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MINISTRY OF WATER AND ENERGY
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Terms of Reference (TOR)

Integrated Advanced Project Management System, OCR-Based Digitalization & Contract Management System, AI-Powered Digital Archiving System and Advanced National KPI Management and Data Analytics System (ANKMDAS)

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1. Introduction

1.1. Background

The Ministry of Water and Energy (MoWE), Ethiopia, is implementing various large-scale water and energy projects across the country. These projects include water supply and sanitation systems, water resources and flood management initiatives, and energy infrastructure development. These are financed by a mix of funding sources, including the World Bank, the Government of Ethiopia, and various bilateral and multilateral donors.

Currently, over six major World Bank-financed projects are under implementation within the Ministry, in addition to several government-financed and donor-financed initiatives. Each World Bank and donor-financed project operates through its own Project Implementation Unit (PIU), while government-financed projects are managed directly under the Ministry's organizational structure.

To enhance institutional efficiency, transparency, and performance monitoring, MoWE intends to procure the services of a qualified Consulting Firm to design, develop, and deploy an Integrated Advanced Project Management System (IAPMS), Contract Management System (CMS), OCR-Based Digitalization and AI-Powered Digital Archiving System, and an Advanced National KPI Management and Data Analytics System (KPI-MDAS).

This assignment is financed by the World Bank and will follow applicable World Bank Procurement Regulations and relevant Ethiopian national procurement laws.

1.2. Purpose of the TOR

The purpose of this Terms of Reference (TOR) document is to define the scope, objectives, deliverables, and expectations for the design, development, implementation, and support of four integrated digital systems: the Advanced Project Management System (APMS), OCR-Based Digitalization and Contract Management System (ODCMS), AI-Powered Digital Archiving System (AIDAS), and Advanced National KPI Management and Data Analytics System (ANKMDAS).

This TOR serves as a guide for potential bidders in preparing proposals that align with the Ministry's technical and operational requirements, as well as the compliance standards set by the World Bank. The goal is to ensure the selection of a qualified firm or consortium capable of delivering a modern, interoperable, and user-friendly digital solution that enhances institutional efficiency, transparency, and data-driven decision-making.

1.3. Users and Beneficiaries

The primary users and beneficiaries of these integrated digital systems include:

- Ministry management and staff across departments
- Project Implementation Units (PIUs) responsible for on-the-ground project execution
- Monitoring and Evaluation (M&E) teams tracking performance and outcomes
- Procurement and legal departments managing contracts and compliance
- The World Bank and other development partners involved in oversight and funding

These systems will empower users at multiple levels to improve coordination, enhance transparency, and facilitate data-driven decision-making within the Ministry and its partner organizations.

2. Objectives of the Assignment

2.1. General Objective

To significantly improve the Ministry's capacity to manage complex projects, administer contracts, preserve institutional knowledge, and monitor performance through the design, development, and implementation of four integrated digital platforms. These platforms will enhance operational efficiency, increase transparency, enable timely and accurate decision-making, and promote sustainable practices across all levels of the Ministry. By leveraging interoperability and advanced technologies, the systems aim to support a more data-driven and accountable approach to the Ministry's development programs and institutional operations.

2.2. Specific Objectives

The assignment focuses on delivering four interoperable digital platforms that collectively transform how the Ministry plans, executes, monitors, and reports on its projects and operations:

2.2.1. Advanced Project Management System (APMS)

- Enable real-time visibility into project progress, financials, schedules, and risks across multiple projects.
- Streamline issue tracking, automated reporting, and milestone management through centralized dashboards.

- Support data-driven decision-making with dynamic visualizations like Gantt charts and status indicators.

2.2.2. OCR-Based Digitalization and Contract Management System (ODCMS)

- Automate the conversion of large volumes of paper contracts and documents into searchable digital formats using OCR with quality Enhancement.
- Facilitate end-to-end contract lifecycle management, including drafting, approval workflows, execution, and renewals.
- Ensure transparency and accountability with audit trails, access controls, and timely notifications.

2.2.3. AI-Powered Digital Archiving System (AIDAS)

- Leverage artificial intelligence to intelligently classify, tag, and retrieve archived documents, enabling efficient knowledge management.
- Employ natural language processing to support advanced search capabilities and ensure compliance with digital preservation standards.
- Preserve institutional memory securely while allowing authorized users fast access to historical data.

2.2.4. Advanced National KPI Management and Data Analytics System (ANKMDAS)

- Centralize the definition, tracking, and analysis of key performance indicators (KPIs) aligned with the Ministry's strategic goals.
- Integrate data from internal platforms (APMS, ODCMS, AIDAS) and external sources for comprehensive monitoring and evaluation.
- Provide interactive dashboards and predictive analytics tools to support proactive management and public accountability.

Together, these systems will enable the Ministry to operate more efficiently, increase transparency, and make informed decisions grounded in reliable, timely data.

3. Scope of Work

The selected firm or consortium will be responsible for delivering a comprehensive, end-to-end solution consisting of four fully integrated and interoperable digital systems: APMS, ODCMS, AIDAS, and ANKMDAS. These systems are expected to serve as a unified digital backbone for the Ministry, supporting more efficient project management, institutional memory, contract oversight, and strategic performance tracking. The firm will be expected to cover the full life cycle of the assignment from analysis and design to deployment, training, and support ensuring sustainability, user adoption, and long-term value for the Ministry and its stakeholders.

The scope includes, but is not limited to, the following:

No.	Component	Description
a	System Analysis and Requirements Gathering	Conduct consultations with Ministry departments to map workflows, identify challenges, and define future-state processes. Deliver a Functional Requirements Specification (FRS) and Technical Requirements Document (TRD) for all four systems.
b	System Design and Architecture	Design modular, secure, and scalable architectures for each system with shared data layers and APIs. Address multilingual support, role-based access, and mobile compatibility. Ensure full interoperability across platforms.
c	User Interface and User Experience (UI/UX) Design	Design intuitive and accessible interfaces for all systems. Gather user feedback through workshops or interviews. Deliver wireframes, mockups, and prototypes developed for all the systems. Ensure consistency, responsiveness, and compliance with usability and accessibility standards.
d	Software Development and Configuration	Build or customize each platform in line with the approved specifications. Integrate AI (AIDAS), OCR (ODCMS), and analytics tools (ANKMDAS). Ensure alignment with Ministry IT standards and infrastructure.

e	Data Migration and Digitalization	Digitize legacy records and migrate structured and unstructured data into the new systems. Use OCR for document conversion and AI tagging for organized archival.
f	System Integration	Enable seamless communication across all systems through standardized APIs. Connect to relevant internal platforms as needed.
g	Testing and Quality Assurance	Conduct multiple test phases, including functional, performance, and UAT, in collaboration with Ministry staff. Identify and resolve bugs before rollout.
h	Training and Change Management	Develop training materials and conduct sessions for different user groups. Provide onboarding support and contribute to smooth organizational adaptation.
i	Deployment and Support	Execute a phased deployment strategy, starting with a pilot. Provide post-launch support, including troubleshooting, updates, and helpdesk setup.
j	Documentation	Develop and deliver full technical and user documentation for all systems. This includes system architecture, setup/configuration manuals, admin/user guides, data dictionaries, and API documentation.
k	Knowledge Transfer and Sustainability	Ensure long-term independence of the Ministry by handing over source code, documentation, and training. Support the setup of internal governance and technical teams for ongoing maintenance.

4. Project Requirements

This section defines the critical requirements that will guide the successful development and implementation of the Ministry's integrated digital systems. These requirements provide a structured foundation for aligning technical execution with user needs, institutional goals, and operational realities.

The consultant or firm must ensure that all solutions meet these expectations across four key dimensions: functionality, performance and reliability, technical robustness, and user experience. Each requirement outlined below must be addressed and validated throughout the lifecycle of the project, from design through to deployment and post-launch support.

4.1. Functional Requirements

This section details the essential functions and features that each of the four integrated systems must provide to effectively support the Ministry's operations. The functional requirements define the specific capabilities needed to manage projects, contracts, digital archives, and key performance indicators with accuracy, transparency, and efficiency. Each system will address distinct but complementary areas, ensuring a comprehensive digital ecosystem tailored to the Ministry's needs.

The requirements are organized by system modules: APMS, ODCMS, AIDAS, and ANKMDAS, each focusing on their unique operational domains while enabling seamless interoperability.

4.1.1. Advanced Project Management System (APMS)

The Advanced Project Management System (APMS) is designed to equip the Ministry of Water and Energy with a comprehensive platform for managing its diverse and complex portfolio of projects. To support the Ministry's operational and strategic objectives, the APMS should include **but not be limited to** the following capabilities. These features will enable detailed project categorization, real-time progress tracking, risk management, quality assurance, and data-driven reporting. Together, they will enhance transparency, accountability, and efficiency across all project phases, while facilitating proactive decision-making and effective resource utilization.

The system will support multiple user roles with customizable views and permissions, enabling stakeholders at all levels from project managers to senior leadership to access the information most relevant to their responsibilities. The APMS will also incorporate advanced technologies such as AI-powered risk forecasting and satellite imagery integration to provide independent monitoring and predictive insights.

The detailed functional requirements below outline the essential features expected in the APMS.

Feature	Description
Hierarchical Project Categorization	Projects will be classified using a multi-dimensional system that includes main and sub-categories, regions, project start year, expected duration, challenges, active follow-ups, owning department, and budget bracket. Each project record will contain full metadata to enable effective search, retrieval, and reporting.
Dynamic Dashboard Interface	A web-based dashboard accessible to all stakeholders will provide live project status displayed as a percentage of completion. Users can filter projects by region, type, owner department, year, and other criteria. Color-coded progress indicators will signal on-track, delayed, or ahead-of-schedule status. The dashboard will compare contract vs. actual performance in real time.
Live Satellite Imaging & Monthly Archiving	Integration with satellite imaging platforms will allow near real-time viewing of project sites. The system will automatically capture high-resolution satellite images monthly, store them within the project's digital catalog, and offer tools for side-by-side historical comparison. 360⁰ tour production of every project all over the nation with VR integration. Compatibility with platforms like Google Earth Engine or other geospatial APIs is required.
Real-Time Project Tracking	Continuous monitoring and updating of project activities, milestones, risks, and issues to provide accurate, up-to-date information to all users for effective decision-making.
AI-Powered Risk Forecasting and Management	Use of AI algorithms to analyze historical and current project data to predict risks, provide early warnings, and recommend mitigation strategies for proactive risk management.
Milestone and Issue Management	Automation of milestone tracking and issue escalation workflows, with notification alerts sent to designated officials to ensure timely resolution and compliance.

Project Schedule Management	Detailed timeline management with task dependencies, critical path analysis, and resource allocation tools to optimize project delivery schedules and identify bottlenecks early.
Notifications & Alerts System	Progress Alerts: Automatically compare real-time progress data to contract timelines. Escalation Alerts: Notify designated officials when project milestones are not met. Milestone Reminders: Automated notifications for upcoming deadlines, deliverables, and payment stages.
Quality Management	Implementation of quality assurance processes such as inspections, compliance monitoring, and corrective action tracking to ensure that projects meet predefined standards and regulatory requirements.
Document Management	Centralized storage, categorization, and retrieval of all project-related documents, linked directly to projects and milestones for easy access and auditability.
Audit Trail	Maintenance of a detailed log of all user activities, changes, and system transactions within the APMS to provide accountability, traceability, and support for compliance audits.
Access Control	Role-based permissions to restrict or allow access to various system functions and data based on user roles and responsibilities, enhancing security and operational integrity.
Reporting and Analytics	Comprehensive reporting tools offering customizable reports, trend analyses, and data visualizations to support strategic planning and operational oversight.
Export	Automated generation of project reports with export options in common formats such as PDF and Excel, enabling easy distribution, sharing, and record-keeping.

4.1.2. OCR-Based Digitalization and Contract Management System (ODCMS)

The OCR-Based Digitalization and Contract Management System (ODCMS) is intended to transform how the Ministry handles physical documents, contracts, and procurement records. By leveraging Optical Character Recognition (OCR) and structured digital workflows, this system will digitize and centralize all incoming and archived documents, making them fully searchable, accessible, and manageable across departments.

The ODCMS should include **but not be limited to** the following core features and functional requirements. These tools will help reduce manual paperwork, ensure compliance with procurement and contract standards, and enable fast retrieval of important records for decision-making, audits, or legal reference.

It will also provide standardized templates and approval workflows, enable integration with other project systems, and support multilingual and scanned document recognition. Ultimately, the system should improve transparency, reduce bottlenecks, and enforce accountability in contract execution.

Feature	Description
OCR-Powered Document Digitization	Scanning & OCR Processing: Conversion of approximately 12 million pages of contracts into searchable, editable digital formats. Upon completion of the 12-million-page conversion, the consultant shall conduct comprehensive knowledge transfer and capacity building for the client's designated staff. This includes hands-on training, documentation, and the transfer of tools, workflows, and best practices to enable the client to independently continue the digitization and OCR processing of any remaining documents Accuracy and Validation: Use advanced AI to enhance OCR accuracy, ensuring reliable text extraction and reducing manual correction efforts.
Indexing Metadata Assignment &	After OCR processing, the system should assign metadata based on document type, content, date, associated project, supplier, contract value, and related tags enabling intelligent search, grouping, and archiving. Manual tagging should also be supported for edge cases.

Contract Authoring & Drafting	Provides standardized templates and customizable contract formats for drafting new agreements. Includes clause libraries, legal references, and version tracking.
Contract Lifecycle Management	Tracks all stages of a contract: creation, negotiation, signing, execution, and closeout. Enables automated reminders for milestone dates, performance deliverables, and renewal/expiry deadlines. Includes template generation, clause libraries, and legal validation workflows.
Amendment & Renewal Management	Supports formalized tracking and documentation of contract amendments and renewals. Includes audit trail for changes, updated compliance review, and version-controlled updated documents. Renewal workflows may trigger based on approaching expiry dates.
Obligation Compliance & Management	Maps contract obligations by party and sets up monitoring tools to ensure deliverables, deadlines, and legal responsibilities are tracked. System flags missed deadlines, incomplete obligations, or potential breaches.
Contract Repository, Advanced Search & Retrieval	Centralized, secure digital vault where all contract records are stored. Includes tagging by supplier, project, department, contract type, year, and more. Full-text search capability across contract bodies, clause titles, and attached annexes. Robust search functionality allowing users to locate documents using keywords, metadata fields, date ranges, project IDs, contractor names, or clause contents.
Vendor Licensing Repository	Maintains an up-to-date directory of registered vendors and contractors, including business licenses, registrations, certifications, and renewal timelines. Ensures ongoing regulatory compliance and prevents engagement with unqualified firms.

Access Control & Permissions	Role-based access to ensure that only authorized users can view, edit, approve, or archive sensitive documents. Includes granular permission settings at document, folder, and user group levels.
Procurement Records Management	Digital registration and archiving of all procurement-related documentation including bid requests, evaluation results, award letters, and contract sign-offs. Linked directly to associated project entries in the APMS.
E-Signature Integration	Supports secure, legally compliant electronic signatures for contract sign-offs, approvals, and inter-departmental validation.
Document Expiry & Renewal Alerts	Automated alerts for expiring contracts, warranties, or licenses. Includes configurable lead time reminders and renewal initiation workflows.

4.1.3. AI-Powered Digital Archiving System (AIDAS)

The AI-Powered Digital Archiving System (AIDAS) is designed to serve as a centralized, intelligent repository for all project-related documents and records. As the volume of documentation across large-scale national infrastructure projects continues to grow, traditional storage and retrieval systems fall short in providing the speed, structure, and insights needed for modern governance.

AIDAS should include **but not be limited to** features that ensure secure long-term storage, smart classification, semantic searchability, and automated summarization. The system must support multilingual document processing and align with government retention and access policies. Its AI-driven components will reduce manual archiving labor, minimize human error, and transform archives from static storage into a strategic asset.

By offering automated classification, change tracking, metadata tagging, and access control, AIDAS will empower the Ministry to maintain institutional memory, meet compliance requirements, and ensure that critical records are always within reach, auditable, reliable, and organized.

AIDAS should reduce the burden of manual recordkeeping, improve discoverability, and ensure all archived data remains audit-ready, traceable, and organized.

Feature	Detailed Functional Description
Smart Document Ingestion & OCR Powered Document Digitization	Scanning & OCR Processing: Conversion of approximately 6.5 million pages (with exclusion of financial documents) and ingestion of digital documents in various formats (PDFs, Word, images, Excel, etc.). OCR (Optical Character Recognition) capabilities should extract text from scanned files and images, including handwriting. With Multi-format support (PDF, JPEG, PNG). Upon completion of the 6.5 million pages (with exclusion of financial documents) conversion, the consultant shall conduct comprehensive knowledge transfer and capacity building for the client's designated staff. This includes hands-on training, documentation, and the transfer of tools, workflows, and best practices to enable the client to independently continue the digitization and OCR processing of any remaining documents
AI-Based Classification & Metadata Extraction	Utilizes AI and natural language processing (NLP) to automatically identify document types (e.g., contracts, invoices, reports, memos) and extract key metadata like project title, department, location, date, responsible personnel, budget, and document tags. As well as Automated summarization and abstracting.
Advanced Search & Retrieval	Full-text Search:Optimized indexing for fast retrieval, Advanced query optimization to minimize latency. Features a semantic search engine that goes beyond keywords understanding context, relationships, and meaning behind queries. Filtering options by project, region, year, document type, author, and tags must be included.
Document Lifecycle Management	Allows for policy-based control over the full lifecycle of documents: from creation and active use to archiving, retention, review, and deletion. Administrators should be able to configure document retention periods based on type, sensitivity, or project. Supports archiving rules, time-based reminders for review, and disposal audit trails. Older records may be auto-archived or transitioned into cold storage while remaining

	accessible for retrieval or legal compliance.
Access Control & Read Logs	Enforces strict user-role permissions. Logs every document access, download, edit, or move, and provides full audit trails for administrative and security review. Custom access rules can be created based on department, seniority, document category, or legal sensitivity.

4.1.4. Advanced National KPI Management and Data Analytics System (ANKMDAS)

The Advanced National KPI Management and Data Analytics System (ANKMDAS) is designed as a centralized, intelligent platform to monitor, analyze, and improve the performance of government institutions, national programs, and infrastructure projects. It will support evidence-based policymaking and operational oversight by aligning KPIs with the Sustainable Development Goals (SDGs), Ethiopia's national development plans, and annual ministerial targets. The system should include **but not be limited to** real-time data integration, customizable dashboards, forecasting tools, benchmarking modules, geospatial tracking, and capacity-building resources. ANKMDAS must serve both internal policy makers and external public stakeholders, ensuring transparency, responsiveness, and continual performance improvement across all levels of government.

Feature	Detailed Functional Description
KPI Alignment with National Goals	Framework to define, categorize, and map KPIs to SDGs, Ethiopia's Ten-Year Development Plan, and sectoral strategies. Supports multi-level alignment (national > institutional > program > project) and updates as policies evolve.

Real-Time Collection Integration	Data and	Connects with internal databases, third-party APIs, and mobile apps for continuous data ingestion. Standardizes formats across sources and validates integrity before processing.
Interactive Dashboards		Custom dashboards for executives, ministry directors, and analysts. filters, and real-time graphs showing KPI performance, trends, and variance against targets. Dashboards can be saved or shared by role.
Automated Reporting Notifications	&	Automatically generates weekly, monthly, or quarterly performance summaries. Users can set email alerts for KPI breaches, overdue data submissions, or anomalies. Reports are templated for consistency and compliance.
Advanced Analytics Forecasting	&	AI/ML-powered models to detect trends, predict future performance, and simulate impacts of policy or budget changes. What-if scenarios help institutions forecast the effect of proposed interventions.
Performance Tracking & Scoring		Scoring algorithm ranks performance across institutions, regions, sectors, or timelines. Includes red-flagging of underperforming areas and heatmaps to visualize performance breakdowns. Scores are adjustable based on strategic weighting.
Role-Based Access & Workflow Management		Multi-user environment with tiered access Includes configurable validation workflows for KPI data approval, change tracking, and publishing cycles.
Benchmarking & Comparative Analysis	&	Compare internal units or track national KPIs against international benchmarks. Charts and tables to assess convergence or divergence from goals.
Visualization		KPIs overlaid on maps at national, regional, or district levels. allow spatial performance tracking, and location-specific progress layers.

Audit Trail & Compliance Logging	Full logs of data submissions, changes, validations, and user actions. Supports exportable compliance reports for internal audit, external donor reporting, or government oversight.
Document Evidence Repository	Each KPI entry can be linked with documents, photos, validation files, or contracts. Searchable archive to support evidence-based evaluations. Ensures traceability of data to its source.
Capacity-Building & Knowledge Base	Built-in learning center with SOPs, training videos, indicator manuals. Institutionalizes best practices and supports onboarding of new users across regions and departments.

4.2. Non-Functional Requirements

This section outlines the essential non-functional characteristics the integrated system must possess to ensure performance, security, maintainability, and long-term scalability. These requirements are critical to the system's effectiveness and sustainability across all modules (APMS, ODCMS, AIDAS, and ANKMDAS). They are not tied to specific functionalities but determine **how** the system performs under various conditions. These requirements should include but are not limited to the following:

Category	Requirement Description
System Performance	The system should load dashboards, search results, and project views within 3 seconds under standard network conditions. It should support at least 500 concurrent users with no degradation in responsiveness.
Scalability	Must be scalable both vertically (more resources per server) and horizontally (adding more servers). Capable of supporting national expansion across all regions and administrative levels.
Availability Uptime &	Minimum 99.5% system availability excluding scheduled maintenance. High-availability architecture with automatic failover and disaster recovery protocols.

Security & Access Control	Enforce multi-layered security including role-based access, two-factor authentication (2FA), encrypted data transmission (HTTPS), and data-at-rest encryption. Must comply with national data protection laws and international standards such as ISO/IEC 27001.
Data Integrity & Auditability	All data modifications (edits, deletions, uploads) must be logged with timestamp, user ID, and change summary. Logs must be immutable and exportable for audit review.
Localization & Multilingual Support	Full system support in English and Amharic at minimum, with options to expand to other national languages. Includes translated UI, date formats, numeric formats, and currency display.
Interoperability	Must support integration with existing government databases,, ERP, CRM, HRM software, and external donor dashboards via secure APIs.
Backup & Recovery	Automated daily backups of all databases and document repositories. Restore functionality should allow for rollback to any point within the past 30 days.
Device Compatibility	Responsive design for desktop, tablets and mobile devices (iOS and Android).
Maintainability & Documentation	Clean modular codebase with technical documentation for each module. Maintenance manuals and admin user guides must be provided.
Usability	The system should be intuitive with minimal training. Interfaces must follow best practices in accessibility, clarity, and consistency. User satisfaction scores should be trackable and monitored.
Compliance	The system must comply with national e-Gov regulations and frameworks.

4.3. Technical Requirements

This section outlines the key technical specifications that must guide the development, deployment, and long-term operation of the integrated digital systems (APMS, ODCMS, AIDAS, ANKMDAS). These requirements ensure that the system is built on reliable, modern, and secure architecture and is future-proofed for scale, integration, and maintainability. The architecture should support both cloud and hybrid deployment models, provide strong data governance, and accommodate both central and regional operations.

Category	Requirement Description
Architecture	Modular, service-oriented architecture (SOA) or microservices-based architecture to allow independent scaling and development of system components. Should support containerization and orchestration.
Hosting Model	Cloud-first(Tele cloud) approach preferred ,with option for on-premises or hybrid hosting depending on national data governance rules with 10 years of Hosting service.
Technology Stack	Open, modern tech stack using widely supported frameworks (e.g., Node.js) with PostgreSQL/MySQL/SQL Server as DBMS. Frontend frameworks may include React, Angular, or Vue.js.
API & Integration	RESTful APIs and/or GraphQL must be available for third-party integrations. Support for secure API key/token-based authentication.
Data Standards	Adherence to common government and international metadata and classification standards
Data Storage	Must support both structured (RDBMS) and unstructured (document/image/video) data storage. Storage should be scalable, redundant, and encrypted. Use of object storage (e.g., AWS S3-compatible) for digital archives is recommended.

Authentication & User Management	Role-based access control (RBAC) with integration to national SSO (Single Sign-On) platforms if available. LDAP or OAuth2-based identity management preferred.
Logging & Monitoring	Real-time system monitoring with dashboards for performance, uptime, and usage analytics. Alerts for critical failures and system thresholds.
Environment & DevOps	Full dev-test-staging-production pipeline. CI/CD tools like GitLab CI, Jenkins, or GitHub Actions to automate deployments.
Versioning & Configuration Management	All modules and APIs must be version-controlled.

4.4. User Interface & UX Requirements

This section outlines the user interface (UI) and user experience (UX) design principles and expectations that should guide the development of the platform. These systems will be used by a diverse group of users including government officials, project managers, analysts, and the public so the interface must be intuitive, responsive, and inclusive. Accessibility, ease of navigation, and localized adaptability are essential.

Category	Requirement Description
Responsiveness	All interfaces must be mobile-responsive and usable across devices (desktop, tablet, and mobile). Layouts should adapt fluidly to different screen sizes with no loss of functionality.
Accessibility	Interfaces must adhere to WCAG 2.1 AA accessibility standards. Color contrast, text scalability, and keyboard navigation should be fully supported. Consider users with limited digital literacy.
Multilingual Support	Full support for at least Amharic and English. The design must allow easy switching between languages .

Simplicity & Clarity	Interfaces should prioritize simplicity without sacrificing functionality. Use consistent icons, clean layouts, and minimal clicks to complete core tasks. Complex data should be visualized clearly.
Visual Consistency	All modules must follow a unified design system (typography, color palette, buttons, input fields, etc.). Use of a modern design framework like Material UI or TailwindCSS is encouraged.
User Roles & Navigation	The interface should dynamically adapt to user roles, only showing relevant sections and tools. Dashboards and sidebars must be role-based and configurable.
Interactive Visuals	Dashboards should use high-quality charts, maps, and infographics for live KPIs, project metrics, and budget performance. Visual tools must support filtering, zooming, and drill-downs.
UI Performance	Interfaces must load within 2 seconds for standard connections. Use of caching and lazy loading for heavy visualizations is required.

5. Deliverables

The selected vendor or consortium will be responsible for delivering a full suite of outputs across the entire project lifecycle. These deliverables must ensure the successful implementation, adoption, and sustainability of the integrated digital systems. They should include, but are not limited to:

Category	Deliverable	Description
Project Inception	Inception Report	A detailed overview of the vendor's understanding of the project, methodology, refined work plan, risk assessment, team structure, and stakeholder engagement plan.
System Design	Requirements Specification Document	Comprehensive documentation of all functional, non-functional, and technical requirements based on stakeholder consultations.

	System Architecture Blueprint	High-level and detailed architecture covering infrastructure, modules, database design, APIs, and security layers.
UI/UX Design	Wireframes & Design Prototypes	Validated UI/UX designs for web and mobile interfaces, tailored to various user roles and device contexts.
Software Development	Fully Functional Integrated Software	Completed and fully tested systems for all modules (APMS, ODCMS, AIDAS, ANKMDAS), deployed in production and meeting all specified requirements.
	Source Code & Build Instructions	Clean, modular, and well-documented source code with build/run instructions and dependencies.
	API Documentation	Clear documentation of all internal and external APIs including endpoints, methods, payloads, and security mechanisms.
Data Digitization	OCR-Powered Document Digitization	Conversion of approximately 12 million pages of legacy contracts and documents into searchable, editable digital formats using advanced OCR and classification tools.
Testing & QA	Testing Plans & Logs	Complete set of test cases, test result logs, defect tracking, and UAT sign-offs.
Training & Change Management	Training Manuals & User Guides	End-user guides, admin handbooks, and visual training content tailored to different user groups and workflows.
	Training Workshops	Onsite or virtual training sessions covering system usage, admin tasks, troubleshooting, and new feature adoption.
Deployment & Handover	Deployment Documentation	Step-by-step documentation of the system deployment process, including configurations, migration activities, and environment setup.
	Final Implementation Report	A full report summarizing the end-to-end implementation process, achievements, challenges faced, and lessons learned.

Sustainability	Warranty & Post-Implementation Support Plan	A clear support plan detailing bug fixes, updates, service-level agreements (SLAs), escalation paths.
	Maintenance Roadmap	Long-term maintenance, upgrade path, and roadmap for enhancements.
Documentation	Full Technical Documentation	Developer-level documentation including data models, logic flows, infrastructure details, system dependencies, and configuration guides.

6. Implementation Timeline & Milestones

The implementation will be divided into key milestones, each with clear deliverables and duration. The assignment is expected to be completed within 7 months

Phase	Duration	Key Deliverables
Inception & Planning	1 month	Kick-off meeting, refined scope, project charter, work plan
System Design	1.5 months	UI/UX prototypes, architecture documentation, interoperability plan
System Development & Testing	3.5 months	Fully functional: APMS, ODCMS, AIDAS, ANKMDAS UAT, security testing, performance optimization, user feedback round
Final Deployment & Training	1 month	Go-live, production deployment, final implementation report, post-launch support User manuals, admin guides, training sessions for all user groups
Warranty & Support	Recommended Duration (post-go-live)	Bug fixes, minor enhancements, on-call support, system monitoring

7. Team Composition & Qualifications

The Consulting Firm shall provide a team of qualified professionals with proven experience and technical capacity to deliver the assignment. The following key experts must be included in the proposal:

No.	Expert Position	Minimum Qualifications	Minimum Specific Experience	Key Responsibilities
1	Team Leader / Project Manager	Master's degree in Project Management, Engineering, ICT, or related field	Over 10 years in managing large-scale ICT or infrastructure projects	Lead overall project planning, coordination, implementation, and stakeholder management. Ensure timely delivery of all outputs.
2	System Architect / Lead Software Engineer	Master's degree in Computer Science, Software Engineering, or related field	Over 8 years in system architecture, software design, and development	Lead the system design and ensure integration across modules. Oversee development of secure, scalable platforms.
3	Software Developer(s)	Bachelor's degree in Computer Science, IT, or related field	Over 5 years in full-stack development of enterprise applications	Design, develop, test, and deploy system modules. Maintain system documentation.
4	Data Analyst / Data Scientist	Master's degree in Data Science, Statistics, or related field	Over 5 years in data analytics and visualization	Develop KPI dashboard, data models, analytics, and reports. Support decision-making with actionable insights.
5	Business Analyst	Bachelor's degree in Business, ICT, or related field	Over 5 years in business process analysis and system requirement gathering	Conduct needs assessments, define system specifications, and bridge user requirements with technical design.
6	Contract Management Expert	Master's degree in Law, Contract Management, or related field	Over 8 years in contract administration, especially under WB and national laws	Design contract management workflows. Ensure system compliance with procurement/contract rules.
7	Procurement Specialist	Bachelor's degree in Procurement, Law, Engineering, or related field. CIPS certification preferred.	Over 8 years in procurement of works, goods, and services under WB and Ethiopian law	Provide guidance on procurement modules and workflows. Ensure integration with WB and national procurement processes.

8	Construction Engineer	Bachelor's degree in Civil Engineering or related field	Over 8 years in managing or supervising construction/engineering contracts	Support alignment of the system with construction contract workflows, variation handling, and site progress tracking.
9	Trainer / Change Management Expert	Bachelor's degree in Education, ICT, or related field	Over 5 years in training and capacity building for ICT projects	Design training programs and conduct sessions for different user groups. Lead change management initiatives.
10	IT Infrastructure / Cybersecurity Expert	Bachelor's degree in IT, Network Engineering, or related field	Over 5 years in system deployment, IT infrastructure, and security	Ensure secure deployment, data backup systems, and cybersecurity compliance.
11	AI / OCR Expert	Master's in Computer Vision, AI, or related field	Over 5 years in AI-powered OCR, digital archiving systems	Lead OCR and AI system development for document classification, digitization, and retrieval.

Note: The consulting firm may propose additional support or non-key staff as necessary, but must clearly outline their roles, qualifications, and relevance to the assignment.

7.1. Qualification Requirements

The Consulting Firm must meet the following minimum eligibility criteria:

- Be a legally registered business entity with a valid license to operate as a consulting firm.
- Have at least **seven (7) years of demonstrable experience** in developing and deploying integrated project management, contract management, digital archiving, and data analytics systems for public sector and donor-funded projects.
- Demonstrated expertise in OCR technologies, AI/ML, cloud-based solutions, and data analytics.
- Successfully completed a **minimum of three (3) similar assignments** in the last 10 years, preferably in the water, energy, or infrastructure sectors in developing countries.
- Demonstrated experience working with **World Bank-funded projects**, with familiarity in **World Bank Procurement Regulations** and **Ethiopian national procurement laws**.
- Have a multidisciplinary team with the relevant technical and sectoral expertise required to implement this assignment.

8. Client Inputs and Responsibilities

To support successful execution, the Client shall be responsible for the following:

- **Appoint Focal Persons for Coordination**
Designate key focal persons from relevant departments to coordinate with the consultant, manage internal communication, and ensure decisions are made promptly.
- **Provide Access to Existing Systems and Records**
Grant the consulting team access to all necessary documents, systems, databases, and physical records relevant to the project.
- **Ensure Availability of Staff**
Make relevant staff available during all critical phases, including requirement gathering, system testing, user training, and final validation.
- **Facilitate Procurement and Payment Processing**
Manage procurement procedures and payment processes in accordance with World Bank guidelines and internal financial protocols.
- **Timely Review and Approval**
Review deliverables and provide formal approvals or feedback within agreed timeframes to avoid delays in project milestones.

9. Budget and Payment Schedule

Bidders are expected to submit a detailed financial proposal that accounts for all costs associated with the successful completion of the assignment. The budget should cover software design and development, training and capacity building, user support, licensing, documentation, post-deployment services, and any other relevant expenses. Payments will be tied to milestone approvals, with disbursements made only upon the successful completion and formal acceptance of each project phase. All payment terms will follow the applicable World Bank disbursement rules and procedures.

10. Evaluation Criteria and Weighting

Proposals will be evaluated based on both technical and financial merits. The technical proposal will account for 70% of the total score, while the financial proposal will carry 30%.

The evaluation will focus on the soundness of the proposed approach and methodology, creativity in design, effectiveness of project and risk management plans, quality assurance measures, the qualifications of key experts, relevant experience of the firm, and transfer of knowledge and participation of nationals among key staff. Proposals that show a strong understanding of the scope, demonstrate relevant experience and advanced technology and offer practical, sustainable solutions will be rated more favorably.