

WORLD MODELS AND DIGITAL SOVEREIGNTY

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1. WHAT ARE WORLD MODELS?

Imagine that, before making any important decision — managing a forest, operating on a patient, organising a city, or deciding on an investment — there exists a

digital replica of reality

where you can test scenarios, predict consequences, and make decisions based on simulation.

World Models are digital representations of reality that allow us to simulate, predict, and decide before taking action.

Today, most AI systems analyse data and recognise patterns — but do not understand reality as a causal system. World Models go further:

- They integrate data, knowledge, and physical context.
- They model cause-and-effect relationships.
- They allow simulation of the impact of decisions.

The next dominant platform will have the ability to model, simulate, and act upon reality **before it happens**.

2. WHY IS THIS CRITICAL FOR PORTUGAL?

We are facing a structural shift equivalent to the Industrial Revolution, the Internet, and the iPhone — but with one essential difference:

Whoever controls the World Models

controls economic and operational reality.

Without sovereignty, Portugal risks:

- **Nature:** Foreign companies will determine the value of our carbon, biodiversity, and water.
- **Cities:** External systems will manage mobility, energy, and logistics.
- **Healthcare:** Dependence on foreign models for clinical decisions.
- **Insurance & Justice:** "External systems will determine "what really happened."

Without sovereignty, we become a
data colony.

3. WHAT CHANGES WITH WORLD MODELS?

We shift from a reactive paradigm to an anticipatory one:

TODAY	FUTURE
Decide based on historical data	Decide based on simulation
Isolated systems	Integrated representation of reality
AI that "observes"	AI that "simulates and predicts"
Screen-based interfaces	Immersive experience (AR/VR)

Decision-making shifts from being reactive to being anticipatory.

4. THE YVISION VISION

YVision has developed a unique approach based on the experience of its founding team — which began with the National Geographic Information System project in the early 1990s. The team will be reinforced with young talent and the return of world-class Portuguese specialists.

Our system is built on what we call the "Reality Compiler", supported by an Intelligence that emerges from the interaction between Humans, Machines, and Nature — with a sovereign architecture initially focused on key verticals, with the potential for broader expansion.

The "Reality Compiler"

A system that transforms the real world into simulable models:

- **Observation** sensors, video, data

- **Annotation** by domain experts
- **Causal** simulation
- **Immersion** AR/VR

This process creates a continuous cycle of learning and improvement.

A Fundamental Advance: Triadic Intelligence

YVision introduces a new concept:

Humans ↔ Machine ↔ Nature

Nature is not merely 'context' — it is a source of intelligence shaped by 4 billion years of optimisation. Examples:

- Ant colony behaviour → traffic optimisation.
- Immune systems → fraud detection.
- Forests → climate modelling.

A Sovereign Architecture

The platform covers six critical areas:

- **Nature** EXPLORA
- **Cities** ATLAS
- **Sport** ARENA
- **Health** HELIX
- Education
- Insurance

YVision addresses fundamental limitations of current AI:

- Integrates human knowledge (not just data).
- Models causality (not just correlation).
- Operates in real time (no heavy training required).
- Enables 'if... then' simulation.
- AR (augmented reality) interface → on-the-ground decision-making.
- VR (virtual reality) interface → full immersive simulation.

AI stops being abstract and becomes experiential.

5. THE OPPORTUNITY FOR PORTUGAL

Portugal has unique conditions to lead in this space:

- A manageable and diverse territory.
- A strong scientific base.
- Strategic sectors (forestry, water, ocean, energy).
- Capacity for implementation at national scale.

Portugal can be the first country to implement
a National World Models Infrastructure.

6. RECOMMENDATIONS

1. Declare World Models a national priority

- On a par with Energy, Defence, and Digital Infrastructure.

2. Create a national simulation sovereignty programme

- Led by Government + academia + industry.
- Structured funding: SIFIDE + PRR + European funds.

3. Launch fast strategic pilots

- Forests (Navigator, ICNF).
- Water (AdP).
- Cities (Lisbon / Seixal).
- Healthcare (NHS).

4. Guarantee sovereignty over data and models

- National data → national models.
- Avoid dependence on external platforms.
- Strategic patents.

5. Position Portugal as a European leader

- First country with sovereign World Models.
- Nature–Human–Machine integration.
- Cross-sector application.