Implementation of the AU AI Strategy: What Role Can R/NRENs Play

Prof. Madara Ogot

Key Messages

The African Union (AU) Artificial Intelligence (AI) Strategy (2024) aims to catalyse inclusive AI-enabled growth and safeguard sovereignty, individual and organisational rights (African Union, 2024). National Research and Education Networks (NRENs) and Regional Research and Education Networks (RRENs) in Africa have the potential to transform fragmented AI initiatives, especially those anchored around the research and education (R&E) sectors, into coherent, layered architectures that support responsible, inclusive, and sustainable AI development and use across the continent. R/NRENs today have the opportunity to reinvent themselves by becoming key enablers of the development and use of AI in Africa, especially in the R&E sectors, in support of national, regional and the AU's AI strategies. Potential areas of engagement aligned to the AU AI Strategy are presented.

The African Union AI Strategy

The African Union (AU) Artificial Intelligence (AI) Strategy, adopted in 2024, aims to harness AI for Africa's development, prosperity, and the achievement of the AU's Agenda 2063 and the Sustainable Development Goals (SDGs) by improving livelihoods, creating jobs, and fostering innovation. It highlights Africa's youthful, tech-savvy population as a strength for inclusive growth, while acknowledging risks such as bias, data privacy breaches, job losses, human-rights threats, disinformation, and security challenges.

The Strategy envisions Africa as an active global AI player, maximising benefits and managing risks through sound governance, infrastructure, and capacity building. It adopts a people-centred, Africa-centric approach grounded in ethics, inclusion, human rights, dignity, diversity, and peace. Structured around five focus areas and fifteen actions, it assigns key roles to diverse institutions, including the AU Commission to develop a five-year plan, convene an annual AI safety conference, mobilise resources, and coordinate research and capacity building; Member States will to craft national AI strategies and invest in skills; the private sector to support local AI solutions; and development partners to align funding with Africa's priorities.

For accountability, the AU commits to creating an African AI Readiness Index, a continental Monitoring and Evaluation (M&E) dashboard, and conduct a mid-term review in 2027. By integrating governance, investment, infrastructure, and ethics, the Strategy positions AI as a catalyst for Africa's sustainable development.

Hierarchy of Engagement with AI Model

The HE-AI model is an eight-level maturity framework viewing AI engagement as a developmental journey shaped by human motivation (curiosity, safety, mastery, and contribution) alongside organisational and policy capacities such as infrastructure, governance, ethics, and stewardship. Level 0 marks the beginning of AI engagement; Level 1 introduces intentional use for simple tasks. At Level 2, organisations embed third-party tools into operations, provide training, and establish oversight.

Level 3 involves building and mastering in-house AI infrastructure and secure data pipelines, while Level 4 focuses on developing tailored AI solutions. Level 5 represents the "ethics gate", where responsibly governed innovations are deployed in mission-critical areas such as health, finance, and government. Level 6 scales AI across systems under robust governance, and Level 7 signifies the highest maturity where organisations shape global standards and promote ethically guided, interoperable AI adoption. The HE-AI model serves as both a diagnostic ("where are we today?") and a strategic ("what happens next?") tool (Ogot, 2025a).

Regional and National Research and Education Networks

A National Research and Education Network (NREN) is a specialised internet backbone and service provider established to serve a country's universities, colleges, research institutes, and other education-related organisations. Its purpose is to deliver high-speed, reliable connectivity and advanced digital services that meet the demanding needs of academic and scientific work, such as transferring large datasets, enabling remote collaboration, and supporting specialised computing. Unlike commercial internet providers, an NREN focuses exclusively on the research and education community, often offering unique services such as identity management systems, dedicated bandwidth, and advanced routing designed for research applications.

A Regional Research and Education Network (RREN) operates at a broader scale, linking together multiple NRENs across countries within a given region. It functions as a high-capacity backbone that allows universities, researchers, and students from different nations to collaborate seamlessly, share data, and access shared digital resources. Regional networks provide international connectivity,

coordination, and shared services, strengthening cross-border cooperation in education and science. A Regional REN, therefore, connects national networks, creating a continental web of collaboration and knowledge exchange.

Together, NRENs and RRENs enable researchers and educators to access powerful, dedicated infrastructure optimised for scientific and educational uses that commercial networks cannot always support. They underpin cross-border collaboration, data sharing, and access to global research platforms, making them vital to modern research and innovation ecosystems.

The HE-AI Framework: Turning Strategy into Action

Policymakers across Africa are faced wit the task of turning the AU's AI Strategy into practical action. Aligning its fifteen action lines with the HE-AI maturity framework provides a clear roadmap that shows what to prioritise, who should act, and how to track progress (see Table 1). The HE-AI model introduces sequencing that reduces implementation risks: early levels (0–2) focus on literacy, awareness, and pilots before moving to infrastructure and innovation (3–4). Progress beyond the Level-5 "ethics gate", which requires bias audits, transparency, and independent oversight, ensures only responsible systems scale to Levels 6–7, where AI is widely deployed and governed.

The Alignment of the AU AI Strategy with the HE-AI framework also clarifies accountability among the AU Commission, Member States, the private sector, and partners. Linking actions to maturity levels, reduces duplication and results in better distribution of responsibilities. The alignment also operationalises the Strategy's monitoring tools, the African AI Readiness Index, M&E dashboard, and 2027 review, by defining measurable indicators at each level to enable comparison, evidence-based policymaking, and accountability.

Further, the HE-AI framework helps policymakers and funders prioritise investments for maximum impact ensuring readiness indicators are met before scaling advanced projects. The alignment is flexible, supporting multiple pathways so that countries can advance different levels simultaneously, for example building infrastructure while running guided pilots or engaging in regional cooperation while strengthening ethics frameworks. This scaffolding acts as a compass, transforming the Strategy from a static checklist into a dynamic architecture for adaptive, accountable, and context-sensitive AI development across Africa (Ogot, 2025b).

The Role of NRENs in Realising the AU AI Strategy

Table 1 details the potential role of NRENs in supporting the implementation of the AU AI Strategy, aligned with the eight levels of the HE-AI framework. At the foundational levels (0–1), NRENs are tasked with raising awareness and building literacy by hosting public webinars, MOOCs, and media and information literacy (MIL) content, and by providing access to AI ethics and digital literacy resources. They could also support pilot projects in ministries, universities, and TVET institutions through sandbox environments and baseline datasets to encourage safe experimentation.

At Level 2, NRENs have the potential to operate national regulatory sandboxes, offer secure cloud and data-hosting for pilot AI projects, and collaborate with data-protection authorities to ensure responsible testing. Level 3 provides NRENs with the opportunity to manage national AI Commons, including high-performance computing (HPC) and Graphic Processor Unit (GPU) clusters, data repositories, and federated-identity systems, and maintain open-data registries and metadata portals.

Table 1: AU AI Strategy Actions Aligned to the HE-AI Framework Identifying Potential Roles for NRENs and RRENs

HE-AI Level	Relevant AU Strategy Action Lines	Potential Role of NRENs	Potential Role of RRENS
L0 – Initial Exposure & Curiosity	7. Strengthen information integrity and promote Media and Information Literacy (MIL). 10. Promote AI skills and talent in schools, workplaces, and across populations (introductory literacy).	• Use NREN platforms to host public webinars, MOOCs, and MIL content on AI ethics, misinformation, and digital literacy • Offer free access to AI-literacy materials	• Coordinate regional MIL campaigns and curate AI-awareness content. • Aggregate usage analytics (e.g., reach, demographics) to inform AU Readiness Index indicators. • Partner with RECs and AU Commission to ensure alignment with Agenda 2063 Goal 1 (education and skills revolution)
L1 – Awareness & Orientation	2. Promote adoption of AI in the public sector (orientation pilots). 3. Accelerate adoption in priority sectors (education, agriculture, health, climate, etc.) at a pilot level. 7. MIL initiatives (extended). 10. AI literacy at K-12 and vocational levels.	• Support sandbox environments for ministry, university and TVET pilots, ensuring safe experimentation with AI tools • Host baseline datasets (education, health, agriculture) developed by universities and ministries to demonstrate responsible data handling	• Establish AI orientation resource hubs within regional backbone networks (UbuntuNet Alliance, WACREN, ASREN) • Facilitate cross-country peer learning through regional webinars and thematic clusters (e.g., education, health)
L2 – Guided Application (Pilots)	2. Public sector adoption (pilot projects). 3. Priority sector pilots. 4. Promote private-sector adoption, including SMEs (early sandboxed use cases). 5. Create enabling environment for start-ups (pilot innovation grants).	• Operate national regulatory sandboxes for AI pilots, in collaboration with data-protection authorities • Provide secure cloud and data-hosting facilities for pilot projects, including compute credits and storage	• Offer regional sandbox federation to allow cross-border pilot comparison and replication • Supply regional compliance toolkits (audit templates, impact-assessment guides)
L3 – Autonomous Utilisation	1. Establish AI governance systems (data protection, legal frameworks). 4. SME adoption (when supported by national	• Manage national AI Commons comprising HPC clusters, secure data repositories, and federated-identity systems	• Coordinate regional AI Commons, interconnecting national data and compute via high-capacity

HE-AI Level	Relevant AU Strategy Action Lines	Potential Role of NRENs	Potential Role of RRENS
	data/compute). 6. Ensure availability of high-quality datasets and build compute infrastructure (HPC, cloud, data centres).	• Host national data registries and metadata portals with open-data standards	backbones
L4 – Creation & Innovation	5. Start-up ecosystem development (innovation hubs, incubation). 11. Foster AI research and innovation through academia-private sector-government partnerships. 12. Advance challenge-driven research in priority areas.	• Run AI hackathons • Offer cloud credits and mentorship to student and faculty start-ups building African-language models • Support collaborative AI research projects linking universities, ministries, and local industry	• Establish regional challenge-driven research platforms on shared HPC and dataset infrastructure • Curate and publish regional research outputs and policy briefs feeding AU AI Strategy updates
L5 – Responsible Deployment & Operational Impact (Ethics Gate)	1. AI governance systems (operationalisation of laws). 8. Ethical principles respecting human rights, dignity, and inclusion. 9. Technical standards for safety and security.	• Host accredited AI audit and red-team laboratories in partnership with national universities • Provide testing environments for fairness, bias, and human-rights compliance before national rollout	• Operate regional audit exchanges, offering Level-5 "compliance-as-a-service" for Member States
L6 – Human-AI Co-Evolution	2. Public sector adoption (scaled services beyond pilots). 3. Priority sector adoption at production scale. 4. SME adoption at national scale. 6. Compute and datasets (scaled to continental services). 11. Research partnerships (scaling outputs).	• Support training-of-trainers for ministries to operate scaled AI applications	• Enable data-sovereignty compliance via regional federated cloud systems • Collaborate with AU MEL platform to produce annual "State of AI in Africa" observability reports
L7 – Societal & Global Integration	13. Promote regional cooperation and stakeholder coordination. 14. Strengthen African participation in global AI governance. 15. Foster partnerships with other regions and global actors.	• Represent Member States in technical standards bodies (ISO, IEEE, OECD.AI) through academic consortia • Publish open datasets, benchmarks, and models under African open-licence frameworks • Coordinate with ministries to feed evidence from national AI Commons into AU policy positions	• Drive Africa's unified voice in global AI ethics and governance dialogues (e.g., UN Advisory Body on AI) • Support AU Commission in establishing pan-African AI Standards Forum and joint ventures with EU, ASEAN, and OECD

NRENs could promote AI innovation and ethics at Levels 4–5, by running hackathons, supporting start-ups with mentorship and cloud credits, and hosting accredited AI audit and red-team labs to test systems for fairness, bias, and compliance with human-rights standards. Finally, NRENs could facilitate scaled national deployment and international cooperation at Levels 6–7, training ministries to manage AI applications, ensuring data-sovereignty compliance, and contributing to Africa's representation in global AI governance.

The Role of RRENs in Realising the AU AI Strategy

With reference to Table 1, the potential role of Regional Research and Education Networks (RRENs) is presented as progressively expanding from coordination and shared learning to regional governance and global engagement.

At the introductory levels (0–1), RRENs could coordinate regional MIL campaigns, curate AI-awareness materials, and aggregate usage analytics to support AU indicators. They could also facilitate cross-country learning through regional webinars and thematic clusters. At Level 2, RRENs have the potential to offer federated sandboxes that allow AI pilots to be tested and compared across countries, and to provide shared compliance toolkits for audit and impact assessment.

From Level 3 onward, RRENs could establish regional AI Commons that interconnect national data and computing infrastructures through high-capacity backbones. They could also host shared research and innovation platforms, enabling multi-country collaboration in challenge-driven AI research (Level 4). At Level 5, RRENs have the potential to provide regional "compliance-as-a-service", operating audit exchanges that support Member States in ensuring ethical, safe, and rights-based AI deployment.

At Level 6, they could lead in data sovereignty and observability, running federated cloud systems and collaborating with the AU's monitoring and evaluation platform to produce annual reports on the "State of AI in Africa." Finally, at Level 7, RRENs should represent African networks in global standards and governance forums, coordinate open datasets and benchmarks, and support the AU in building a continental AI Standards Forum and partnerships with global regions such as the EU, ASEAN, and OECD.

Conclusion

The HE-AI model provides a framework that combines inclusion and ethics with infrastructure, innovation and scale for the implementation of the AU AI Strategy. NRENs and RRENs form the backbone of Africa's digital research and education ecosystem, and have great potential in supporting the translation of the AU's AI Strategy into practical action. NRENs should position themselves as a national foundation that can enable literacy, pilots, infrastructure, innovation, and ethical

deployment. RRENs can regionally connect these efforts to ensure interoperability, shared governance, and the presence of Africa's collective voice in the development of global AI standards.

The combined roles of NRENs and RRENs have the potential to transform fragmented AI initiatives, especially those anchored around the research and education sectors, into coherent, layered architectures that supports responsible, inclusive, and sustainable AI development and use across Africa.

References

African Union. (2024). Continental Artificial Intelligence Strategy. Addis Ababa: African Union Commission. https://au.int/en/documents/20240809/continental-artificial-intelligence-strategy

Ogot, M. (2025a). A Maslow-Inspired Hierarchy of Engagement with AI Model. https://doi.org/10.48550/arXiv.2509.07032. *Under journal review.*

Ogot, M. (2025b). From Vision to Impact: How Africa Can Deliver on its AI Strategy. Policy Brief. https://doi.org/10.60763/africarxiv/10147

Author

Prof Madara Ogot
UbuntuNet Alliance for Research and Education Networking
madara.ogot@ubuntunet.net