

Framing the Foundations: Embedding OECD AI Capability Metrics at the Core of Morocco's Digital Transition

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Abstract - This article examines the relevance and applicability of the OECD AI Capability Indicators as a framework for guiding Morocco's digital transformation agenda, as articulated in the Digital Morocco 2030 strategy. While current national initiatives emphasize infrastructure development, service digitization, and talent creation, they offer limited mechanisms for assessing the functional maturity of AI systems. By aligning Morocco's digital priorities with a capability-based evaluation of cognitive performance—across domains such as language understanding, planning, perception, and metacognition—this analysis identifies critical governance and implementation gaps. It proposes a four-pillar roadmap to integrate capability auditing into public procurement, regulatory sandboxes, national benchmarks, and talent pipelines. The objective is to support more informed, measurable, and context-sensitive deployment of AI systems, and to position capability assessment as a foundational instrument of sovereign digital governance.

Keywords: AI governance, capability metrics, cognitive maturity, digital transformation, OECD indicators

Main Reference Reports: *OECD – Introducing the AI Capability Indicators* (June 2025); *Digital Morocco 2030 – Strategic Roadmap* (Ministère de la Transition Numérique, Sept. 2024)

1 Series Introduction: Why Capability Matters Now

This policy brief inaugurates the series *AI Maturity in Practice: A Cognitive Audit of Digital Morocco 2030*, which seeks to examine Morocco's digital transformation through a new analytical lens: capability-based governance of artificial intelligence.

While national strategies often emphasize infrastructure, scale, or innovation metrics, this series centers on a more fundamental question: **To what extent are our digital systems cognitively capable?**

In 2025, the OECD introduced the *AI Capability Indicators* — a structured framework to evaluate AI systems based on their alignment with human cognitive functions such as language understanding, planning, creativity, and metacognition. At the same time, Morocco's Digital Morocco 2030 roadmap articulated an ambitious agenda for national digital transformation, encompassing talent development, sovereign cloud infrastructure, service digitization, and AI adoption.

This series is motivated by a strategic convergence: Morocco's AI investments must go beyond widespread deployment to achieve functional robustness, contextual awareness, and cognitive alignment with the goals of public trust, social equity, and strategic autonomy.

Each entry in the series will explore one facet of this convergence. From AI sovereignty and cloud governance to justice digitization and educational AI tools, we will apply the OECD's capability framework to assess:

- Where Morocco's AI systems stand today in terms of cognitive maturity,
- What sectoral or strategic gaps remain,
- And how digital sovereignty can be grounded in measurable, operational capability.

This first brief lays the foundation by mapping the OECD framework onto the core pillars of *Digital Morocco 2030*, identifying immediate opportunities for alignment, and proposing a roadmap to bring AI maturity into the center of Moroccan digital policymaking.

2 Context: Two Frameworks, One Imperative

In June 2025, the OECD released a milestone document titled *Introducing the AI Capability Indicators*. This framework defines nine cognitive domains that capture the functional maturity of artificial intelligence systems: language, perception, planning, problem-solving, social interaction, physical manipulation, creativity, metacognition, and navigation. Each domain is calibrated on a five-level scale representing the progression from rudimentary pattern matching to near-human adaptability and reasoning.

The goal is to move beyond narrow metrics like accuracy or throughput and instead evaluate AI systems by what they can actually do — cognitively, contextually, and ethically.

Concurrently, Morocco's national strategy *Digital Morocco 2030* — launched in late 2024 — outlines a strategic framework for digital transformation across the public and private sectors. It aims to:

- Train 100,000 digital talents annually;
- Create 240,000 jobs and 3,000 startups;
- Expand fiber coverage and 5G infrastructure;
- Develop sovereign cloud platforms and secure compute;
- Fully digitize key public services in justice, health, education, and local administration.

While both frameworks — the OECD's and Morocco's — reflect rigorous conceptual development in their respective domains, they have yet to be integrated. One defines the **cognitive standards** for AI maturity. The other defines the **national priorities** for AI deployment.

This policy series, and this inaugural brief in particular, seek to bridge this gap by mapping Morocco's digital ambitions to OECD-defined AI capabilities — enabling strategic alignment while providing a rigorous framework to track, benchmark, and govern Morocco's AI maturity.

3 Framing the Problem: The Missing Layer of Cognitive Evaluation

Despite Morocco's significant progress in infrastructure development and digital policymaking, a critical dimension remains largely unaddressed: the cognitive capability of the AI systems being deployed.

Public discourse and strategic documents tend to emphasize scale (e.g., number of connected users, fiber penetration), access (e.g., digitization of services), and institutional reform. Yet few, if any, national strategies include concrete instru-

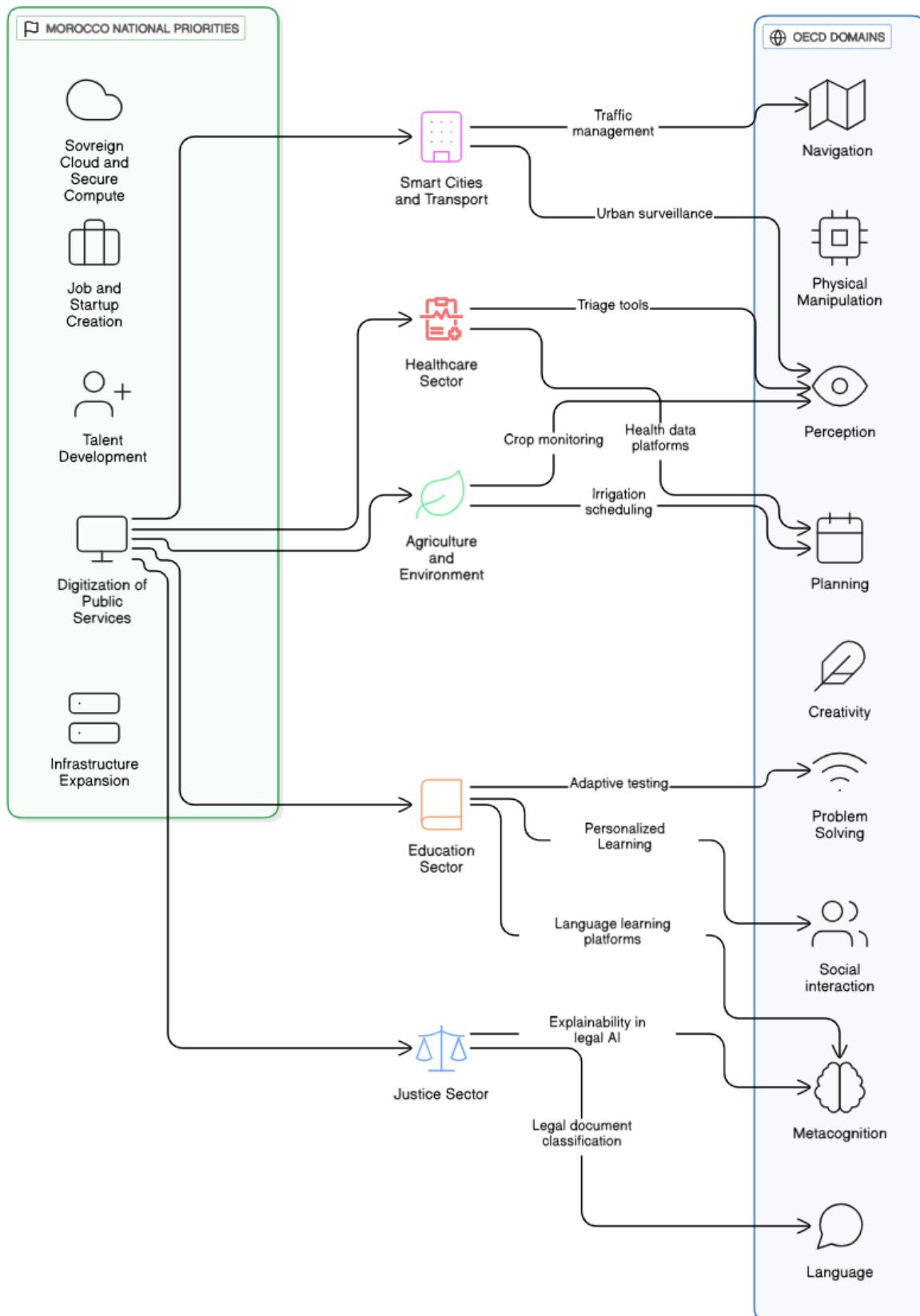


Figure 1: Mapping Morocco's National Priorities to OECD AI Capability Domains

ments for assessing what deployed AI systems *can actually do* — how well they reason, adapt, plan, understand language, or interact socially.

It may be argued that Morocco is still in an early phase of AI deployment, and that capability evaluation is premature. But postponing this question risks embedding long-term fragility into the very foundations of national systems. Without minimal benchmarks for reasoning, contextual awareness, and robustness, even early-stage deployments can produce distorted outcomes — particularly in sensitive domains such as education, policing, or healthcare.

In this vacuum, three risks emerge:

1. **Functional misalignment:** AI systems may be deployed in critical sectors without sufficient maturity, leading to biased outcomes, overgeneralization, or loss of trust.
2. **Infrastructural overestimation:** Investments in cloud, compute, or talent pipelines may be incorrectly assumed to yield strategic autonomy, when underlying systems remain cognitively shallow.
3. **Sovereignty dilution:** Without a national benchmark of AI capability, Morocco risks importing models and technologies whose limitations are not transparent — or whose capabilities do not reflect local linguistic, ethical, or institutional contexts.

What is missing is not just a technical benchmark, but a **governance lens** — one that ties the deployment of AI to explicit cognitive goals, grounded in internationally recognized capability metrics.

This is where the OECD AI Capability Indicators offer a compelling opportunity: a structured, scalable, and auditable framework to measure whether Morocco's AI systems are keeping pace with its digital vision — both in terms of scale and sophistication.

4 Strategic Fit: From Parallel Visions to Integrated Governance

On the surface, the OECD AI Capability Indicators and Morocco's Digital Morocco 2030 strategy appear to address different layers of transformation. The former offers a cognitive evaluation framework for AI systems; the latter outlines a national blueprint for infrastructure, talent, and digitized services. Yet without deliberate integration, their parallel development risks producing digital infrastructure that is widespread — but cognitively underpowered.

The Digital Morocco 2030 strategy explicitly seeks to:

- Accelerate AI adoption in public and private sectors,
- Localize computing infrastructure and data governance,
- Build sovereign digital services that reflect national values and social needs.

However, these objectives presuppose a level of maturity in the AI systems that underpin them. What use is a sovereign cloud if it hosts opaque or cognitively shallow models? How can AI in justice or education be considered inclusive if it fails to understand the linguistic or socio-cultural context in which it operates?

This is where the OECD capability indicators provide indispensable structure. They allow policymakers and technologists to:

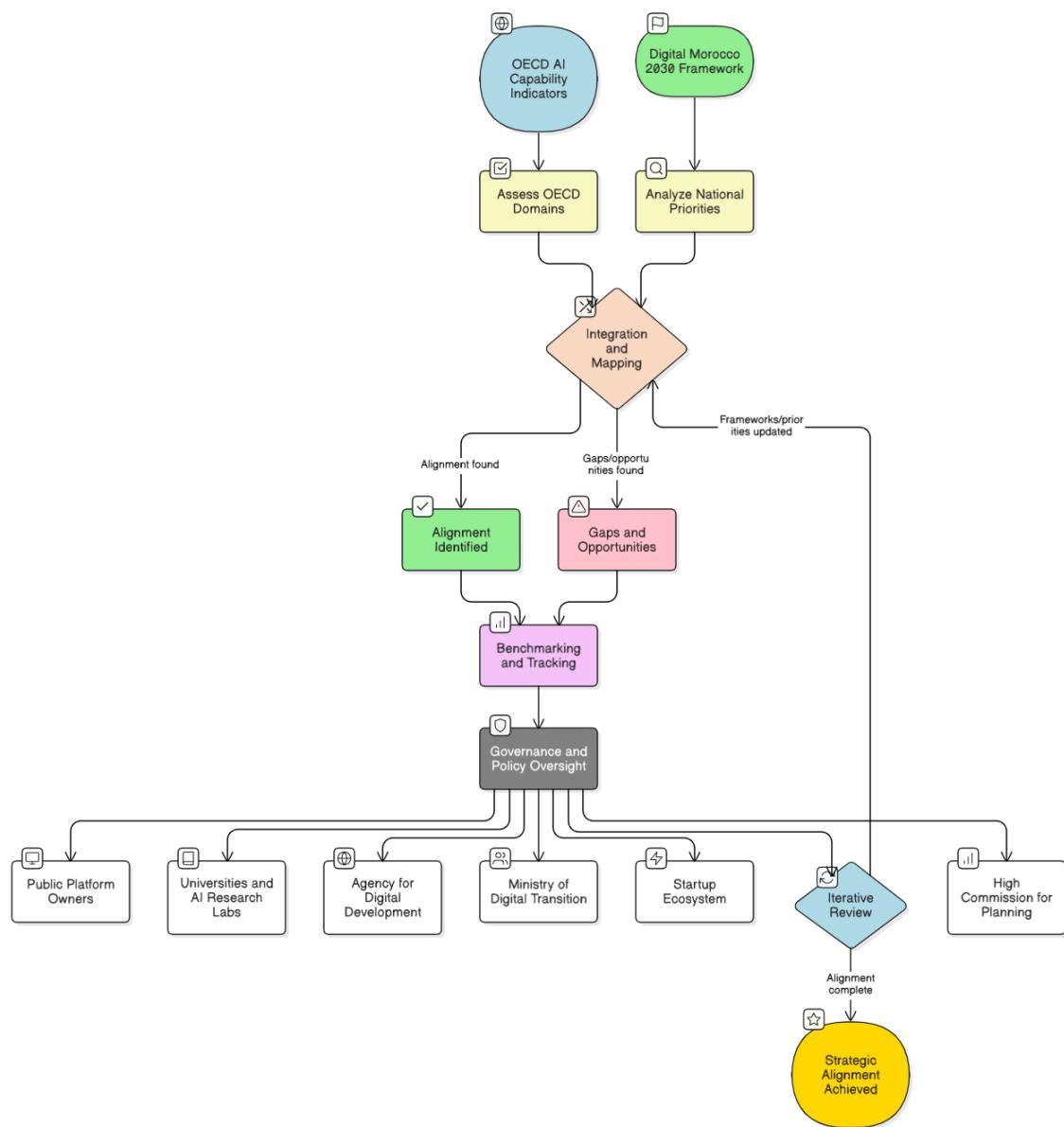


Figure 2: Integration and Mapping Process Between OECD Indicators and Digital Morocco 2030

- Set domain-specific capability thresholds (e.g., NLP maturity in public services, planning depth in logistics platforms),
- Monitor progress across sectors through auditable, cross-comparable metrics,
- Prioritize funding, talent, and international partnerships not by hype, but by cognitive readiness.

Aligning these two frameworks thus transforms Digital Morocco 2030 from a roadmap of outputs into a governance system grounded in measurable, context-aware, and cognitive intelligence.

In effect, this approach repositions Morocco from a passive beneficiary of digital innovation to an autonomous architect of cognitively grounded AI ecosystems.

5 Capability Priorities: Where Morocco Must Act Now

To operationalize the OECD capability framework within the Digital Morocco 2030 agenda, the first step is to identify which cognitive domains are most critical — and currently most underdeveloped — in the national context.

Based on current use cases, strategic documents, and observed limitations in publicly deployed or pilot-stage AI systems, four domains stand out as urgent priorities:

1. **Language Understanding** Despite the centrality of Arabic and Amazigh in public communication, most deployed NLP systems remain anchored in Modern Standard Arabic or French. There is minimal semantic modeling for Moroccan Arabic (Darija), limited speech recognition tuned to local accents, and near-total absence of multilingual reasoning. This undermines inclusion and fairness in public-facing AI tools such as chatbots, legal assistance, or educational platforms. Recent efforts to create a Moroccan dialect corpus for sentiment analysis confirm both the feasibility and the current sparsity of such resources.
2. **Planning and Problem-Solving** AI is increasingly used to support administrative automation (e.g., document routing, resource allocation, scheduling). Yet many of these systems operate using hard-coded rules or rigid logic rather than adaptive planning or contextual problem-solving. In domains like healthcare triage, public budgeting, or logistics, this can introduce systemic inefficiencies or inequities.
3. **Perception and Vision** Computer vision systems are expanding in Moroccan agriculture, transport, and urban monitoring. However, most are based on imported models, often trained on datasets with no local relevance (e.g., plant species, vehicle types, surveillance scenes). This limits their reliability, and exposes them to both performance failures and ethical blind spots.
4. **Metacognition and Explainability** As AI systems enter decision-critical contexts — such as eligibility scoring, fraud detection, or predictive policing — their ability to self-assess uncertainty, explain outputs, or provide traceable logic becomes vital. Yet Morocco lacks national standards or benchmarks for **explainable AI (XAI)**, even as deployment accelerates in sensitive domains.

These are not abstract technical challenges. They represent the very cognitive foundation of trustworthy, inclusive, and context-aware AI — and should therefore be prioritized in R&D funding, regulatory standards, university training programs, and international collaboration frameworks.

The OECD indicators serve as a dual instrument: they define a rigorous evaluative vocabulary for identifying current shortcomings and outline a structured roadmap for Morocco's advancement in cognitively grounded digital governance.

6 Implementation Plan: Making Capability Governance Real

Operationalizing the OECD AI Capability Indicators within Morocco's national strategy requires more than technical alignment — it demands institutional will, cross-sector coordination, and policy integration.

To move from insight to action, the following four-step roadmap is proposed:

1. **Establish a National AI Capability Task Force** Create a multi-stakeholder task force under the joint leadership of the Ministry of Digital Transition and the Agency for Digital Development (ADD), with representation from academia, civil society, regulatory bodies, and the private sector. Its mission: adapt the OECD capability taxonomy to Morocco's linguistic, institutional, and strategic context, and define capability thresholds by sector.
2. **Integrate Capability Auditing into Public Procurement and AI Sandboxes** Mandate a lightweight but standardized “capability impact statement” for all AI systems deployed in publicly funded projects or tested in regulatory sandboxes. This instrument should evaluate which OECD cognitive dimensions are involved, at what maturity level, and with what safeguards for bias, opacity, and failure modes.
3. **Benchmark Flagship Platforms and National Use Cases** Select a sample of high-impact systems — such as Rokhas.ma, Chikaya.ma, the Health Data Platform, or agriculture monitoring tools — and conduct structured capability audits. These initial benchmarks will form the foundation of a public knowledge base and provide feedback loops for system redesign, procurement decisions, and R&D policy.
4. **Align Talent Development and Research Funding with Capability Gaps** Map the nine OECD domains to university curricula, bootcamp programs, and national R&D grants. For example: launch challenge grants for Darija NLP (Language), fund explainability modules in justice and finance AI (Metacognition), and incentivize perception systems trained on Moroccan datasets (Vision). This ensures that national investment addresses actual gaps — not generic innovation metrics.

Each of these steps is designed to be implementable within 12–24 months, making use of existing institutions while anchoring digital progress in measurable, cognitively grounded governance principles.

Embedding capability metrics at the core of Morocco's digital transformation would do more than accelerate innovation — it would de-risk it, localize it, and enable Morocco to govern it on its own terms.

7 Conclusion & Series Continuation: Toward a Sovereign Cognitive Architecture

This inaugural brief has argued that Morocco's digital transformation, as outlined in the Digital Morocco 2030 strategy, must be matched by a no less ambitious transformation in how AI maturity is defined, measured, and governed. The OECD AI Capability Indicators offer more than a diagnostic framework; it is a policy lever — one that can anchor Morocco's digital future in cognitive transparency, functional alignment, and long-term strategic autonomy.

Rather than viewing capability evaluation as a late-stage refinement, this brief positions it as a prerequisite to meaningful AI deployment — especially in domains where trust, fairness, and local relevance are non-negotiable.

Looking ahead, this article is only the first in a broader audit.

The next entries in this series will extend the capability lens to the operational domains of national digital sovereignty:

- **AI Sovereignty:** How can Morocco design, govern, and trust its own models and inference pipelines?

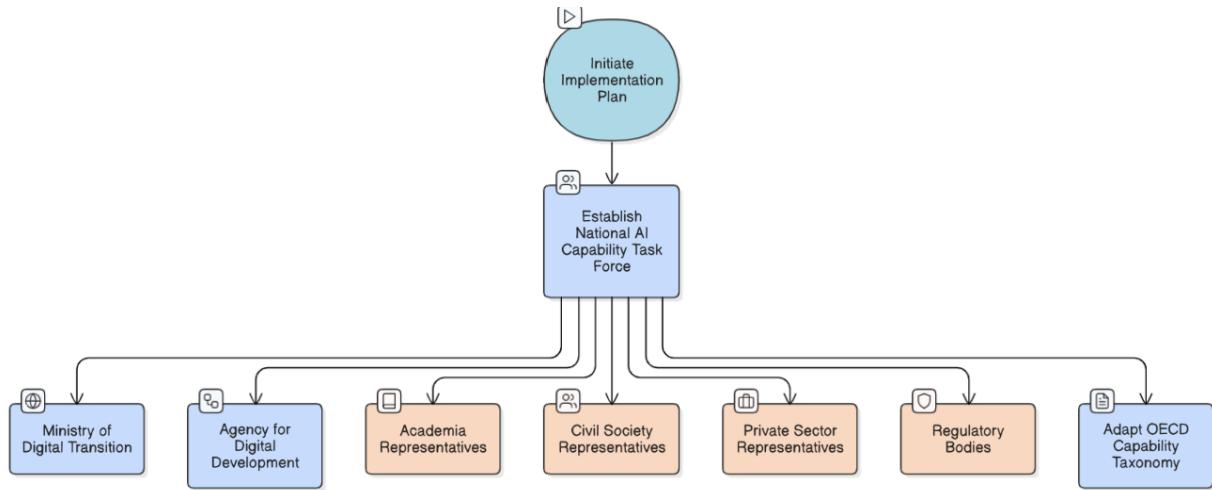


Figure 3: Stakeholder Structure for the National AI Capability Task Force

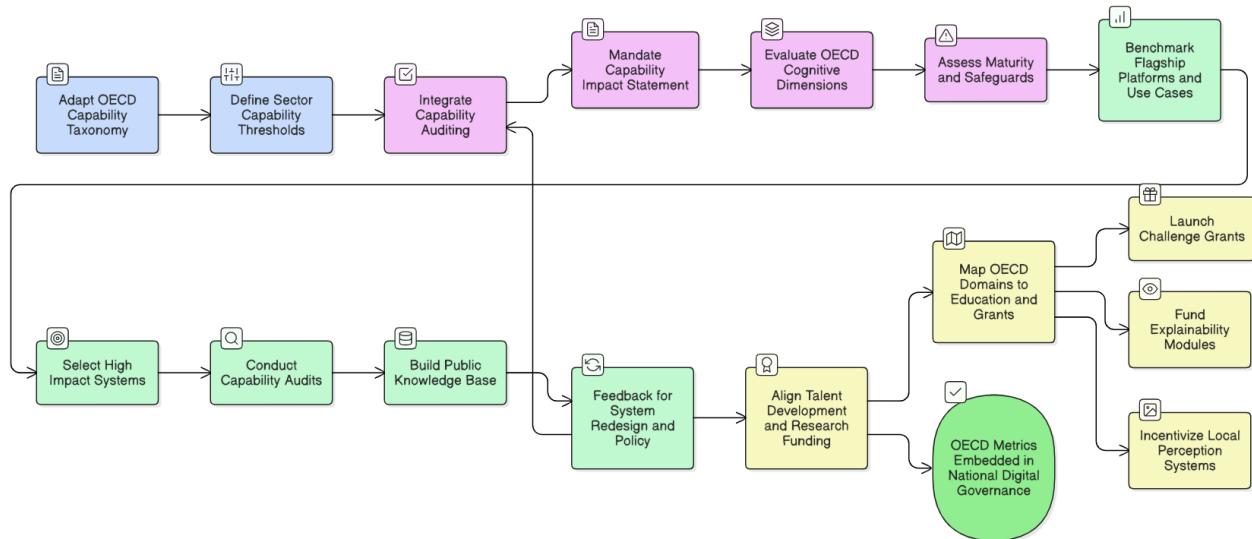


Figure 4: Operationalization of the OECD Capability Framework in Morocco

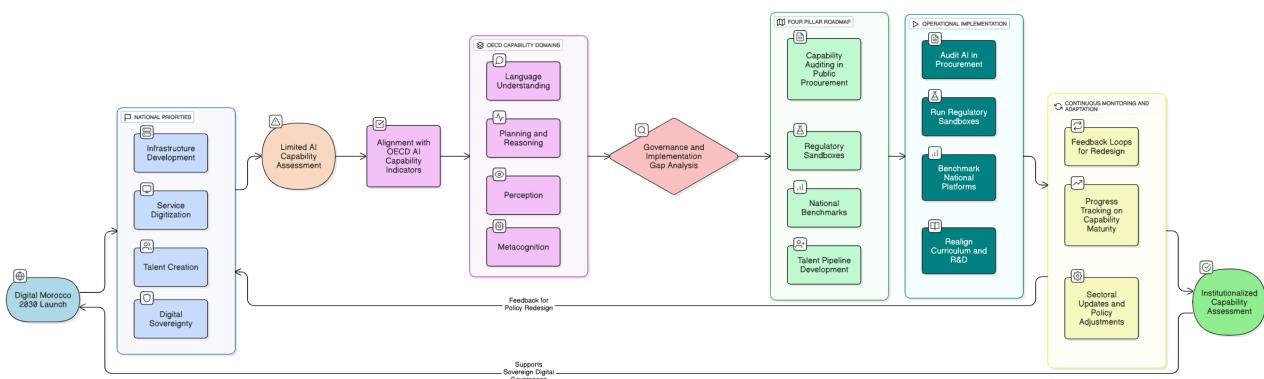


Figure 5: Integrated Roadmap: Embedding OECD AI Capability Metrics into Digital Morocco 2030

- **Data Sovereignty:** Who owns, controls, and regulates national datasets — and for whose benefit?
- **Cloud Sovereignty:** What is the role of sovereign compute and hybrid infrastructure in ensuring AI resilience?
- **Security & Explainability:** Can Morocco's AI systems withstand adversarial risk while remaining intelligible to regulators and citizens?
- **Public Sector Use Cases:** How should capability thresholds be embedded in justice, health, education, and administrative platforms?

Each entry will use the OECD indicators as a reference point, but also extend beyond them — integrating local data realities, institutional constraints, and geopolitical stakes.

This is not merely a series about governance. It is a contribution to the architecture of digital sovereignty — measured by infrastructure, access, and the cognitive depth and integrity of the systems Morocco chooses to build.