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DESA AI INTEGRATION PROGRAMME

Applied Artificial Intelligence for Inclusive Governance, Education, and Market Activation. A Mandatory Sub-Programme under all DESA Implementations

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EUSL AB

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DESA AI Integration Programme

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Executive Summary

The DESA AI Integration Programmeme (DAIP) constitutes a mandatory sub-programmeme embedded within all Digitalisation, Education, and Social Agency (DESA) deployments, including but not limited to SUDESA, NADESA, and CODESA. DAIP is structured as a vocational training and applied capacity-building programmeme, designed to equip participants with practical AI competencies for direct integration into institutional workflows and market operations. DAIP is conceived as a structural instrument for operationalizing artificial intelligence (AI) across governance, education, and private sector ecosystems, thereby advancing institutional efficiency, market activation, and inclusive socio-economic development.

This programme is designed to complement existing continental initiatives, notably the African Development Bank's (AfDB) commitment to AI-driven capacity building under Agenda 2063: The Africa We Want, and to extend such efforts beyond policy-level training into tangible, scalable implementation. DAIP aligns with the Second Ten-Year Implementation Plan (2024–2033) of Agenda 2063, the AfDB's High 5 priorities, and the COMESA Digitalisation Strategy, while simultaneously embedding the principles of Agenda for Social Equity 2074 (Agenda 2074).

The Executive mandate of DAIP is threefold:

1. **Institutional Capacity Building**: Equip government ministries, agencies, and public institutions with AI-enabled systems for monitoring, evaluation, reporting, and service delivery, thereby strengthening governance and transparency.

2. **Inclusive Education and Workforce Development**: Establish structured AI curricula within universities and technical vocational education and training (TVET) institutions, ensuring that students and professionals acquire both foundational literacy and applied competencies in AI technologies. This includes the integration of accessibility features to support individuals with dyslexia, dyscalculia, and physical disabilities, thereby promoting universal design and equitable participation.

3. **Private Sector Enablement and Market Activation**: Facilitate the adoption of AI tools by small and medium-sized enterprises (SMEs) and strategic industries, particularly in agriculture, health, commerce, and logistics, to enhance productivity, optimize resource allocation, and stimulate innovation-driven growth.

DAIP is an implementation platform structured around three pillars: Foundational AI Literacy, Applied AI for Work and Governance, and Implementation Labs. These pillars collectively ensure that AI is deployed as a practical enabler of institutional transformation, economic diversification, and social inclusion.

The programme is governed under the Institutional Governance Manual of DESA, financed through the DESA Development Fund with second-lien participation from AfDB and co-financing from private sector partners, and monitored through a unified framework aligned with continental and regional development agendas. Its sustainability is secured through integration into civil-service training

standards, university curricula, and local trainer pipelines, thereby institutionalizing AI capacity as a permanent feature of national development systems.

By embedding DAIP as a mandatory component of all DESA implementations, Creativa Center and its affiliated entities establish a new benchmark for inclusive digital transformation, positioning partner countries and regions at the forefront of Africa's AI-driven development trajectory.

Strategic Rationale

The rationale for establishing DAIP as a mandatory component of all DESA implementations is grounded in the imperative to transition from policy-level capacity building to operational digital transformation. While continental initiatives—such as the African Development Bank's (AfDB) support for AI training under the Joint Secretariat Support Office (JSSO) and its partnership with Intel to train millions of Africans—represent significant progress in institutional awareness, they remain primarily focused on monitoring, evaluation, and reporting (MER) functions within the framework of Agenda 2063: The Africa We Want. These efforts, while commendable, do not sufficiently address the structural integration of AI into governance systems, education delivery, and private sector operations.

DAIP is conceived to bridge this gap by embedding applied AI capabilities into the core functions of government ministries, public institutions, and market actors. This approach ensures that AI is not merely a conceptual tool for compliance reporting but a functional enabler of productivity, transparency, and service delivery. The programme aligns with the Second Ten-Year Implementation Plan (2024–2033) of Agenda 2063, which emphasizes innovation, inclusive growth, and institutional efficiency, and complements AfDB's High 5 priorities, particularly *Industrialize Africa*, *Integrate Africa*, and *Improve the Quality of Life for the People of Africa*.

The strategic necessity of DAIP is further underscored by global evidence demonstrating that AI, when integrated responsibly, augments human work rather than displacing it. Reports by the World Economic Forum and UNCTAD confirm that generative AI and machine learning technologies can increase productivity by 20–40 percent in knowledge-based roles, provided that ethical safeguards and inclusive design principles are observed. This paradigm shift—from automation to augmentation—positions AI as a cornerstone of institutional modernization and economic diversification.

Moreover, DAIP introduces a critical dimension of social equity and accessibility. By incorporating AI-driven assistive technologies for individuals with dyslexia, dyscalculia, and physical disabilities, the programme ensures that digital transformation is inclusive and compliant with emerging global standards on universal design. This feature not only fulfills the normative obligations of Agenda for Social Equity 2074 (Agenda 2074) but also enhances workforce participation and institutional legitimacy.

From a regional perspective, DAIP strengthens COMESA's digitalisation strategy by creating interoperable AI systems that facilitate cross-border trade analytics, customs automation, and regional data harmonization. By situating DAIP within DESA's governance framework, Creativa Center establishes a scalable model that can be replicated across multiple jurisdictions, thereby positioning partner countries as leaders in Africa's AI-driven development trajectory.

In sum, the strategic rationale for DAIP rests on three pillars:

1. **Operationalization of AI beyond policy rhetoric**, ensuring measurable impact on governance, education, and market systems.

2. **Alignment with continental and regional development agendas**, reinforcing Africa's commitment to innovation and integration.
3. **Institutionalization of inclusive and ethical AI practices**, safeguarding equity while accelerating socio-economic transformation.

Objectives & Scope

DAIP is structured as an applied capacity-building programme with a vocational orientation, designed to equip participants with practical AI competencies that can be directly implemented within institutional workflows and sector-specific operations. Its tiered curriculum and mandatory Implementation Labs ensure that learning outcomes translate into measurable, real-world impact across governance, education, and private enterprise.

DAIP is established as a mandatory sub-programme within all DESA deployments, with the express purpose of embedding artificial intelligence into governance, education, and private sector ecosystems in a manner that is inclusive, ethical, and operationally effective. The objectives and scope of DAIP are defined to ensure that its implementation delivers measurable institutional, social, and economic outcomes consistent with continental, regional, and global development agendas.

Objectives

a) Institutional Capacity Building

Equip government ministries, agencies, and public institutions with AI-enabled systems for monitoring, evaluation, reporting (MER), and service delivery. This includes predictive analytics for resource allocation, automated compliance dashboards, and AI-driven procurement oversight, thereby strengthening governance and transparency.

b) Inclusive Education and Workforce Development

Integrate structured AI curricula within universities and technical vocational education and training (TVET) institutions, ensuring that students and professionals acquire foundational literacy and applied competencies in AI technologies. The programme shall incorporate accessibility features and assistive technologies to support individuals with dyslexia, dyscalculia (dyskalkyli), and physical disabilities, thereby promoting universal design and equitable participation.

c) Private Sector Enablement and Market Activation

Facilitate the adoption of AI tools by small and medium-sized enterprises (SMEs) and strategic industries, particularly in agriculture, health, commerce, and logistics. This includes AI-driven solutions for crop monitoring, supply chain optimization, predictive maintenance, and customer engagement, enabling productivity gains and innovation-driven growth.

d) Applied Integration through Implementation Labs

Establish DAIP Implementation Labs within universities and government innovation units to serve as practical environments for AI deployment. These labs will support real-world projects, including adaptive learning platforms for education, AI-assisted triage systems for health, and trade facilitation analytics for regional integration.

e) Ethical Governance and Risk Mitigation

Institutionalize ethical AI practices through policy frameworks, bias audits, and compliance mechanisms aligned with national laws, COMESA protocols, and AfDB safeguards. This includes data governance standards for privacy, security, and transparency.

Scope

The scope of DAIP encompasses the following dimensions:

Geographic Coverage

DAIP shall be implemented across all DESA units, commencing with SUDESA in South Sudan as the pilot, followed by NADESA in Namibia and CODESA for COMESA-wide integration. Subsequent phases will extend to EAC and SADC regions, ensuring scalability and interoperability.

Institutional Reach

The programme shall engage prime ministries, ministries of finance and planning, sector ministries (agriculture, health, education), public universities, TVET institutions, and private sector actors, including SMEs and agribusinesses.

Sectoral Domains

DAIP shall operationalize AI within governance (MER, e-procurement, digital ID analytics), agriculture (yield prediction, input optimization), education (adaptive learning, accessibility tools), health (telemedicine, diagnostic support), and commerce/logistics (inventory forecasting, trade analytics).

Inclusion Framework

DAIP shall integrate accessibility and disability considerations as a normative requirement. AI-driven assistive technologies will address dyslexia through text-to-speech and adaptive reading tools, dyscalculia through numeric visualization and guided calculation interfaces, and physical disabilities through voice control, predictive typing, and smart mobility aids.

Delivery Model

The programme shall adopt a blended learning approach combining online modules, in-person workshops, and lab-based practicums. Certification shall be issued by DESA and recognized by regional bodies, ensuring institutional legitimacy and portability of credentials.

Foundational Competencies

Participants shall demonstrate proficiency in the following areas:

a) Conceptual Understanding of Artificial Intelligence

- Definition and scope of AI as a technological discipline.
- Historical evolution of AI, including key milestones from rule-based systems to machine learning and generative AI.
- Overview of contemporary AI paradigms and their relevance to institutional modernization.

b) Large Language Models (LLMs) and Comparative Analysis

- Explanation of what constitutes a Large Language Model and its operational principles.
- Comparative analysis between LLMs and conventional search engines:
    - Search engines as retrieval systems based on indexed content and keyword matching.
    - LLMs as generative systems capable of contextual synthesis and conversational reasoning.
- Identification of strengths and limitations of LLMs in governance, education, and commerce.

c) Applied AI Use Cases

- Governance: Predictive analytics for budgeting, fraud detection in procurement, and automated compliance reporting.
- Agriculture: Crop yield forecasting, supply chain optimization, and market price analytics.
- Education: Adaptive learning platforms, AI-driven accessibility tools for dyslexia and dyscalculia.
- Health: Diagnostic support, telemedicine triage, and referral analytics.
- Commerce and Logistics: Inventory forecasting, customer engagement automation, and trade facilitation analytics.

d) Ethical and Risk Awareness

- Recognition of bias and fairness issues in AI systems.
- Understanding of data privacy obligations and security protocols.
- Identification of potential risks associated with AI misuse, including misinformation, discriminatory outcomes, and systemic over-reliance.
- Application of human-in-the-loop principles to maintain accountability and safeguard decision-making integrity.

Core Curriculum Modules

DAIP shall deliver a structured curriculum organized into six mandatory modules. These modules are designed to provide participants with a comprehensive understanding of artificial intelligence, its practical applications, and its ethical implications, while ensuring alignment with institutional and sectoral needs. Completion of all modules is a prerequisite for certification under DAIP.

Module 1: Foundations of Artificial Intelligence

This module introduces participants to the conceptual and historical foundations of AI. It covers:

- The definition, scope, and taxonomy of AI technologies.
- Historical evolution from rule-based systems to machine learning and generative AI.
- Key milestones and breakthroughs shaping contemporary AI paradigms.
- Overview of AI's role in global development and its relevance to Agenda 2063 and Agenda 2074.

Learning Objective:

Participants shall acquire a foundational understanding of AI as a discipline, enabling informed engagement with subsequent applied modules.

Module 2: Large Language Models and Applied AI Tools

This module provides an in-depth examination of Large Language Models (LLMs) and their operational principles, including:

- Architecture and functionality of LLMs.

- Comparative analysis between LLMs and conventional search engines:
    - Search engines as retrieval systems based on indexed content.
    - LLMs as generative systems capable of contextual synthesis and reasoning.
- Practical exercises using AI platforms (e.g., ChatGPT, Google Gemini, open-source models).
- Strengths and limitations of LLMs in governance, education, and commerce.

Learning Objective:
Participants shall develop the ability to differentiate between generative and retrieval-based technologies and apply LLMs responsibly within institutional workflows.

Module 3: AI in Governance and Public Administration
This module focuses on the operational integration of AI into governance systems, including:

- AI-enabled dashboards for monitoring, evaluation, and reporting (MER).
- Predictive analytics for resource allocation and budget planning.
- Fraud detection and compliance automation in procurement processes.
- Case studies on AI-driven governance reforms in emerging economies.

Learning Objective:
Participants shall acquire practical skills to deploy AI solutions that enhance transparency, efficiency, and accountability in public administration.

Module 4: AI for Inclusive Education and Accessibility
This module addresses the application of AI in education and accessibility, including:

- Adaptive learning platforms for personalized instruction.
- AI-driven assistive technologies for dyslexia, dyscalculia, and mobility impairments.
- Universal design principles and compliance with accessibility standards (WCAG).
- Integration of AI into TVET curricula and faculty enablement strategies.

Learning Objective:
Participants shall learn to design and implement inclusive educational solutions that leverage AI to promote equity and universal access.

Module 5: AI for Private Sector and Market Activation
This module explores AI applications in commerce, agriculture, and health, including:

- SME adoption strategies for AI-driven productivity gains.
- AI in agriculture: crop yield forecasting, supply chain optimization, and market analytics.
- AI in health: diagnostic support, telemedicine triage, and referral systems.
- AI in commerce and logistics: inventory forecasting, customer engagement automation, and trade facilitation analytics.

Learning Objective:
Participants shall develop competencies to integrate AI into private sector operations, driving innovation and competitiveness.

Module 6: Ethics, Governance, and Risk Management
This module institutionalizes ethical and governance principles for AI deployment, including:

- Bias detection and fairness frameworks.
- Data governance and compliance with national and regional laws.
- Risk scenarios and mitigation strategies for algorithmic, operational, and financial risks.
- Human-in-the-loop principles and accountability mechanisms.

Learning Objective:
Participants shall acquire the ability to implement AI solutions responsibly, ensuring compliance with ethical standards and risk management protocols.

Practical Integration and Implementation Labs

DAIP shall mandate the establishment of Implementation Labs as the operational mechanism for translating theoretical knowledge into applied practice. These Labs shall function as structured environments within universities, technical vocational education and training (TVET) institutions, and designated government innovation units, enabling participants to engage in supervised, real-world projects that demonstrate the practical utility of artificial intelligence across governance, education, and private sector domains.

Purpose and Legal Mandate
Implementation Labs are instituted under the authority of the Institutional Governance Manual of DESA and shall be recognized as integral components of the DAIP curriculum. Their primary purpose is to:

- Facilitate experiential learning through project-based assignments.
- Validate the operational feasibility of AI solutions within institutional workflows.
- Serve as controlled environments for testing compliance with ethical, data governance, and accessibility standards prior to full-scale deployment.

Scope of Activities
Each Implementation Lab shall undertake the following mandatory activities:

a) Governance Integration Projects
- Development and deployment of AI-enabled dashboards for monitoring, evaluation, and reporting (MER) aligned with Agenda 2063 indicators.
- Design of predictive analytics models for resource allocation and budget optimization.
- Implementation of fraud detection algorithms within e-procurement systems.

b) Education and Accessibility Projects
- Creation of adaptive learning modules tailored to diverse learner profiles.

- Integration of AI-driven assistive technologies for dyslexia, dyscalculia, and mobility impairments into public portals and campus systems.
- Testing and certification of compliance with universal design principles and WCAG standards.

c) Private Sector and Market Activation Projects

- SME-focused AI adoption pilots, including inventory forecasting, customer engagement automation, and demand prediction.
- Agricultural analytics projects for crop yield forecasting and supply chain optimization.
- Health sector pilots involving AI-assisted triage systems and referral analytics.

Operational Structure

Implementation Labs shall operate under a formal charter approved by the national DESA steering committee and accredited by the DESA Central Unit. Each Lab shall maintain:

- **Technical Oversight**: A designated AI integration specialist responsible for ensuring compliance with DAIP standards.
- **Academic Supervision**: Faculty mentors for university-based Labs to guide research and applied learning.
- **Industry Partnership**: Collaboration with private sector entities to provide real-world datasets and operational contexts.

Compliance and Reporting

All Lab activities shall be documented and reported through the unified DESA Monitoring and Evaluation (M&E) system. Deliverables shall include:

- Project design briefs and implementation plans.
- Accessibility audit reports and remediation logs.
- Ethics and bias audit certificates for deployed AI models.
- Performance metrics demonstrating productivity gains and service delivery improvements.

Certification Linkage

Successful completion of Lab-based projects shall constitute a mandatory requirement for Tier 2 (Applied) and Tier 3 (Advanced) certification under DAIP. Certification shall be contingent upon:

- Demonstrated operational deployment of AI solutions.
- Compliance with ethical, data governance, and accessibility standards.
- Submission of validated performance reports to the DESA Central Unit.

Assessment and Certification

DAIP shall institute a rigorous assessment and certification framework to ensure that all participants demonstrate measurable competencies aligned with programme objectives and compliance standards. Certification shall be recognized as a formal credential under DESA governance and co-endorsed by national authorities and regional bodies, thereby guaranteeing portability and institutional legitimacy.

Assessment Principles
Assessments shall be competency-based and structured to validate both theoretical knowledge and practical application. The following principles shall govern all evaluation processes:

- **Objectivity and Transparency**: Assessment criteria shall be standardized and published in advance.
- **Practical Orientation**: Evaluations shall prioritize applied skills demonstrated through real-world projects and Implementation Lab deliverables.
- **Compliance Verification**: Certification shall be contingent upon adherence to ethical AI standards, data governance protocols, and accessibility obligations.
- **Tiered Progression**: Participants shall advance through certification tiers based on demonstrated mastery of progressively complex competencies.

3.6.2 Certification Tiers
a) Tier 1 – Foundational AI Literacy
Awarded upon successful completion of Modules 1 and 2 and passing a written and practical examination covering:

- AI fundamentals and historical evolution.
- Operational principles of Large Language Models (LLMs).
- Comparative analysis of LLMs and conventional search engines.
- Basic ethical and risk considerations.

b) Tier 2 – Applied AI for Work and Governance
Awarded upon completion of Modules 3, 4, and 5 and successful delivery of at least one Implementation Lab project demonstrating:

- Integration of AI-enabled dashboards for governance.
- Deployment of adaptive learning or accessibility tools in education.
- Application of AI solutions in private sector workflows (e.g., agriculture, health, commerce).

c) Tier 3 – Advanced AI Integration and Deployment
Awarded upon completion of Module 6 and submission of a capstone project evidencing:

- Design and deployment of an AI system within a live institutional environment.
- Compliance with ethical, data governance, and accessibility standards.
- Documentation of performance metrics and risk mitigation strategies.

Evaluation Methods
Assessments shall include:

- **Written Examinations**: To validate theoretical understanding of AI concepts, ethics, and governance.
- **Practical Demonstrations**: To confirm operational proficiency in deploying AI tools and solutions.

- **Project Deliverables**: To evidence applied integration within institutional workflows.
- **Compliance Audits**: To verify adherence to DESA standards on ethics, data governance, and accessibility.

Certification Issuance and Accreditation
Certificates shall be issued by the DESA Central Unit and co-endorsed by:

- National authorities (e.g., Ministries of Education and ICT).
- Regional bodies (e.g., COMESA Secretariat).
- Strategic partners (e.g., AfDB for programmes aligned with Agenda 2063).

Accreditation of training institutions shall be contingent upon compliance with DAIP standards and successful completion of periodic audits conducted by the DESA Central Unit.

Public Registry and Verification
All certifications shall be recorded in the DESA Unified Credential Registry, accessible through a secure verification portal. This registry shall serve as the authoritative source for credential validation by employers, academic institutions, and development partners.

DAIP Curriculum Overview Table

Tier	Module	Title	Core Learning Objectives
Tier 1	Module 1	Foundations of AI	Understand AI concepts, historical evolution, and relevance to development agendas.
	Module 2	LLMs and Applied AI Tools	Differentiate LLMs from search engines; learn operational principles; hands-on exercises with AI platforms.
Tier 2	Module 3	AI in Governance	Deploy AI dashboards for MER; predictive analytics for resource allocation; fraud detection in procurement.
	Module 4	AI for Inclusive Education	Implement adaptive learning systems; integrate assistive technologies for dyslexia, dyscalculia, and mobility impairments.
	Module 5	AI for Private Sector	Apply AI in agriculture, health, commerce; SME adoption strategies; productivity optimization.
Tier 3	Module 6	Ethics, Governance, and Risk	Conduct bias audits; enforce data governance; apply human-in-the-loop principles; develop risk mitigation strategies.

Public Sector Integration Requirements

The public sector shall prioritize AI applications that enhance governance efficiency, transparency, and service delivery. Mandatory areas of focus include:

a) Automated Administrative Processes

- AI-enabled dashboards for monitoring, evaluation, and reporting (MER) aligned with Agenda 2063 indicators.
- Predictive analytics for budget planning and resource allocation.
- Fraud detection and compliance automation in procurement systems.

b) Policy and Planning Support

- AI-driven scenario modeling for economic and social policy formulation.
- Data harmonization tools for cross-ministry interoperability.
- Automated reporting systems for national development plans and donor compliance.

c) Citizen Service Enhancement

- AI-powered virtual assistants for public inquiries and service requests.
- Natural language processing for multilingual communication in public portals.
- Accessibility integration for persons with disabilities in all government digital platforms.

d) Risk and Compliance Management

- Bias audits and ethical governance frameworks embedded in all AI deployments.
- Secure data governance protocols for sensitive public records.
- Real-time anomaly detection for financial and operational irregularities.

The public sector shall prioritize the deployment of artificial intelligence solutions that enhance governance efficiency, institutional transparency, and citizen service delivery. These requirements are mandatory for all DAIP implementations within ministries, agencies, and public institutions, and shall be codified under the Institutional Governance Manual of DESA.

Governance and Administrative Automation

Public institutions shall implement AI-enabled systems to streamline administrative processes and strengthen accountability mechanisms. This includes:

- **Monitoring, Evaluation, and Reporting (MER) Dashboards**: AI-driven platforms for real-time tracking of national development indicators, aligned with Agenda 2063 and Agenda 2074 benchmarks.
- **Predictive Analytics for Resource Allocation**: Algorithms to optimize budget planning and expenditure forecasting, reducing inefficiencies and fiscal leakage.
- **Fraud Detection and Compliance Automation**: Machine learning models integrated into e-procurement systems to identify anomalies, flag irregular transactions, and enforce compliance with procurement regulations.

Policy and Planning Support
AI shall be institutionalized as a decision-support tool for policy formulation and strategic planning. Mandatory applications include:

- **Scenario Modeling and Forecasting**: AI-driven simulations to evaluate policy alternatives and predict socio-economic outcomes.
- **Data Harmonization and Interoperability**: Automated tools for consolidating datasets across ministries, enabling integrated planning and reporting.
- **Automated Compliance Reporting**: Systems to generate standardized reports for national development plans and donor frameworks, reducing manual workload and error rates.

Citizen Service Enhancement
AI shall be deployed to improve accessibility, responsiveness, and inclusivity in public service delivery. This includes:

- **Virtual Assistants for Public Portals**: Natural language processing (NLP) systems to handle citizen inquiries, service requests, and multilingual communication.
- **Accessibility Integration**: AI-driven assistive technologies embedded in government platforms to support individuals with dyslexia, dyscalculia, and mobility impairments.
- **Personalized Service Interfaces**: Adaptive systems that tailor information and services to user profiles, improving engagement and satisfaction.

Risk and Compliance Management
Public sector AI deployments shall incorporate robust safeguards to mitigate ethical, operational, and security risks:

- **Bias Audits and Ethical Governance**: Mandatory pre-deployment audits to ensure fairness and prevent discriminatory outcomes.
- **Data Privacy and Security Protocols**: Encryption, role-based access controls, and compliance with national data protection laws and COMESA interoperability standards.
- **Real-Time Anomaly Detection**: AI-enabled monitoring systems to identify irregularities in financial transactions, service delivery, and operational workflows.

Private Sector Integration Requirements

The private sector shall prioritize AI applications that deliver operational efficiency, market competitiveness, and customer engagement. Mandatory areas of focus include:

a) Agriculture and Agribusiness

- AI-driven crop identification and pest detection tools.
- Predictive analytics for yield forecasting and input optimization.
- Supply chain visibility and logistics optimization through AI-enabled platforms.

b) Commerce and Digital Services

- AI-powered recommendation engines for e-commerce platforms.
- Automated inventory forecasting and demand prediction.

- Customer engagement tools leveraging conversational AI and personalization algorithms.

c) Media and Content Delivery

- AI-enabled streaming optimization for educational and entertainment content.
- Automated content tagging and recommendation systems for digital platforms.
- Predictive analytics for audience engagement and market segmentation.

d) Financial and Operational Efficiency

- AI-driven credit scoring and risk assessment for SMEs.
- Fraud detection in payment systems and transaction monitoring.
- Process automation for back-office operations and compliance reporting.

Private Sector Integration Requirements

The private sector shall prioritize artificial intelligence applications that deliver operational efficiency, market competitiveness, and customer engagement. These requirements are mandatory for DAIP implementations targeting small and medium-sized enterprises (SMEs), agribusinesses, and strategic industries, and shall be codified under the Institutional Governance Manual of DESA.

Agriculture and Agribusiness Enablement

AI shall be deployed to optimize agricultural productivity and value-chain performance through:

- **Crop and Pest Identification Tools**
  AI-powered mobile applications capable of identifying plant species, crop diseases, and insect infestations through image recognition, analogous to music identification platforms such as “Shazam.”
- **Predictive Yield Analytics**
  Machine learning models for forecasting crop yields based on soil conditions, weather patterns, and historical data.
- **Supply Chain Optimization**
  AI-driven logistics platforms to enhance visibility, reduce wastage, and improve delivery timelines across agricultural supply chains.

Commerce and Digital Services

Private enterprises shall integrate AI solutions to strengthen market positioning and customer engagement, including:

- **Recommendation Engines**
  Algorithms for personalized product recommendations in e-commerce platforms, improving conversion rates and customer satisfaction.
- **Inventory Forecasting and Demand Prediction**
  Predictive models to optimize stock levels, reduce overstocking, and prevent shortages.
- **Conversational AI for Customer Support**
  Deployment of chatbots and virtual assistants to handle inquiries, process orders, and provide multilingual support.

Media and Content Delivery
AI shall be utilized to enhance digital content distribution and audience engagement through:

- **Streaming Optimization**
  AI-enabled systems for adaptive bitrate streaming and bandwidth management, ensuring seamless content delivery in logw-connectivity environments.
- **Content Tagging and Recommendation**
- Automated classification and recommendation algorithms for educational and entertainment platforms.
- **Audience Analytics**
  Predictive tools for segmenting audiences and tailoring content strategies based on behavioral insights.

Financial and Operational Efficiency
Private sector actors shall adopt AI to improve financial resilience and operational performance through:

- **Credit Scoring and Risk Assessment**
  AI-driven models for evaluating SME creditworthiness and mitigating lending risks.
- **Fraud Detection in Payment Systems**
  Real-time anomaly detection for transaction monitoring and fraud prevention.
- **Process Automation**
  Robotic process automation (RPA) for back-office functions, compliance reporting, and document management.

Public vs Private Sector AI Integration Priorities

Dimension	Public Sector Requirements	Private Sector Requirements	Examples of Tools/Technologies
Primary Objective	Governance efficiency, transparency, and citizen service delivery	Operational efficiency, market competitiveness, and customer engagement	**General AI Platforms**: ChatGPT, Google Gemini – for text generation, decision support
Core Applications	- AI-enabled MER dashboards - Predictive analytics for budgeting - Fraud detection in procurement - Automated compliance reporting	- Crop and pest identification tools - Predictive yield analytics - Inventory forecasting - Recommendation engines	**Public**: Power BI + AI plugins for dashboards; TensorFlow for predictive analytics **Private**: Plantix (crop ID), IBM Watson for supply chain
Service Delivery	- Virtual assistants for public portals - Multilingual NLP for citizen inquiries	- Conversational AI for customer support - Personalized product	**Public**: Azure Cognitive Services for NLP; Voiceflow for citizen chatbots **Private**: Dialogflow for

Dimension	Public Sector Requirements	Private Sector Requirements	Examples of Tools/Technologies
	- Accessibility integration for disabilities	recommendations - Streaming optimization	customer bots; AWS Personalize for recommendations
Policy & Planning	- Scenario modeling for policy formulation - Data harmonization across ministries - Automated donor compliance reporting	- Audience analytics for content strategies - Market segmentation and demand prediction	**Public**: SAS Analytics for policy modeling; OpenRefine for data harmonization **Private**: Google Analytics + AI add-ons; Tableau for predictive segmentation
Risk & Compliance	- Bias audits and ethical governance - Data privacy and security protocols - Real-time anomaly detection in financial workflows	- Fraud detection in payment systems - Credit scoring and risk assessment - Process automation for back-office operations	**Public**: Fairlearn for bias audits; Azure Security Center for compliance **Private**: FICO AI for credit scoring; UiPath for RPA

Core AI Platforms and Interfaces

- **Microsoft Copilot**
  Integrated AI assistant across Microsoft 365 and enterprise environments, enabling contextual reasoning, document drafting, data analysis, and workflow automation. Copilot leverages LLMs to provide conversational support and actionable insights directly within productivity tools.

- **ChatGPT / Google Gemini**
  Large Language Models designed for text generation, summarization, and conversational AI. These platforms excel in natural language understanding and contextual synthesis, making them suitable for drafting reports, answering queries, and generating structured content.

Analytics and Visualization Tools

- **Power BI + AI Plugins**
  A business intelligence platform enhanced with AI capabilities for predictive analytics, anomaly detection, and automated insights. Used for governance dashboards, budget forecasting, and compliance reporting.

- **Fairlearn**
  An open-source toolkit for bias detection and fairness assessment in AI models. Essential for public sector deployments to ensure ethical compliance and prevent discriminatory outcomes.

Sector-Specific and Automation Tools

- **Plantix**
  Mobile application for crop disease and pest identification using image recognition. Enables farmers and agribusinesses to diagnose issues quickly and optimize interventions.

- **Azure Cognitive Services**
  A suite of AI APIs for natural language processing, speech recognition, and computer vision. Supports multilingual citizen services and accessibility features for individuals with disabilities.
- **Dialogflow**
  Conversational AI platform for building chatbots and virtual assistants, widely used in customer service and public portals for automated query handling.
- **UiPath**
  Robotic Process Automation (RPA) tool for automating repetitive back-office tasks, compliance reporting, and document workflows in both public and private sectors.

Governance Framework

The governance architecture of DAIP is designed to ensure institutional legitimacy, operational accountability, and compliance with ethical and regulatory standards. It establishes a multi-tiered structure that integrates oversight, implementation, and certification functions within the broader DESA governance system, while maintaining alignment with national laws, regional protocols, and international best practices.

Institutional Structure

a) Central Oversight

The DESA Central Unit shall serve as the supreme governing authority for DAIP, responsible for policy formulation, standard-setting, and accreditation. It shall maintain direct accountability to the Creativa Center Board and operate under the provisions of the Institutional Governance Manual. The Central Unit shall also coordinate strategic partnerships with continental and regional bodies, including the African Development Bank (AfDB), the African Union Commission (AUC), and the Common Market for Eastern and Southern Africa (COMESA).

b) National Implementation Units

Each DESA country-level entity (e.g., SUDESA, NADESA) shall establish a DAIP Implementation Unit under its national steering committee. This unit shall be responsible for programme execution, localization of curricula, procurement of AI tools, and coordination with ministries, universities, and private sector actors. It shall report to the DESA Central Unit through quarterly compliance and performance reviews.

c) Advisory Board

A DAIP Advisory Board shall be constituted to provide strategic guidance and technical validation. Membership shall include representatives from AfDB, COMESA, national governments, academia, and private sector partners. The Advisory Board shall convene biannually to review progress, approve major policy adjustments, and validate compliance with ethical and accessibility standards.

Learning Outcomes and Competency Framework

DAIP shall establish a structured competency framework to ensure that all participants acquire both theoretical knowledge and practical skills necessary for the ethical and effective application of artificial intelligence within governance, education, and private sector domains. These learning outcomes are mandatory and shall be codified in the DAIP Curriculum Map annexed to this document.

Policy and Compliance Standards

DAIP shall operate under a codified set of policies and standards, including:

- **Ethical AI Governance**
  All AI systems deployed under DAIP shall adhere to principles of fairness, transparency, and accountability. Mandatory bias audits shall be conducted prior to deployment, and human-in-the-loop mechanisms shall be maintained for all critical decision-making processes.

- **Data Governance and Security**
  Data handling shall comply with national data protection laws and regional interoperability protocols. Encryption, role-based access controls, and audit trails shall be enforced to safeguard privacy and prevent unauthorized use. Cross-border data exchange within COMESA shall be subject to harmonized standards validated by the Advisory Board.

- **Accessibility and Inclusion Standards**
  DAIP shall institutionalize universal design principles across all AI tools and educational platforms. Compliance shall be measured against internationally recognized accessibility benchmarks, including WCAG guidelines, and shall incorporate assistive technologies for dyslexia, dyscalculia, and mobility impairments.

Certification and Accreditation

DAIP shall establish a formal certification framework to ensure quality and portability of credentials:

- **Tiered Certification**:
  - *Foundational AI Literacy*
  - *Applied AI for Work and Governance*
  - *Advanced AI Integration and Deployment*
- Certifications shall be issued by DESA and co-endorsed by national authorities and regional bodies, ensuring recognition across COMESA member states.
- Accreditation of training institutions shall be contingent upon compliance with DAIP standards and successful completion of periodic audits.

Accountability and Reporting

DAIP governance shall be underpinned by a robust accountability framework:

- **Quarterly Compliance Reports** submitted by national units to the DESA Central Unit.
- **Annual Performance Reviews** conducted by the Advisory Board, including independent audits of ethical compliance, accessibility integration, and financial stewardship.
- **Public Disclosure** of key performance indicators (KPIs) through DESA's unified Monitoring and Evaluation (M&E) dashboard, aligned with Agenda 2063 and AfDB reporting protocols.

Implementation Roadmap

DAIP shall be implemented through a sequenced, result-oriented roadmap that moves from design and institutional readiness to applied deployment and regional scaling. The roadmap has been structured to ensure legal sufficiency, operational feasibility, accessibility by design, and measurable impact across

governance, education, and private sector domains. All milestones and deliverables specified herein are mandatory requirements for every DESA unit (including SUDESA, NADESA, CODESA), unless explicitly derogated by resolution of the DESA Central Unit.

Time Horizon and Phasing

DAIP is organized into four phases over thirty-six months, preceded by a preparatory Phase 0. Each phase is defined by binding entry/exit criteria, formal deliverables, and institutional responsibilities.

Phase 0: Design and Partnering (Month 0–3).
This phase establishes the legal and operational preconditions for DAIP. It includes national scoping, baseline assessments, partner alignment, and formalization of the curriculum and accessibility standards.

Phase 1: Foundation and Quick Wins (Month 3–9).
This phase delivers early operational value through foundational training cohorts, procurement of enabling tools, and the first live governance dashboards and accessibility services.

Phase 2: Applied Integration and Labs (Month 9–18).
This phase institutes DAIP Implementation Labs within ministries and universities, executes sector pilots, and embeds AI into high-value workflows for governance, agriculture, health, education, and commerce.

Phase 3: Scale-Up and Institutionalization (Month 18–36).
This phase consolidates DAIP as a permanent institutional function, expands the Labs network, embeds curricula and civil-service standards, and establishes regional hubs for cross-border interoperability.

Institutional Responsibilities and Lines of Accountability
The DESA Central Unit retains supreme oversight and accreditation authority, including approval of all policy instruments, curricula, and certification standards. Country-level DESA entities (e.g., SUDESA, NADESA) shall constitute DAIP Implementation Units and are responsible for localization, procurement, execution, and quarterly reporting. A DAIP Advisory Board—comprising AfDB, COMESA, national authorities, academia, and private partners—shall convene biannually to validate progress, authorize major adjustments, and adjudicate compliance with ethical, data governance, and accessibility obligations.

Phase-by-Phase Milestones, Deliverables, and Exit Criteria

Phase 0: Design and Partnering (0–3 months).
Objectives. Establish legal and operational readiness and finalize the national DAIP plan. **Core Activities.** National scoping and baseline study; stakeholder mapping; MoUs with prime, finance/planning, and sector ministries; partnership protocols with public universities/TVETs; liaison arrangements with AfDB and COMESA; procurement pre-qualification; curriculum and accessibility finalization.

Deliverables. DAIP National Implementation Plan; Curriculum Map (Foundational, Applied, Advanced); Accessibility Checklist and Testing Protocol; Data Governance and Ethics Policy; Procurement and Vendor-Neutrality Guidelines; Change-Management Plan; Baseline Metrics and M&E Integration Note. Exit Criteria**.** Formal adoption of DAIP by the national DESA steering committee; budget envelopes approved; training institutions accredited; ethics and data governance instruments enacted; partner MoUs executed.

Phase 1: Foundation and Quick Wins (3–9 months).
Objectives. Build initial capacity and demonstrate early operational impact.

Core Activities. Delivery of Foundational AI Literacy cohorts for civil servants, faculty, and SME operators; deployment of initial governance MER dashboards in planning/finance ministries; pilot e-procurement analytics for spend visibility and fraud risk flagging; provisioning of accessibility services (text-to-speech, dyslexia-friendly readers, numeric visualization, voice control) in public portals and campus environments; establishment of University Practicum Studios for small applied projects. **Deliverables.** Certified Tier-1 cohorts; at least two live MER dashboards aligned to national and Agenda 2063 indicators; e-procurement analytics pilot report; accessibility services operational in at least three priority interfaces; Practicum Studios operational with mentor rosters; user adoption and change-management reports.

Exit Criteria. Minimum thresholds met for Tier-1 certification, dashboards uptime and data quality, accessibility compliance (WCAG-aligned), and documented quick-win productivity gains.

Phase 2: Applied Integration and Labs (9–18 months).
Objectives. Embed AI into priority workflows and establish DAIP Labs as permanent integration and testing environments.

Core Activities. Creation of DAIP Labs within ministries and universities; sector pilots: agriculture (yield forecasting, input optimization, market price analytics), health (triage assist, referral analytics), education (adaptive learning for remedial reading/math, inclusive HCI), commerce/logistics (inventory forecasting, route optimization, trade facilitation analytics); SME Adoption Sprints (CRM augmentation, demand forecasting, customer engagement); cross-border interoperability pilots coordinated with COMESA for customs and trade data harmonization; accessibility feature hardening and user testing with disability cohorts.

Deliverables. DAIP Labs chartered and staffed; sector pilot completion reports with measurable KPIs; SME adoption kits and documented case studies; interoperability pilot reports; accessibility audit certificates; consolidated governance dashboards with ethics/bias audit logs.

Exit Criteria. Demonstrated task-level augmentation and service-delivery improvement in at least three sectors; Labs meeting service-level agreements; interoperability pilots validated by COMESA counterparts; accessibility audits passed with remediation plans closed.

Phase 3: Scale-Up and Institutionalization (18–36 months).
Objectives. Consolidate DAIP as a standing institutional function and extend regional reach. **Core Activities.** Expansion of Labs network; integration of DAIP modules into civil-service training standards and university curricula; establishment of regional DAIP Hubs (e.g., Lusaka, Juba, Windhoek) for shared services, pooled procurement, and cross-border support; trainer-of-trainers pipelines; maintenance and support contracts; formalization of cost-recovery mechanisms for advanced certification tiers; publication of annual public performance reports.

Deliverables. National standards adopted; regional hubs operational; trainer registries; maintenance/support SLAs; cost-recovery and sustainability plan; annual DAIP performance report aligned to Agenda 2063, AfDB High 5, COMESA priorities, and Agenda 2074.

Exit Criteria. National and regional institutionalization evidenced by embedded standards, budget lines, and sustained performance metrics; independent audit finding DAIP compliant and effective; governance resolutions confirming continuity.

Workstreams and Integration Logic

To maintain coherence across diverse activities, DAIP is organized into concurrent workstreams that are overseen centrally but executed locally.

Governance and Policy. Drafting, enactment, and periodic revision of ethical AI policy, data governance instruments, procurement standards, and accessibility regulations; conduct of bias audits, privacy impact assessments, and compliance reporting.

Curriculum and Certification. Delivery of tiered curricula and assessments; accreditation of institutions; issuance of portable credentials co-endorsed by national authorities and regional bodies; maintenance of a public register of certified trainers and institutions.

Infrastructure and Tools. Procurement and configuration of AI-enabled analytics, low/no-code automation, and accessibility tooling; adoption of open-source or low-cost solutions wherever feasible; edge/offline capabilities for low-connectivity settings; secure hosting and role-based access controls.

Implementation Labs. Standing environments for design, integration, testing, and user acceptance; intake of ministry and SME projects; change-management support; documentation and knowledge transfer.

Accessibility and Disability Inclusion. Systematic application of universal design and assistive AI; user testing with cohorts representing dyslexia, dyscalculia, and mobility impairments; publication of accessibility conformance statements and remediation logs.

Sector Programmes. Operational embedding of AI in governance (MER, e-procurement, service backlogs), agriculture (extension services augmentation, value-chain analytics), health (triage/referral and facility throughput), education (adaptive learning, faculty enablement), commerce/logistics (trade analytics, inventory and route optimization).

Change-Management and Adoption

DAIP requires structured change-management to convert training into durable practice. Each DESA unit shall maintain executive sponsorship within the prime or finance/planning ministry, appoint departmental champions, and adopt communication and user-support plans. Practicum deliverables are tied to the user's daily tasks, and early quick wins are prioritized to build trust and momentum. Resistance is tracked through adoption metrics and addressed via coaching, targeted refresher sessions, and executive escalations.

Dependencies and Preconditions

Execution is contingent on policy approvals, minimum connectivity and compute baselines, data access arrangements, and licensing or procurement lead times. Where infrastructural constraints exist, DAIP mandates edge/offline patterns, phased deployment, and alternative low-bandwidth modalities. Cross-border pilots require COMESA coordination and legal clearances for data exchange.

Success Criteria and Verification

Success shall be evidenced by documented productivity gains at task and workflow levels, improved service-delivery indicators, certified cohorts and trainers, accessible interfaces in public portals and campus systems, and validated interoperability with regional counterparts. Verification is conducted through quarterly compliance reports, biannual Advisory Board reviews, independent audits, and public disclosure on DESA's unified M&E dashboard, with cross-walks to Agenda 2063 indicators, AfDB High 5 targets, COMESA digitalisation objectives, and Agenda 2074 outcomes.

Contingency and Corrective Actions

If milestones are missed or audits detect substantive non-compliance, DAIP requires corrective action plans with time-bound remediation, targeted funding realignment, or project re-scoping. Persistent issues may trigger escalation to the DESA Central Unit for resolution, including suspension of certification privileges until compliance is restored.

Monitoring & Evaluation Framework

The Monitoring and Evaluation (M&E) framework for DAIP is established as a binding instrument to ensure transparency, accountability, and continuous performance improvement. It is designed to measure compliance with programme objectives, validate alignment with continental and regional development agendas, and provide evidence-based insights for decision-making at both national and regional levels.

Purpose and Principles

The M&E framework serves three primary purposes:

1. **Performance Measurement**: To assess the extent to which DAIP achieves its stated objectives in governance, education, private sector enablement, and accessibility.
2. **Compliance Assurance**: To verify adherence to ethical AI standards, data governance protocols, and accessibility obligations.
3. **Strategic Alignment**: To ensure that DAIP contributes to the implementation of Agenda 2063 Second Ten-Year Plan, advances AfDB's High 5 priorities, and supports COMESA's digitalisation strategy, while embedding the normative principles of Agenda 2074.

The framework is guided by principles of objectivity, independence, and data integrity, and shall operate under the unified DESA Monitoring, Evaluation, and Learning (MEL) system.

Key Performance Indicators (KPIs)

KPIs are structured across five dimensions:

a) Capacity Development

- Number of individuals certified under Tier 1 (Foundational), Tier 2 (Applied), and Tier 3 (Advanced).
- Number of accredited institutions delivering DAIP curricula.
- Number of trainers certified under the Train-the-Trainer programme.

b) Institutional Integration

- Number of AI-enabled governance dashboards deployed (MER, e-procurement, service delivery).
- Percentage of ministries and agencies with operational AI systems.
- Number of DAIP Implementation Labs established and functional.

c) Private Sector Adoption

- Number of SMEs adopting AI tools for operations and market engagement.
- Documented productivity gains (e.g., reduction in processing time, error rates, cost savings).

d) Accessibility and Inclusion

- Number of AI-driven assistive technologies deployed for dyslexia, dyscalculia, and mobility impairments.
- Compliance rate with accessibility standards (WCAG and DESA benchmarks).
- Beneficiary feedback scores from disability cohorts.

e) Strategic Impact

- Contribution to Agenda 2063 indicators (innovation, governance efficiency, education access).
- Alignment with AfDB High 5 targets (Feed Africa, Industrialize Africa, Integrate Africa, Improve Quality of Life).
- Regional interoperability achieved within COMESA corridors.

Data Collection and Reporting Mechanisms

a) Data Sources

- Administrative records from DESA national units.
- Digital logs from AI-enabled systems (dashboards, accessibility tools).
- Independent audits and compliance reviews.
- Beneficiary surveys and user experience assessments.

b) Reporting Cadence

- **Quarterly Reports**: Submitted by national DAIP units to the DESA Central Unit, covering KPIs, compliance status, and corrective actions.
- **Biannual Advisory Board Reviews**: Validation of progress and strategic alignment.
- **Annual Public Performance Report**: Disclosure of aggregated results on DESA's unified MEL dashboard, cross-referenced with Agenda 2063 and AfDB reporting frameworks.

Evaluation Methodology

Evaluations shall be conducted at three levels:

- **Formative Evaluation**: During Phase 1 to assess readiness and early adoption.
- **Mid-Term Evaluation**: At the conclusion of Phase 2 to measure applied integration and sectoral impact.
- **Summative Evaluation**: At the end of Phase 3 to determine institutionalization and sustainability.

Each evaluation shall include quantitative analysis of KPIs, qualitative assessments of user experience, and compliance audits for ethical AI, data governance, and accessibility standards.

Feedback and Learning

The M&E framework incorporates a structured feedback loop to inform continuous improvement. Findings shall be disseminated to national steering committees, training institutions, and private sector partners, with recommendations for curriculum updates, policy refinements, and technology

enhancements. Lessons learned shall be codified into the DESA Knowledge Repository and shared across regional hubs to promote best practices and interoperability.

Compliance and Enforcement

Non-compliance with M&E obligations shall trigger corrective action plans with time-bound remediation. Persistent failure to meet reporting requirements or performance thresholds may result in suspension of certification privileges, reallocation of funding, or escalation to the DESA Central Unit for enforcement measures.

Financing & Sustainability Model

The financial architecture of DAIP is designed to ensure adequacy of resources, predictability of funding flows, and long-term sustainability beyond the initial implementation horizon. This chapter establishes the sources of financing, cost-control mechanisms, and institutional strategies for embedding DAIP as a permanent function within national and regional development systems.

Financing Principles

DAIP financing shall adhere to the following principles:

- **Transparency and Accountability**: All financial transactions shall be subject to audit and disclosure under DESA's fiduciary standards and AfDB safeguard policies.
- **Diversification of Sources**: Funding shall be drawn from multiple streams to mitigate dependency risk and ensure resilience against fiscal shocks.
- **Value for Money**: Procurement and operational expenditures shall prioritize cost-efficiency without compromising quality or compliance.
- **Alignment with Development Objectives**: Financing instruments shall be structured to reinforce Agenda 2063, AfDB High 5 priorities, COMESA digitalisation strategy, and Agenda 2074 goals.

Sources of Financing

- **DESA Development Fund**
  The primary source of financing shall be the DESA Development Fund, which will allocate earmarked resources for DAIP under its digitalisation and capacity-building portfolio.

- **African Development Bank (AfDB)**
  AfDB shall participate as a second-lien financier, providing concessional loans, grants, and technical assistance through its Joint Secretariat Support Office (JSSO) and sector-specific windows. This arrangement complements AfDB's ongoing investments in AI training and digital transformation initiatives across Africa.

- **Private Sector Co-Financing**
  Strategic partnerships shall be established with technology providers, telecom operators, agribusinesses, and financial institutions to secure co-financing through Corporate Social Responsibility (CSR) programmes, in-kind contributions (software licenses, cloud credits), and internship stipends.

- **Development Finance Institutions (DFIs) and Donors**
  Additional resources shall be mobilized from DFIs, bilateral donors, and philanthropic foundations, particularly for accessibility and inclusion components targeting persons with disabilities.

- **Cost-Recovery Mechanisms**
  Revenue streams shall be generated through tuition and certification fees for advanced tiers of DAIP training, structured to ensure affordability while contributing to programme sustainability.

Cost-Control and Efficiency Measures

- **Pooled Procurement**: Consolidated purchasing of AI tools and infrastructure across DESA units to leverage economies of scale.
- **Open-Source Adoption**: Utilization of open-source and low-cost AI platforms where feasible, reducing licensing costs without compromising functionality.
- **Shared Services Model**: Establishment of regional DAIP hubs for hosting, maintenance, and technical support, thereby minimizing duplication of resources.

Sustainability Strategy

The sustainability of DAIP shall be secured through institutionalization and capacity transfer:

- **Integration into National Systems**
  DAIP modules shall be embedded within civil-service training standards and university curricula, ensuring continuity beyond the initial funding cycle.

- **Local Trainer Pipelines**
  A Train-the-Trainer model shall be implemented to create a cadre of certified instructors capable of delivering DAIP content independently, reducing reliance on external expertise.

- **Regional Hubs and Interoperability**
  DAIP hubs shall be established in strategic locations (e.g., Lusaka, Juba, Windhoek) to provide shared services, pooled procurement, and cross-border technical support, reinforcing COMESA's digitalisation objectives.

- **Performance-Based Financing**
  Future funding allocations shall be linked to verified performance metrics under the Monitoring & Evaluation framework, incentivizing efficiency and accountability.

Risk Mitigation in Financing

Financial risks, including funding shortfalls, currency fluctuations, and delayed disbursements, shall be mitigated through:

- Diversification of funding sources.
- Maintenance of contingency reserves within the DESA Development Fund.
- Adoption of hedging instruments for currency risk where applicable.

- Enforcement of strict financial reporting and audit protocols.

Risk Management & Safeguards

The DAIP operates within the institutional and fiduciary architecture of DESA, which provides a comprehensive governance framework for risk mitigation and safeguard enforcement. This chapter delineates the categories of risk inherent in AI-driven digitalisation initiatives and prescribes mandatory safeguards to ensure ethical compliance, operational continuity, and institutional resilience.

Risk Management Principles

Risk management under DAIP is guided by the following principles:

- **Preventive Orientation**: Risks shall be identified and mitigated at the design stage through policy instruments and technical standards.
- **Institutional Accountability**: All DESA units shall maintain documented risk registers and implement corrective actions under the supervision of the DESA Central Unit.
- **Transparency and Auditability**: Risk mitigation measures shall be subject to independent audits and public disclosure through DESA's Monitoring and Evaluation (M&E) dashboard.
- **Alignment with Continental and Regional Safeguards**: All risk protocols shall conform to AfDB safeguard policies, COMESA interoperability standards, and Agenda 2074 ethical principles.

Risk Categories and Mitigation Measures

a) Ethical and Algorithmic Risks

- **Risk**: Bias in AI models leading to discriminatory outcomes; opacity in decision-making processes.
- **Safeguards**: Mandatory bias audits prior to deployment; human-in-the-loop mechanisms for critical decisions; publication of explainability reports; adherence to DESA Ethical AI Policy.

b) Data Privacy and Security Risks

- **Risk**: Unauthorized access, data breaches, and non-compliance with national data protection laws.
- **Safeguards**: Encryption of all sensitive data; role-based access controls; secure hosting within approved jurisdictions; compliance with DESA Data Governance Protocol and COMESA cross-border data standards.

c) Accessibility and Inclusion Risks

- **Risk**: Failure to accommodate persons with disabilities, resulting in exclusion and non-compliance with ESG obligations.
- **Safeguards**: Mandatory accessibility audits; integration of assistive AI technologies for dyslexia, dyscalculia, and mobility impairments; adherence to WCAG and DESA Accessibility Standards.

d) Institutional Adoption Risks

- **Risk**: Resistance to change within ministries, universities, and private sector entities; low user uptake.

- **Safeguards**: Structured change-management plans; executive sponsorship; quick-win deliverables; continuous user support and refresher training.

e) Financial and Sustainability Risks

- **Risk**: Funding shortfalls, delayed disbursements, and cost overruns.
- **Safeguards**: Diversification of funding sources; contingency reserves within the DESA Development Fund; performance-based financing; quarterly financial audits.

f) Operational Risks

- **Risk**: Infrastructure constraints, connectivity failures, and vendor lock-in.
- **Safeguards**: Deployment of edge/offline capabilities; phased implementation; vendor-neutral procurement policies; pooled resource models through regional DAIP hubs.

DESA Architecture as a Safeguard Mechanism

The DESA architecture provides a multi-layered governance structure that institutionalizes risk management:

- **Central Oversight**: The DESA Central Unit enforces compliance through policy instruments, accreditation standards, and independent audits.
- **National Implementation Units**: Country-level DESA entities maintain operational risk registers and execute mitigation plans under binding compliance obligations.
- **Advisory Board**: Comprising AfDB, COMESA, and strategic partners, the Advisory Board validates risk protocols and adjudicates escalations.
- **Unified MEL System**: Risk indicators are integrated into DESA's Monitoring, Evaluation, and Learning framework, enabling real-time tracking and corrective action.

This architecture ensures that risk management is not an ancillary function but a structural component of DAIP's governance model, embedded in every phase of implementation and aligned with continental and regional safeguard regimes.

Contingency and Corrective Action Protocols

In the event of risk materialization, DAIP mandates the following corrective measures:

- **Immediate Notification**: National units shall report incidents to the DESA Central Unit within 48 hours.
- **Remediation Plan**: A time-bound corrective action plan shall be developed and approved by the Advisory Board.
- **Escalation Mechanism**: Persistent non-compliance may trigger suspension of certification privileges, reallocation of funding, or intervention by the DESA Central Unit.
- **Public Disclosure**: Significant risk events and remediation outcomes shall be disclosed through DESA's MEL dashboard to maintain transparency and stakeholder confidence.

Annual Data Usage and Fiber Optics Justification (DMAP)

Reference jurisdiction: Juba, South Sudan (1,000,000 activated users)

12.1 Purpose, Scope, and Alignment

This Chapter determines the annual data usage required to operate the DESA Market Activation Programme (DMAP) at city scale and establishes the fiber-optics justification for funders. It is framed for Juba, South Sudan, using one million activated users as the reference population for market portals, corridor APIs, credit-risk decision support (with human oversight), settlement rails, and public MRV dashboards. The analysis aligns with (i) the AfDB Digital Transformation Action Plan 2024–2028 (DTAP), which positions high-capacity broadband as a structural enabler of digital markets and public services; (ii) World Bank Digital Progress & Trends evidence on traffic growth and the 4Cs (connectivity, compute, context, competency) as AI foundations; and (iii) ITU Measuring Digital Development benchmarks on adoption and traffic, which together justify fiber backbones and fiber-fed access for lawful, auditable, and inclusive market activation.

12.2 Background and Methodology

Traffic is estimated by **workload family**, then aggregated to monthly and annual totals for 1,000,000 users. Per-user monthly envelopes derive from DMAP's functional stack (e-commerce, price observatories, corridor telemetry, credit scoring with explainability and human oversight, settlement rails, MRV dashboards) and reflect the blend of **video/images**, **API calls**, **ledger/AML streams**, and **public disclosure** duties. The range mirrors international planning norms observed in education and government fiber programmes (for example, K-12 and university systems that report traffic doubling every ~18 months and plan to **1 Gbps per 1,000 learners** as a floor), and regional programmes validating fiber for tele-education and AI-enabled services.
Sources: Juniper Networks solution brief for digital learning capacity planning (E-Rate) noting the 1 Gbps/1,000-students goal and compounding traffic growth **COMESA** regional optic fiber validation (2023) confirming fiber's centrality for **AI/IoT/5G-ready** services **World Bank** regional digital integration & broadband usage trends

12.3 Assumptions and Definitions

In this Chapter, **1 user** denotes a distinct active identity interacting monthly with at least one DMAP workload. **PB** (Petabyte) = 1,000 TB = 1,000,000 GB. Ranges are **planning envelopes**, verified ex-post through MRV telemetry and independent audit. Where adoption lags, the **lower bound** assumes lighter video/content and sparser transaction intensity; the **upper bound** assumes sustained use of video-rich commerce and corridor/ledger peaks consistent with seasonal trade cycles.
Sources: ITU & World Bank indicators on adoption and traffic baselines

12.4 Workload Envelopes (Per-User, Per-Month)

The following envelope reflects DMAP's five workload families plus MRV/public dashboards. Values are **per user per month**.

Workload	Per-User Data / Month (GB)	Latency Requirement	Planning Rationale
E-commerce portals (S'agapo, Growthify)	**8–15**	≤ 30 ms	Video/images, cart, escrow & dispute flows; symmetric traffic for listings and uploads.

Workload	Per-User Data / Month (GB)	Latency Requirement	Planning Rationale
Price observatory & open feeds	**1–3**	≤ 20 ms	High-frequency API queries; machinereadable publication.
Corridor telemetry (customs/ports/transport)	**0.5–1**	≤ 20 ms	Deterministic gateway ingress/egress for KPIs and SLAs.
Credit scoring with human oversight	**0.2–0.5**	≤ 25 ms	Model serving, explainability artifacts; privacy-safe logs.
Payment rail (utility settlement, AML/CFT)	**0.2–0.5**	≤ 20 ms	Ledger traffic, reserves, on/off-ramp instrumentation.
MRV dashboards (national/REC)	**0.1–0.3**	≤ 20 ms	OCDS datasets, accessibility statements, posture summaries.

Sum (per user): ~10–20 GB / month. The envelope aligns with observed ranges for mixed public-service and marketplace stacks in comparable deployments, scaled to AI-enabled platforms and richer media use over time.
Sources: AfDB DTAP on fiber as structural enabler; COMESA fiber validation; World Bank DPTR 2025 & interactive series on adoption/traffic

12.5 Aggregate Monthly and Annual Demand (1,000,000 Users, Juba)
Derivation: 1,000,000 users × 10–20 GB/user/month = **10–20 PB/month**. Annualization multiplies by 12.

Metric (Juba reference)	Monthly (1M users)	Annual (1M users)
Lower bound	**10 PB**	**120 PB**
Central case	**15 PB**	**180 PB**
Upper bound	**20 PB**	**240 PB**

These totals are **frontend + backend combined**, capturing user traffic and core processing (APIs, ledger/AML, logs). They are consistent with international planning where education, government, and commerce shifts to cloud/video increase per-capita traffic and require **fiber backbones for symmetry and low jitter**.

Sources: ITU & World Bank on traffic/adoption trends (ITU 2025; DPTR 2025); U.S. K-12 fiber planning benchmarks illustrating petabyte-scale growth in digital learning ecosystems (Juniper brief).

12.6 Sensitivity and Scale-Up Scenarios
To assist financiers, the envelope scales linearly with activated users and non-linearly with richer media/AI intensity.

Scenario	Activated Users	Monthly	Annual	Planning Note
Conservative	750,000	7.5–15 PB	90–180 PB	Early adoption; lighter video; fewer corridor connectors.
Reference (Juba)	1,000,000	**10–20 PB**	**120–240 PB**	Baseline adoption; mixed workloads.
Expansion corridor	1,250,000	12.5–25 PB	150–300 PB	New corridor links; marketplace densification.
High-intensity (AI/video)	1,000,000	15–30 PB	180–360 PB	Heavier streaming; higher API/ledger cadence.

Sources: AfDB DTAP programme logic for market activation and public service digitalization (PDF); World Bank regional broadband results and traffic expansion examples.

12.7 Minimum Network Baselines (Backbone & Access)

To sustain the annual demand with low latency and resilience, the follo**wing fiber-anchored** baselines apply:

- **Core/Backbone:** dual 10–40–100 Gbps uplinks between national data center(s), corridor gateways, and marketplace clusters, with east-west API fabrics dimensioned for >10 Gbps and deterministic sub-30 ms latency between metro points.
- **Access (institutional):** ministries/agencies and innovation labs at ≥100 Mbps symmetrical; marketplaces and PSP nodes at ≥100–200 Mbps; schools/labs at ≥50–100 Mbps, with fiber-fed FTTx or fixed-wireless access on fiber backhaul to guarantee uplink capacity for uploads, escrow/disputes, and AML streaming.
  Sources: ITU & World Bank on quality and affordability gaps motivating fiber upgrades (ITU 2025; DPTR 2023/2025); AfDB-supported national backbones and data center components (e.g., Niger TSB fiber & Tier III DC) illustrating standard build blocks.

12.8 Financing Implications and Fiber Justification

The 120–240 PB/year envelope for Juba (central case 180 PB) demonstrates that fiber is not optional; it is a structural precondition for DMAP and the programmes it enables (education, governance, payments, AI-assisted services). Satellite and legacy copper cannot provide the deterministic low latency, symmetry, and scale demanded by corridor systems, escrow/dispute mechanisms, AML/CFT analytics, and public MRV disclosures. The financing case thus coheres with:

- **AfDB DTAP** pillars on connectivity and integrated digital markets, positioning fiber backbones, national data centers, and metro loops as enablers of High 5 outcomes.
- **World Bank DPTR** emphasis on the 4Cs—connectivity and compute—for AI adoption and inclusive digital growth, requiring sustained CAPEX in fiber and sovereign hosting capacity.
  Sources: AfDB DTAP; World Bank DPTR 2025.

12.9 MRV and Assurance

All figures become binding performance metrics under DMAP MRV: monthly telemetry (APIs, marketplace KPIs, ledger finality), quarterly posture/accessibility statements, OCDS procurement datasets, and annual public reports cross-walked to Agenda 2063 and REC observatories. Independent operational and fiduciary audits validate capacity claims and the tariff safeguards embedded in PPPs. Sources: World Bank/ITU evidence frameworks for traffic and adoption reporting (interactive indicators); DMAP transparency model (OCDS) as adopted in this document.

Executive Number (for Funders)

Annual data requirement (Juba, 1,000,000 users): ≈ 180 PB/year *(central case; range: **120–240 PB/year**).*

This single figure underwrites the **fiber budget line** and the choice of fiber as the **only viable backbone** for lawful, auditable, inclusive digital markets at city scale.

Sources: AfDB DTAP; World Bank DPTR; ITU 2025.

References (live links)

1. **AfDB – Digital Transformation Action Plan 2024–2028 (detailed)**: <https://vcda.afdb.org/system/files/report/DTAP_Detailed%20Version.pdf>
2. **World Bank – Digital Progress & Trends 2025: Strengthening AI Foundations**: <https://www.worldbank.org/en/publication/dptr2025-ai-foundations>
   Interactive indicators (adoption, traffic, connectivity): <https://www.worldbank.org/en/data/interactive/2024/03/04/digital-progress-and-trends-report-interactive-charts>
3. **ITU – Measuring Digital Development: Facts & Figures 2025**: <https://www.itu.int/en/ITU-D/Statistics/Pages/facts/default.aspx/>
4. **COMESA – Regional Optic Fiber Study Validated (2023)**: <https://www.comesa.int/regional-optic-fiber-study-validated/>
5. **Juniper Networks – Transforming Learning with Scalable Broadband Fiber Services (solution brief)**: <https://www.juniper.net/content/dam/www/assets/solution-briefs/us/en/transforming-learning-with-scalable-broadband-fiber-services.pdf>
6. **AfDB – Niger Trans-Sahara Optical Fiber Backbone (press)**: <https://afdb.africa-newsroom.com/press/niger-takes-a-major-step-towards-highspeed-connectivity-with-handover-of-over-1000-km-of-fibreoptic-cable?lang=en>

Final Word

DAIP has been conceived and established as a mandatory, vocationally-oriented, applied capacity-building instrument under DESA. It binds together governance, education, and private sector activation through an inclusive, ethical, and operational approach to artificial intelligence. The preceding chapters set out a complete architecture—objectives and scope; governance; implementation; financing; monitoring and evaluation; and risk management—ensuring that DAIP is not an episodic workshop series but a standing institutional function embedded in each DESA unit and aligned to continental and regional development frameworks.

In strategic alignment terms, DAIP advances Agenda 2063: Second Ten-Year Implementation Plan (2024–2033) by moving from awareness to accelerated implementation, translating digital aspirations into measurable improvements in service delivery, institutional efficiency, and citizen experience. Agenda 2063 calls for resilient, innovation-led governance, integrated infrastructure, and digitization across policy and planning, all of which DAIP operationalizes through AI-enabled monitoring, evaluation, and reporting (MER); predictive analytics for resource allocation; and accessibility by design for universal participation.

Regionally, DAIP is methodologically anchored in COMESA's digitalisation structures, which emphasize regional harmonization, interoperable platforms, and capacity building. COMESA's IDEA Programme and sector policies center on creating an enabling environment for affordable broadband, trusted data platforms, and digitally-enabled services, while advancing knowledge transfer and regional coordination—precisely the role DAIP's Implementation Labs and DAIP Hubs fulfill at scale. In trade facilitation, COMESA's work on customs digitalization and cross-border automation underscores DAIP's design for interoperability pilots and data exchange in regional corridors, aligning our public-sector AI deployments with the practical requirements of border agencies and ministries of trade and finance. The COMESA Medium-Term Strategic Plan (2021–2025) also codifies pillars on productive integration, physical connectivity, effective secretariat, and knowledge and skills, which DAIP directly supports through standardized curricula, tiered certification, and pooled regional services via the DAIP Hubs (e.g., Lusaka).

From a financing and partnership perspective, DAIP is deliberately complementary to the African Development Bank (AfDB) ecosystem. AfDB's partnership with Intel to train 3 million Africans and 30,000 officials in AI confirms continental appetite for AI skills and policy harmonization. DAIP extends that energy from skills pipelines into institutional integration—governance dashboards, procurement analytics, inclusive education platforms, and SME adoption—thereby converting skill formation into durable service delivery gains and market activation. This dovetails with AfDB's continuing emphasis (including its 2025 AI side event with Google) on aligning AI with the Bank's Ten-Year Strategy, and with the High 5 priorities—*Industrialize Africa*, *Integrate Africa*, and *Improve the Quality of Life for the People of Africa*—through investments in data infrastructure, ethics, and results-based governance.

In formal terms, DAIP is secured by DESA's Institutional Governance Manual and the enforced standards herein—ethical AI, data governance, and accessibility—together with a tiered certification and accreditation regime co-endorsed by national authorities and, where applicable, regional bodies. The Monitoring & Evaluation framework is unified across DESA units, cross-walking to Agenda 2063 indicators and COMESA priorities, and reporting publicly through the DESA MEL dashboard. Risk management is embedded in DESA's architecture, with bias audits, privacy safeguards, accessibility conformance, and contingency protocols integrated in every phase.

In practical terms, DAIP's vocation and value are demonstrated in its Implementation Labs and sector pilots: ministries using dashboards for MER and e-procurement analytics; universities embedding adaptive learning and assistive AI for dyslexia, dyscalculia, and mobility impairments; agribusinesses leveraging crop and pest identification, yield prediction, and supply-chain optimization; health systems deploying triage and referral analytics; and SMEs adopting conversational AI, inventory forecasting, and streaming optimization. These are not abstract promises; they are repeatable patterns backed by DAIP's curricula, trainer pipelines, and regional hubs for shared services.

Accordingly, DAIP is positioned as an operational bridge between continental strategy and everyday institutional practice. It enables governments to govern with evidence; universities and TVETs to teach

with inclusion; and businesses to compete with intelligence. With DESA as custodian and COMESA as the regional harmonization platform, and with AfDB as financing and policy partner, DAIP offers a bankable, scalable pathway to an AI-ready public sector and a digitally empowered private economy—consistent with the Second Ten-Year Plan of Agenda 2063, the COMESA digitalisation agenda, and AfDB's AI skill-building and innovation thrusts.

Final determination: DAIP is hereby affirmed as a mandatory sub-programme across all DESA implementations, with binding obligations on governance, ethics, accessibility, and results reporting. Its adoption constitutes a strategic commitment to Africa's decade of accelerated implementation—transforming policy intent into institutional competence and measurable outcomes, within a regional system designed for interoperability, inclusion, and growth.

References

Agenda 2063 – Second Ten-Year Implementation Plan (2024–2033):
AU Launch Version (Feb 2024) — PDF; AUDA-NEPAD overview — link; UNDESA/APRM workshop materials — PDF.

COMESA Digitalisation and Regional Integration:
IDEA Programme documents — link; Customs Digitalization Special Report — PDF; Medium-Term Strategic Plan 2021–2025 — PDF; COMESA–EU Digital Future workshop note — news.

AfDB AI Initiatives and Strategy Linkages:
AfDB–Intel AI training partnership press release (June 7, 2024) — press; AfDB 2025 AI side event with Google — event. AI Training Event