

Ethiopian National Enterprise Architecture Framework (ENEAF) and Ethiopian eGovernment Interoperability Framework (EeGIF)

IMPLEMENTATION ROADMAP

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List of Acronyms

ADM	Architecture Development Method
ARM	Application Architecture Reference Model
BRM	Business Architecture Reference Model
CIO	Chief Information Officer
DRM	Data Architecture Reference Model
EA	Enterprise Architecture
ERP	Enterprise Resource Planning
ESA	Ethiopian Standards Authority
ENEAF	Ethiopian National Enterprise Architecture Framework
FDR	Federal Democratic Republic (of Ethiopia)
GRM	Governance Reference Model
ICT	Information and Communication Technology
IRM	Integration Architecture Reference Model
MDA	Ministry, Department, Agency and Authority
MinT	Ministry of Innovations and technology (of the FDR of Ethiopia)
PMO	Prime Minister's Office
PRM	Performance Architecture Reference Model
SRM	Security Architecture Reference Model
TRM	Technology Reference Model
TOGAF	The Open Group Architecture Framework

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1 Purpose of this Document

The ENEAF version 5.0 has been assessed to be a generic framework which should be translated into workable structures, processes, and tools. As part of the current update (2019), major changes were introduced to the framework so as to bring it one step nearer to implementation. Particularly, the

- Principles of the ENEAF were rationalized, streamlined and elaborated;
- A governing framework was proposed; and
- A compendium of standards to be adhered to developed.

The current update particularly focused on creating the basic infrastructure for realizing the national architecture. As such it focused on addressing the most relevant aspects of the “preliminary phase” of the ADM adopted as part of the ENEAF.

This roadmap document is developed to assist the planned and expedited realization of the national enterprise architecture. Its purpose is to indicate the major outstanding activities to be undertaken in the coming months and years. MinT, the MDAs, and the other organizations recommended in the governance structure could use this document as an input in their planning for a complete NEAF.

2 Audience of the Document

The main audience of this document are: MinT, MDAs, Governing Council, and Technical groups engaged in materializing the NEAF.

3 Project List

3.1 Establish Architecture Repository

Operating a mature Architecture Capability at a national level creates a huge volume of architectural output. Effective management and leverage of these architectural work products require a formal taxonomy for different types of architectural asset alongside dedicated processes and tools for architectural content storage. Therefore, MinT needs to establish a repository containing:

- All documents produced as part of the ENEAF development process
- Re-usable building blocks
- Publicly available reference models
- Organization-specific reference models
- Organization standards

3.2 Endorsement of Standards

As part of the current update, various standards are proposed to regulate the acquisition and/or development of data, applications, and infrastructures. These standards need to be endorsed by the Ethiopian Standards Authority (ESA).

3.3 Endorsement of the ENEAF

The ENEAF is developed in the interest of the nation. It is a mechanism and a tool for achieving efficiency and effectiveness in government. Therefore, the ENEAF (as updated) should be endorsed by the Council of Ministers for to gain formal acceptance by all stakeholders.

3.4 Establishment of organs defined in the governance structure

The governance structure developed as part of the current iteration of development of the ENEAF proposes several organs that could support its realization. Accordingly, the following organs need to be established at various levels of government.

- Governance Council under the PMO
- EA unit at MinT
- EA working groups at MDAs

To functionalize the governing organs, the processes and supporting documents need to be developed. Further,

- budget requirements and sources, and
- compliance guidelines and forms need to be worked out.

3.5 Elaborate the EA vision for the Federal Government (As-is)

The Governing Council and the technical working groups needs to set in motion a consultative process to frame the vision of the EA at the national level. Particularly,

- the visions, concerns and business requirements of the MDAs needs to be established;
- capabilities and readiness of the MDAs should be assessed;
- architectural principles for the MDAs need to be developed; and
- the top services that need to be delivered should be identified.

Based on the responses to the above questions, the governing council and the technical working groups could decide upon the scope, scale, timeframe and resource requirements of the overall effort. The exercise will create clarity on:

- the EA initiative that need to be prioritized;
- major components of the Core Platform;
- categorization of major applications as Common, Group and Domain-specific applications;
- number, nature and depth of performance parameters;
- sub-set of ENEAF principles and standards to be observed and enforced mandatorily;
- list of artefacts to be generated in the design and development of the Architecture;
- granularity of the design & documentation of the architectural artefacts;
- list of legacy applications to be leveraged;
- areas requiring BPR on top priority;
- integration goal and model;
- list of quick wins and game-changers to be targeted;
- high-level roadmap for implementation considering the above factors.

3.6 Elaborate the Reference Models of the ENEAF for the Federal Government (To-be)

Governance Architecture Reference Model (GRM): The objective of GRM is to manage and maintain architecture requirements and artefacts. It comprises of enterprise structure, processes and standards to ensure that the architecture is consistent with the business vision and objectives of the enterprise. Effective and efficient EA Governance ensures that priorities are based on broad consensus across the enterprise. EA is a continuous activity and governance is an integral part for its successful implementation and maintenance. As part of the current update, the ENEAF governance structure is drafted. However, the document needs to be iteratively completed through a continuous review process. In the next iteration, the governance architecture should address the following points.

- Integration of the EA governance process in the national procurement policy
- Funding model for future EA works. Particularly, emphasis should be given to the mechanisms by which regional states could be brought to the national EA fold.
- Stakeholder Consultation Strategy should be worked out to ensure the participatory nature of the EA development and governance process.
- The capacity building strategy should also be worked out. In this regard,
 - The Open Group could be engaged to certify Ethiopian Universities as local training centres. The Schools of Information Science of Addis Ababa University – as a unit of the AAU which helped enrich the ENEAF document – is well suited to serve as national training centre with other federal universities serving as regional cells.
 - Mechanisms for certifying MDAs, vendors, individuals should be worked out in collaboration with the aforementioned stakeholders.

Performance Architecture Reference Model (PRM): is designed to provide linkage between investments or activities and the strategic vision established by the Federal government and MDAs.

- Setup a mechanism by which MDAs publish their performance goals and measurement in machine readable format
- Establish a common repository to maintain performance data
- Establish process (and support documents) to allow for evaluation of investments based on alignment of IT investment to performance goals within an MDA and across MDAs
- Develop integration plan with BRM, ARM and DRM

Business Architecture Reference Model (BRM): it defines a functional view of Government's business processes, including the internal operations and services for citizens, the modes of delivering the services and enterprise back office processes. The BARM defines horizontal common business processes rather than MDA level stove piped view of processes.

- Government frontline and support services (portfolio)
- Service delivery modes and infrastructure plan
- Re-engineered processes

Application Architecture Reference Model (ARM): is a service driven view of the applications architecture defined to automate the business processes. The aim of the model is to recommend application services capabilities to support the reuse of business components and services across Government.

- Application portfolio
- Logical application architecture
- Service delivery channels with features
- Identity management and authentication management
- Develop portfolio of applications across MDAs to reduce cost of redundancy
- Integration plan for legacy applications
- Develop design artefacts for major processes

Data Architecture Reference Model (DRM): intended to promote the common identification, use, and appropriate sharing of data/information across the Government of Ethiopia through the standardisation of data. It defines the broad data entities across Government and their properties.

- Define government entities and their relationships
- Identify data sources across MDAs
- Define core data and meta-data
- Define data governance processes

Technology Architecture Reference Model (TRM): is technology driven model that categorises the standards and technologies to support and enable the delivery of service components and capabilities. The standards specifications and their policies have been defined in the e-GIF document.

- Network architecture topology for the government network infrastructure
- Create IT asset management strategy
- Identify opportunities for shared services

Security Architecture Reference Model (SRM): this defines the security framework that supports the applications and technical infrastructure to support the MDAs. Accordingly, the following activities should be undertaken as part of the SRM.

- Develop/update security policy
- Enforce application and infrastructure/technology with controls via standards
- Ensure Procurement guidelines and TOR/RFP documents include adopted security standards

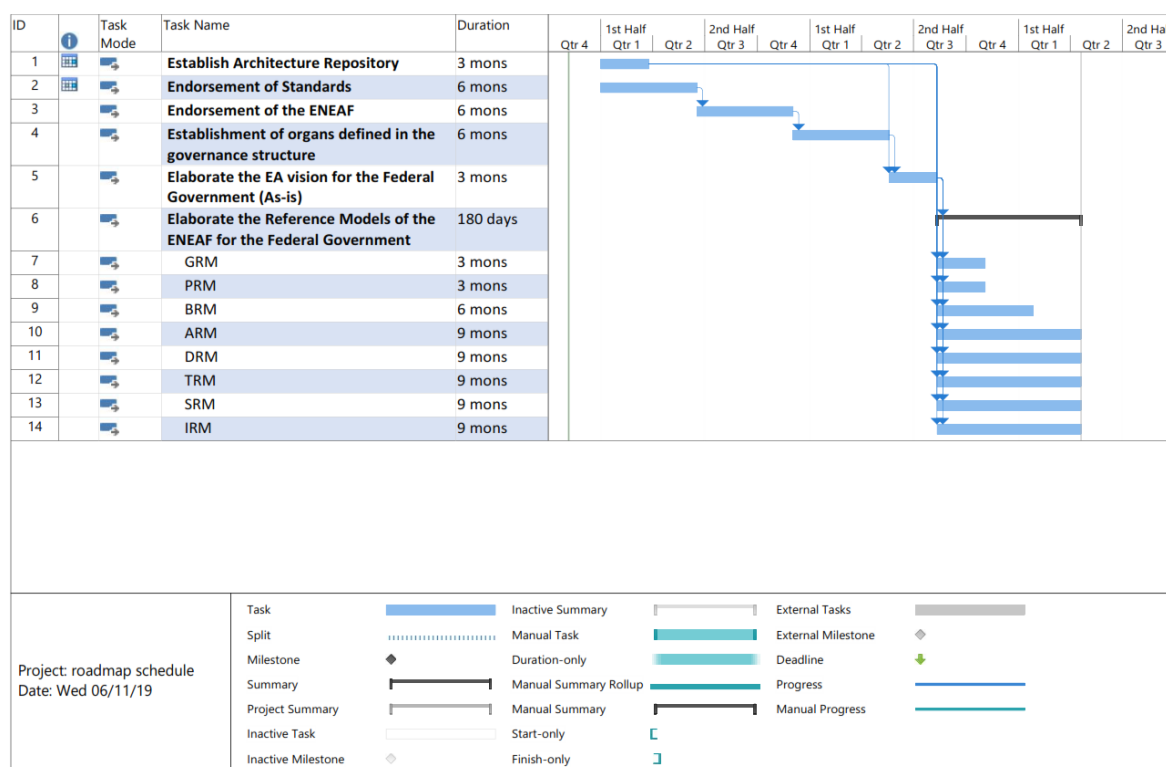
Integration Architecture Reference Model (IRM): A critical aspect of Enterprise Architecture in Governments is their ability to make government administrations at different layers to collaborate and work together in order to provide public services in an integrated seamless manner. When multiple government entities are involved there is a need for coordination and governance by the

relevant authorities with a mandate for planning, designing, provisioning, and operating public services. This makes integration architecture covering all the viewpoints (performance, business, data, application, technology, security) an absolute imperative to realize the vision of ONE Government. As part of the IRM, the following tasks should get attention by MinT and the governing council.

- Preparation and/or update of the E-government service bus document
- Launch of enterprise information integration project(s)
- Identification of shared ERP services and preparation of a plan for the acquisition of the same.

4 Time-Oriented Migration Plan

Project (major categories)		Estimated Duration for implementation
3.1	Establish Architecture Repository	3 months
3.2	Endorsement of Standards	6 months
3.3	Endorsement of the ENEAF	6 months
3.4	Establishment of organs defined in the governance structure	6 months
3.5	Elaborate the EA vision for the Federal Government (As-is)	3 months
3.6	Elaborate the Reference Models of the ENEAF for the Federal Government (To-be)¹	
	• GRM	3 months
	• PRM	3 months
	• BRM	6 months
	• ARM	9 months
	• DRM	9 months
	• TRM	9 months
	• SRM	9 months
	• IRM	9 months



¹ It should be understood that EA at a national level is a long-term engagement. The duration estimate provided here is only for work at the level of the federal Ministries.

5 Risks and Issues

Management Buy-in: Buy-in at the top level of the government is the most critical prerequisite (and risk) for the successful materialization of the ENEAF. The ENEAF needs a champion promoter and that champion should preferably be from the top brass at the various levels of government. At the Federal level the support of the PMO should be assured. At the Ministry level, the endorsement of the Ministers or Vice Ministers is required.

Stakeholder Engagement: The extent to which all the stakeholders of ENEAF engage with the process will significantly affect the outcome. If there is a positive stakeholder attitude towards the whole endeavour, the process could be expedited, and the required change will materialize. Lack of acceptance or indifference to the project will ultimately make the ENEAF a white elephant – a project with big investment but no significant impact. Therefore, from the get-go MinT and other trend setters should set a strategy to engage all the stakeholders in the process.

Budget: The work spans over at least two fiscal periods and demands a significant amount resource. The Ministry should workout the detailed budget required for the work and look for funding sources.

Internal Capacity: Enterprise Architecting is new for many of our MDAs. The human and non-human capacity to support such change may not be available in many of the MDAs. The institutional capacity at all levels of government needs to be continuously assessed and wherever gaps are found, fast actions should be taken to remedy the deficiencies.

Approval/Endorsement Process: Several projects are suggested in this roadmap. However, implementing these projects in an agile manner instead of in a sequential waterfall is recommended. Quick wins always help to capture the trust of stakeholders. Therefore, the governing council should move to establish the essential building blocks of the architecture before the detailed elaborations are launched.

Technological changes: Technological changes are always a threat to any planned change. Constant monitoring of the environment is required to keep abreast with the changes. The standards, structures, tools, techniques, and infrastructures need to be updated. The ENEAF should remain a work in progress to stay fresh.

Political Changes: As indicated in the first bullet, top management commitment is the top most criteria for the success of ENEAF. However, the government may change its focus from time to time which means the ENEAF may lose its credibility and potency. The best strategy to mitigate this risk is to continuously align the ENEAF with the policies and strategies of the sitting government. Promotion and popularization could also make the ENEAF current in the minds of all the stakeholders.

Governance process: The speed with which the governance structure processes requests and develop & implement architectural changes could make or break the ENEAF. The governance council, the technical working groups and the coordinating unit within MinT should serve as change agents instead of bureaucratic hurdles. A continuous participatory process with all stakeholders could help clear misunderstandings and positively frame the working modalities of the governing organs.