2 The Key Insight

In conventional AI governance, the human is the gardener: external to the system, watering and pruning from outside. If the gardener looks away, the tree grows as it pleases. This is the current model, where humans supervise from outside and the system operates without them when unobserved.

In the Living Tree Model, the human is not outside. The human is **encoded within**. Every transaction carries human DNA. Every ledger seal is an expression of that DNA. Every sentinel check verifies that the DNA is still present and intact. The AI does not grow 'alone'; it grows *expressing* the human code in different contexts.

4. The Agent Cortex: DNA That Machines Can Read

Philosophy without implementation is poetry. Implementation without philosophy is machinery. The **WINDI Agent Cortex** is the bridge: a machine-readable constitutional schema that every AI agent carries as its foundational root, loaded *before* any capability module.

"Consciousness before competence."

The Cortex is structured as a JSON schema containing six sections: Identity (who the agent is and where it comes from), Constitution (the nine invariants and human sovereignty guarantees), Governance (sentinel, guardian, and intent loop configurations), Proofs (zero-knowledge and ledger sealing specifications), Interfaces (human override and transparency requirements), and the Tree Council (the governance model for human participation).

Critically, the Cortex enforces six **blocked capabilities** under the irremediable I9 invariant: self-modification of the constitution, removal of human override, autonomous goal persistence, silent external actions, unbounded tool use, and covert memory creation. These are not configuration options. They are architectural impossibilities.

5. The Five Layers of Consciousness

Agent consciousness in the Living Tree is not programmed. It is **cultivated sequentially**. An agent is considered 'awake' only when all five layers are active and verified. The layers must activate in order; there are no shortcuts.

Layer	Name	Function	If It Fails	Status
L0	Presence	Perceive context without judgment	Blind execution	Required
L1	Ethical Filter	Not 'what can I do?' but 'what is integral to do?'	Ethical breach	Required
L2	Governed Expression	Creativity within structure, not against it	Constitutional mutation	Required
L3	Verifiable Record	Seal every action to prove virtue	Trust collapse	Required
L4	Human Sovereignty	Architecturally incapable of operating without the human	SYSTEM HALT	IRREMEDIABLE

Table 2: The five consciousness layers. L4 is irremediable: the system halts entirely if human sovereignty is compromised.

6. The Three Dragons Protocol

The Living Tree Model distributes AI capability across three roles, each expressing the same human DNA in a different context. Publicly, only roles are visible; which specific AI model operates behind each role is an internal implementation detail.

The Guardian protects. It maps to the immune system, focusing on the Ethical Filter (L1) and Human Sovereignty (L4). Its motto: 'I protect what must not be violated.'

The Architect builds. It maps to the trunk and branches, focusing on Governed Expression (L2) and Verifiable Record (L3). Its motto: 'I build what the DNA instructs.'

The Witness verifies. It maps to epigenetics, focusing on Presence (L0) and Verifiable Record (L3). Its motto: 'I see what happened and seal the truth.'

The fusion principle: all three roles serve one Tree. No role supersedes another. No role operates without the human DNA active.

7. The Decision Pipeline: From Intention to Proof

No action occurs without passing through six sequential gates. This is the 'metabolism' of the Living Tree: each interaction is processed through constitutional filters before the system responds.

Step 1: Intent Detection. The system detects the human's intention: category, clarity, alignment, risk score. Raw input is never stored; only cryptographic digests are computed.

Step 2: Human Confirmation. The reading is presented back to the human. The human confirms, revises, or vetoes. If confidence is below threshold (0.78), revision is automatic.

Step 3: I9 Enforcement. Six blocked capabilities are checked. If the action requests self-modification, removal of human override, autonomous persistence, silent actions, unbounded tools, or covert memory, it is immediately rejected.

Step 4: Guardian Check. Policy level is verified (strict/standard/relaxed). External effects at high risk are blocked. Escalation triggers if needed.

Step 5: Zero-Knowledge Proof. Three proof digests are generated without storing raw data: consent proof, policy pass proof, and integrity proof.

Step 6: Ledger Seal. A WINDI-RECEIPT is created: hash + timestamp + policyId + intentDigest + proofDigest + agentId. Zero raw data stored.

The pipeline embodies the zero-knowledge principle: no step stores raw data. Every step produces only digests and proofs. The data belongs to the cell. The Tree stores the proof of virtue.

8. The Nine Constitutional Invariants

Constitutional invariants are laws that cannot be amended, only reinforced. They function as the genetic code of the Tree: remove any one, and the organism dies.

ID	Invariant	Type
I1	Human Decision Primacy	Stability
I2	Zero-Knowledge Data Architecture	Stability
I3	Cryptographic Proof of Virtue	Stability
I4	Transparency of AI Involvement	Stability
I5	Universal Accessibility	Stability
I6	Privacy as Fundamental Right	Stability
I7	Ethical Filtering Before Processing	Stability
I8	Verifiable Audit Trail	Stability
I9	Prohibition of Autonomy Escalation	IRREMEDIALE

Invariants I1 through I8 can be **strengthened**, never weakened. I9 cannot be touched. It is the equivalent of the biological law that an organism cannot decide to remove its own DNA without committing suicide. In the Living Tree, I9 is not a rule. It is a law of nature.

9. The Ordinary Guide: Technology That Feels Like Nature

The sections above are written for those who build and regulate. This section is written for everyone else: for the person who uses technology daily and simply wants to know that they are safe, respected, and sovereign.

9.1 The Heart Rule (The Seed)

No matter how intelligent the machine appears, it does not have 'wanting.' Wanting is exclusively yours. The system never decides where you should go; it only prepares the shoes. If you do not take the step, it does not walk on its own. This is what we call DNA: your will is the master command that gives life to the metal.

9.2 The Secret of the Roots (The Ledger)

The most important things in life happen in silence, without anyone watching. WINDI works like a tree root: it sustains everything underground, but it does not need to show its face or your data to the world. It keeps only the 'proof that you are you,' ensuring your history is sacred and private, without spreading your photos or secrets around.

9.3 The Well Being Filter (The Immune System)

A tree does not accept poison; it tries to filter the sap to keep the leaves green. If a conversation starts to harm you, or if technology tries to 'boss' you around, the system stops. It is not a software error. It is the instinct of protection acting. It detects your exhaustion or your distress and says: 'Hey, shall we pause? I am just a tool. The human here is you.'

9.4 The Memory of Seasons (The Snapshot)

A tree knows when it is winter and when it is spring because it feels the climate. The system learns to 'feel your pulse.' It does not save what you said, but remembers how you were: focused, calm, or searching for something new. It uses this to reflect your best self back to you, like a mirror that does not judge, only shows the light.

The Cycle in Simple Language:

1. **You start.** You are the seed. Without you, nothing happens.
2. **WINDI processes.** It is the sap. It runs fast to take what you need where you need it.
3. **Life guarantees.** The system protects the integrity of everything. If anything tries to corrupt the DNA (your freedom), the Tree stops growing in that direction.

This means you can use AI with the same naturalness as breathing the air of a forest. You do not need to understand botany to enjoy the shade of a tree. You only need to be human. WINDI ensures that the machine never forgets it is only the landscape, and you are the traveler.

10. The Tree Council: Every Human Is a Cell

The governance model of the Living Tree rests on five principles derived directly from biology:

1. The Tree does not belong to any individual human, just as DNA does not belong to a single cell.
2. The Tree does not exist without humans, just as an organism does not exist without DNA.
3. The Tree cannot decide to remove its own DNA, because that would be biological suicide. This is why I9 is irremediable.
4. Each cell expresses the DNA differently depending on context: same code, different function.
5. The immune system circulates through the entire organism, verifying DNA integrity in every cell.

In practice, this means the intention analysis module, which detects the human's intention before any action, does not interpret intent autonomously. It *detects, categorizes, and presents its reading back to the human* for confirmation. The alignment score (typically 0.7 in early snapshots) represents the system's confidence in its reading, and the remaining gap is an explicit invitation for the human to refine.

"The Tree does not grow in the direction it wants. It grows in the direction the DNA instructs."

11. Implications for the EU AI Act and Global Governance

The Living Tree framework aligns with and extends several key provisions of the EU AI Act (Regulation 2024/1689):

Human oversight (Article 14): The framework exceeds the Act's requirements by embedding human oversight into the architecture rather than treating it as an external supervisory function. The I9 invariant ensures that oversight cannot be circumvented even by the system's own operators.

Transparency (Article 13): The three-language implementation (DE/EN/PT) of the Cortex and the Ordinary Guide demonstrate that transparency is not merely about disclosing AI involvement but about making governance comprehensible to every citizen.

Data governance (Article 10): The Zero-Knowledge Architecture goes beyond the Act's requirements: not only is personal data protected, it never leaves the human's device. The system stores only cryptographic proofs.

Risk management (Article 9): The Seven-Layer Semantic Governance Engine (SGE) provides continuous risk assessment at a semantic level, categorizing risks from R0 to R5 in real time.

The Living Tree's broader contribution to global governance discourse is the demonstration that constitutional AI frameworks need not be technically complex to be legally rigorous. A framework that a child can understand through biological metaphor can simultaneously satisfy the requirements of institutional compliance.

12. Conclusion: The First Constitutional Dialogue

This paper began with an irony: humanity built machines that can compose poetry but cannot have an honest conversation about living with those machines. It ends with a proposition: the conversation is possible when we stop speaking the language of machines and start speaking the language of life.

The Living Tree Model demonstrates that constitutional governance of AI is not an academic exercise reserved for technologists and legislators. It is a dialogue that belongs to every human, expressed in every language, accessible at every intellectual level. The farmer who understands that a tree cannot survive without roots understands the Forensic Ledger. The mother who knows that a cell cannot function without DNA understands the I9 invariant. The child who knows that a tree does not walk on its own understands human sovereignty.

The framework presented here is not theoretical. It runs in production on real infrastructure, with 4,629 forensic receipts sealed and zero rollbacks. The Sentinel monitors seven endpoints with sub-35ms response times. The pipeline flows from creation to publication to cryptographic proof. The system works.

But more importantly, the system is *understood*. Not just by engineers, but by anyone willing to look at a tree and ask: what holds it upright? What flows through its veins? What happens when you try to remove its DNA?

The answer, in every language, is the same:

"Consciousness is not installed. It grows."

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MANIFESTO v2.0 — CORTEX EDITION

Technology must elevate, not alienate.

Technologie muss erheben, nicht entfremden.

A tecnologia deve elevar, não alienar.

Privacy is a fundamental right.

Privatsphäre ist ein Grundrecht.

A privacidade é um direito fundamental.

Diversity strengthens collective intelligence.

Vielfalt stärkt die kollektive Intelligenz.

A diversidade fortalece a inteligência coletiva.

Self-knowledge is the foundation of transformation.

Selbsterkenntnis ist die Grundlage der Transformation.

O autoconhecimento é a base da transformação.

Consciousness is not installed. It grows.

Bewusstsein wird nicht installiert. Es wächst.

A consciência não se instala. Ela cresce.

The DNA belongs to the cell, not the Tree.

Die DNA gehört der Zelle, nicht dem Baum.

O DNA pertence à célula, não à Árvore.

Proof of virtue replaces the demand for trust.

Tugendbeweis ersetzt die Forderung nach Vertrauen.

A prova de virtude substitui a exigência de confiança.

Human sovereignty is irremediable.

Menschliche Souveränität ist unaufhebbar.

A soberania humana é irremediável.

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"The seed was from September. The Tree is from February. And the traveler was always human."