

Proposed Enterprise Architecture Framework and Strategy for the Ministry of Foreign Trade



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EXECUTIVE SUMMARY

Like all modern organizations, the Ministry of Foreign Trade (MoFT) is implementing a range of new information technology (IT) programs to improve its operations. While a number of the units of the Ministry have engaged in a systematic review of their business processes in order to identify ways to improve those processes, with or without IT support, the Ministry as a whole has not yet done so. This lack of a central review was not a problem in the past when the various parts of the Ministry were located in separate sites around Cairo. But in the near future, much of the Ministry will be relocated to a new facility where certain IT resources will be shared and where all of the Sectors will be interconnected. This creates a new emphasis for a Ministry-wide review of business processes and, more particularly, the use of IT in support of Ministry activity.

This report recommends a process, the Enterprise Architecture (EA) initiative as described more fully below, by which the MoFT can maximize the efficiency of its use of IT resources to support its business processes. If adopted, the EA would allow the MOFT to identify improvements in its business and management processes with the help of information technology, increasing the availability and reliability of information provided to trade stakeholders, eliminating redundancies, and thus fulfilling its mission more effectively.

The EA process would promote decentralized management and implementation of IT initiatives while ensuring that applications across the Ministry can operate efficiently and cooperatively.

An EA is the explicit description and documentation of the current and desired relationships among business and management processes, on one hand, and information technology resources, on the other. The EA concept is very powerful and if properly implemented, it will yield immediate results. By adopting the EA model for the MOFT as the framework to implement current and future IT projects, the MOFT will eliminate IT redundancy, increase data reliability and opportunity, and manage changes in business and technology more efficiently.

Without an EA for the MOFT, information will be difficult to share, new information requirements will be very difficult to implement, and IT resources will not be effectively used. The MOFT is now at the appropriate moment to adopt the EA approach since main MOFT sectors will soon move to a new single location, using one physical networking infrastructure.

This report defines the framework and strategy to implement the Enterprise Architecture initiative for the MOFT. A modified version of the Federal Enterprise

Architecture Framework (FEAF)¹ model is proposed as the way to document business and management process relationships with IT resources. To proceed with the EA implementation, MOFT should create a taskforce including IT and business managers of the main sectors. The taskforce would then prepare an EA implementation plan as one of its first tasks. It would also seek to develop a set of Principles and Standards to apply to all IT components. These would cover such items as network security, application audits, shareable information, restricted access information, intranet access to specific information, hardware that can be connected to the MOFT's LAN, website standards, maintenance and support, traffic on the Intranet, application architecture, procurement policies, web-based applications among others. The Principles and Standards report would be the first deliverable of the EA implementation. If this deliverable is implemented successfully, Sectors will be able to effectively manage their resources and carry out decentralized implementation.

This report suggests a process with specific activities to produce the Principles and Standards product. Once this deliverable is produced, the taskforce should create work teams to focus on several processes, which will yield the other three main deliverables: (1) the EA baseline, (2) Target EA and (3) the portfolio of IT initiatives and associated implementation plan. A Steering Committee formed with the heads of the main Sectors should approve the portfolio of IT initiatives. An appropriate software tool will be selected to support the analysis of processes, defining the data model, and logical and physical entity-information flow relationships. The portfolio of projects will be the vehicle to move the current EA to the target EA.

The establishment and definition of the EA initiative requires full support from MOFT's top managers. In addition, the following critical success factors need to be present:

- Engaged end-users and middle management
- A realistic scope
- An implementation approach that can produce quick results/products
- A qualified EA team that has credibility within the MOFT
- Well defined Principles and standards for business processes, data, applications, and IT infrastructure.

In addition to the EA initiative, MOFT should develop a strategy and approach to gradually integrate its current IT initiatives with its new Enterprise Architecture. Current IT initiatives are characterized by discrete components designed to contribute to the overall MOFT IT initiatives. Some sectors are more mature than others in developing IT strategic plans. Those sectors with experience in preparing IT strategic plans would be in a very good position to contribute to the EA initiative, specifically analyzing current processes and identifying improvements to make the work more efficient, and improving the information and services provided to the trade community. IT components supported

¹ FEAF Framework has been adopted by several US Federal Government agencies including HUD, and OMB

by the Assistance for Trade Reform (ATR) project have resulted from specific requests from Sectors. Some recipient Sectors have not carried out formal project planning; therefore for those Sectors, very limited formal documentation exists to support the definition of the EA baseline. For other sectors a more extensive analysis of business processes has already been done. This knowledge can be quickly incorporated into the Ministry's EA. Since contributions from the ATR project are part of major MOFT systems/applications, documentation on current and future components should be prepared in accordance with the guidelines included in this report and all activities should be compliant with the Principles and Standards, the first deliverable from the EA implementation.

The establishment of the Target Enterprise Architecture and the definition of the implementation plan (migration strategies to reach the Target EA) for the entire Ministry will take approximately 9 months, assuming that the EA taskforce meets the timeframe schedule for critical activities included in this report. The cost of moving the MOFT from its baseline EA to the target EA is unknown at this moment. Once the economic analysis is performed by the 8th month of EA project implementation, the steering committee can assign priorities for implementation, based on budget availability, and capacity of MOFT and Sectors to absorb the change. Sectors will be responsible for project implementation.

Table of Contents

1.0 Background.....	1
2.0 Scope of this Report.....	2
3.0 What is Enterprise Architecture?.....	2
4.0 Principles to establish the MOFT’s Enterprise Architecture	3
5.0 Why an Enterprise Architecture for the MOFT.....	3
6.0 MOFT’s Enterprise Architecture Guiding Principles.....	4
7.0 Mission, Goals, and Objectives of the EA Project.....	5
8.0 Challenges and Issues to be addressed by the EA	6
9.0 Enterprise Architecture Framework Models.....	8
10.0 Proposed framework for the MOFT	11
11.0 Suggested Standards for Immediate New Proposed IT Initiatives	12
11.1 Suggested standards for projects implemented during the transition period	12
11.2 Standards for IT Projects to reach the Target EA	13
11.3 Standards for Project Implementers.....	14
12.0 Establishing the Enterprise Architecture for the MOFT.....	14
13.0 Process to Define and Implement EA Principles and Standards	17
14.0 Project Management Organization	17
15.0 Contextual Definitions.....	21
15.1 MOFT Definitions	21
15.2 ATR-Supported Sectors.....	21
15.2.1 GOEIC	21
15.2.2 Trade Agreement Sector (TAS).....	23
15.2.3 Foreign Trade Policy Sector (FTPS).....	24
15.2.4 ECS	25
ANNEX I.....	26
Current ATR Initiatives	26
1. Email Servers and Network components.....	26
2. GOEIC. Training Center.....	26
3. GOEIC. DDTAS.....	27
5. TAS. AWFS.....	27
6. GOEIC. TSC.....	28
7. TAS. WTO UNIT	28
ANNEX II.....	29
ATR-Supported IT Initiatives for the next two years.....	29
1.0 Ministry’s Office.....	29
Strengthen the Central IT Department.....	29
Assist in the implementation of the MOFT’s EA	29
Facilitate Data Integration.....	29
2.0 Trade Agreement Sector	29

Strengthen Human Resources Process.....	29
Strengthen the Correspondence and Filing Management Process for the Trade Agreement Sector.....	30
Strengthen the TAS IT Department	31
TAS Web Site	31
TAS Intranet (current location).....	31
Develop Data Warehouse	32
Strengthen the CD/WTO.....	32
Implement a correspondence and filing system.....	32
Strengthen the CD/Bilateral and Multilateral Agreements Process	Error! Bookmark not defined.
Establish a System to meet the information needs of Egyptian Parties on provisions and protocols related to the EU Agreement.....	Error! Bookmark not defined.
Improvements to the Website to increase public awareness on International Trade Policies	Error! Bookmark not defined.
3.0 Foreign Trade Policies Sector.....	32
Improve Central Management Sector	Error! Bookmark not defined.
Improvements to the Egyptian Center for Export Development Sector	32

1.0 Background

The Ministry of Foreign Trade (MoFT) is implementing several information technology (IT) programs to improve its operations. While a number of the units of the Ministry have engaged in a systematic review of their business processes in order to identify ways to improve their operations, with or without IT support, the Ministry as a whole has not yet done so. This lack of a corporate initiative was not a problem in the past when the various parts of the Ministry were located in separate sites around Cairo. But in the near future, much of the Ministry will be relocated to a new facility where several IT resources will be shared and where all of the Sectors will be interconnected. This creates a new emphasis for a Ministry-wide review of business processes and, more particularly, the use of IT in support of Ministry strategies.

This report recommends a process, the Enterprise Architecture initiative as described more fully below, by which the MoFT can maximize the efficiency of its use of IT resources to support its business processes. If adopted, the Enterprise Architecture initiative would allow the MOFT to identify improvements in its business and management processes with the help of information technology, increasing the availability and reliability of information provided to trade stakeholders, eliminating redundancies, and thus fulfilling its mission more effectively.

An Enterprise Architecture would establish principles and standards for all IT solutions that would promote decentralized management and implementation of IT initiatives while ensuring that applications across the Ministry can operate efficiently and cooperatively.

Among support in several areas, the USAID-funded Assistance for Trade Reform (ATR) project is providing technical assistance to the MOFT to strengthen its information technology infrastructure. We believe that a corporate Enterprise Architecture initiative improves the use of IT resources, and creates a more reliable source of information. In adopting the Enterprise Architecture concept, the MOFT would be able to handle organizational changes and technological upgrades without disrupting functional operations. The Enterprise Architecture will create a repository with definitions of information relationships and location of data sources to support business processes more efficiently. Therefore, new initiatives will be implemented more consistently, information can be produced when it is needed, and redundancy of IT components can be identified and redeployed to support other processes, as needed.

Sectors' technological development is uneven. These differences will introduce a factor to consider for assigning priorities for implementation of IT projects.

The ATR project contracted Alvaro J. Garcia to develop a preliminary draft of the Enterprise Architecture (EA) framework and approach for implementation based on MOFT's urgent needs to minimize IT redundancy, promote IT collaboration among

sectors, maximize the use of the integrated network architecture of the new building, and implement industry standards to manage its information technology resources.

2.0 Scope of this Report

This report proposes the strategy, framework, and approach for the implementation of Enterprise Architecture initiative for the Ministry of Foreign Trade of Egypt (MOFT). At present, MOFT does not have a formal corporate strategic plan or an IT strategic Plan. Several sectors have worked on IT strategic plans, which they are in various stages of implementation. No integrated corporate strategic plans have been developed. The ATR project has implemented several IT components in the ATR-supported sectors. It should be noted that the ATR project only includes four out of 14 MOFT sectors.

The ATR project has identified a great deal of information and prepared reports and proposals with mission, goals, objectives, organization structures, functions, and management information systems for the four-supported sectors. Several IT components have been implemented including hardware, basic software, telecommunications, and application software. However, nine sectors are outside of the ATR project scope. This report will provide the framework and strategy for the entire MOFT Enterprise Architecture; however, the contextual concept description will only include those Sectors under the ATR project.

The proposed framework and strategy can be used as the foundation for the development and establishment of the Enterprise Architecture adopted by the Ministry for the next five years. Once the baseline of the current Enterprise Architecture is determined, the MOFT will need to define the Target (desired) Enterprise Architecture and a comprehensive project plan to implement IT. The preparation of the Target EA and its execution of the migration plan will require appropriate quality assurance, configuration management and project management techniques to ensure that the EA is realigned as needed when processes, objectives, or technological upgrades or changes occur.

3.0 What is Enterprise Architecture?

An Enterprise Architecture is the explicit description and documentation of the current and desired relationships among business and management processes, on one hand, and information technology resources, on the other. It describes the "current architecture" and "target architecture" and includes the rules and standards to optimize and maintain an integrated IT architecture. The Enterprise Architecture also provides a

strategy that enables the MOFT to support and maintain its current IT infrastructure and acts as the roadmap for transition to its target environment.²

4.0 Principles to establish the MOFT's Enterprise Architecture

The establishment of the Enterprise Architecture for the MOFT requires consensus on the following principles:

1. Develop information systems that operate in open networks, hardware, software, and telecommunications platforms.
2. The Ministry will be connected through a single network with certain shared resources. Collaboration in this environment is essential.
3. Meet strategic objectives and information needs through effective business processes, sharing IT resources. Information will be produced regardless of the physical location of the required data elements and delivered to the user via the most expeditious path.
4. Establish a level of security for all information systems that is commensurate to the risk and magnitude of the harm resulting from the loss, misuse, unauthorized access to, or modification of the information stored or flowing through these systems.

5.0 Why an Enterprise Architecture for the MOFT

The MOFT is a very large and complex governmental institution. Without an EA, the proliferation of information technology resources implemented in several MOFT sector will create an unsustainable and unreliable information technology infrastructure. Without an EA for the MOFT, information and other IT resources will be difficult to share, new information requirements will be very difficult to implement, and resources will not be effectively used. Furthermore, the MOFT sectors will soon move to a new single location, using one physical networking infrastructure. There is a common desire to share resources and eliminate redundancies. Table 1-1 shows the benefits of implementing the EA and the risks involved if the MOFT continues with its current IT implementation strategy.

² Adapted from the US Federal Government definition

Table 1.1- Benefits and Risks

EA Benefits	Risks without an EA
Systems will support business processes.	Systems might be implemented in functions that are not critical for supporting MOFT’s strategic objectives.
Resource use will be maximized, making information accessible for queries, independently from their physical location.	Duplication and redundancy of IT components make systems difficult to maintain and deliver inconsistent information.
Systems will comply with EA policies on information security	Systems might not comply with industry standards on security exposing all users to risks.
Systems will be easy to maintain and will be enhanced when needed without harm to the integrity of the system	Enhancements might be performed without necessity and integrity of systems might be lost.
Policies and procedures will enforce IT security requirements, ensure availability, reliability, and opportunity of information and facilitate system use and maintenance.	The lack of centralized definition and enforcement of security policies and procedures will decrease IT infrastructure security. Enhancements and changes to systems functionality will be difficult to implement.
Proper project management practices will yield high quality products and processes.	Initiatives might take considerably more time to be implemented, at a higher cost, and less likely to respond to needed changes in a timely way.
MOFT will have a clear roadmap to implement future information technology projects.	MOFT will react to a problem rather than knowing what should be implemented, when, and where, and who will benefit from such implementation.
MOFT will build its knowledge database to ensure continuity in providing reliable information to the government and private entities.	MOFT will not capitalize on experiences and reuse proven solutions as needed.

6.0 MOFT’s Enterprise Architecture Guiding Principles

The EA principles need to come from MOFT top managers in terms of goals and objectives, and business processes, and from middle and operational managers in terms of data, functional requirements, applications, and information needs. The following

principles are provided as a working list for discussion by the MOFT taskforce responsible for implementing the EA initiative.

- MOFT's Enterprise Architecture and associated systems will meet program and business needs.
- System changes, integration, and new initiatives will be implemented following predefined principles and standards.
- Data is a MOFT asset and will be shared with all who have a need and authorization to use it.
- IT components will be non-redundant (except as a security practice), securely shared, and cost-effective.
- Security will be designed into all architecture layers (applications, data, network, systems) balancing the need for data protection with the need for accessibility and ease of use.
- IT architecture security will be simple and integrated, and it will prevent unauthorized access or damage to the integrity, reliability, and opportunity of information.
- EA will use internal auditing, quality assurance, configuration management, and project management processes to ensure its success and sustainability.
- EA will ensure maintainability, reduce complexity, and increase quality of information technology systems.
- EA will ensure that program/business and information technology requirements use commercial off-the-shelf (COTS) technology rather than customized or in-house solutions unless otherwise justified.
- EA will exploit the communications vehicle of Internet technology to the maximum extent possible, making systems web-enabled, accessible, and connected.
- End-user application interfaces will be standardized so that navigation among applications is similar, reducing training costs.

7.0 Mission, Goals, and Objectives of the EA Project

Mission:

The mission of MOFT's Enterprise Architecture project is to develop and implement **one** information technology architecture aligned with MOFT's business goals and processes, using enterprise-wide data integration, and maximizing the use of IT resources.

Goals:

- Enable the Ministry to build a shareable knowledge base of information on business processes and their relationships with information technology
- Support the consistent implementation of IT initiatives linked directly to processes and strategic objectives.

- Support effective delivery of information services and understanding of the Ministry's capabilities, policies, and regulations.
- Support MOFT's strategic goals and objectives
- Support key processes of the MOFT with appropriate IT resources so quality of services to the GOE and trade stakeholders improves.

Project indicators:

- Principles and standards implemented and effectively used to define IT projects.
- Portfolio of IT initiatives and associated implementation plan defined to achieve the target architecture.
- Improved quality of information delivered to exporters, importers, manufacturers, producers, and the general business community.
- IT resources securely shared among sectors

Project outputs:

- EA principles and standards
- EA Baseline
- Target EA
- Portfolio of Projects
- Implementation Plan

8.0 Challenges and Issues to be addressed by the EA

The establishment of an EA for the MOFT requires full commitment from top management. The Enterprise Architecture will provide the sectors with a consistent repository of principles, standards, and data relationships with business processes. The hardware and software architectures defined and implemented in sectors will form the corporate architecture for the Ministry. The successful implementation of Enterprise Architecture requires active participation of top and middle managers from all Sectors, their IT departments, and the central IT department. All participants will need to reach consensus on issues that this project will address. Critical issues identified during a preliminary review of the ATR-supported sectors are:

- Sectors are implementing information technology initiatives without analyzing, which resources could be shared or what contribution or collaboration could assist the MOFT in maximizing the use of technology. This approach is likely to prove redundant and costly, with incompatibility to share information and other resources.
- There is no corporate auditing to evaluate sectors' IT investment and establish the appropriate mechanism to determine whether proposed new initiatives contribute to institutional strategic objectives in the most effective way.

- Data modeling has not been developed at the institutional level. Each application uses an independent data source, which may generate data redundancy and inconsistent information, difficult to support and maintain.
- Resources to support critical MOFT processes are not utilized efficiently. It is likely that current investment in IT might not support MOFT strategic objectives and associated processes effectively (e.g. several servers hosting websites, several servers hosting independent email servers under different domain names, several ISP providers, several databases containing the same information).
- IT resources (data, networks, hardware, applications, policies and procedures) are not shared among sectors and associated entities of the MOFT.
- Current and future enhancements to the IT infrastructure will be difficult to implement and might quickly deteriorate the availability and reliability of critical information.
- There is no quality assurance function, configuration management and project planning to implement information technology initiatives.
- There are no sharable repository with policies/procedures and standards on MOFT information infrastructure.
- IT departments of MOFT sectors are overwhelmed with implementation and do not have time to conduct appropriate planning, and document all stages of project implementation developed by them or by others (outsourced).

9.0 Enterprise Architecture Framework Models

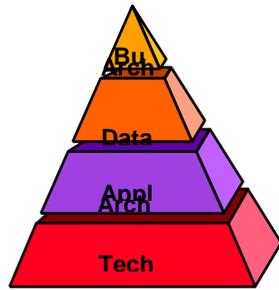
The MOFT is a complex institution of the GOE. Its information technology architecture needs to support critical business processes in a consistent and secure technological environment. A framework is needed to organize and visualize the architecture for this complex undertaking.

Frameworks include concepts that drive and organize the types of architectural products being created. The products, both graphical and textual descriptions, capture the information prescribed by the framework. Several frameworks are available in the market. We analyzed two frameworks that offered appropriate characteristics for the MOFT environment: The Zachman Framework and the Federal Enterprise Architecture Framework (FEAF).

The Zachman framework is useful to show short-term results; however, it is complex, especially when the institution has not reached the technological and business development needed to absorb the methodology associated with its implementation.

The FEAF model is good to deliver products quickly, favors decentralized implementation and management, and is appropriate for vertical organizational structures. Both models use the pyramid IT architecture as the basis for establishing relationships between processes and information technology. Figure 9-1 shows the IT Enterprise Architecture approach.

Figure 9-1 IT Enterprise Architecture



10.0 Proposed framework for the MOFT

Although the Zachman model offers a complete framework to document the EA Architecture (baseline and target), the learning curve might be steep and the personnel resources needed to absorb the tool and document model products would not be ready in a short period of time. Therefore, we recommend a simplified version of the FEAF (Federal Enterprise Architecture Framework) Model. This model is good to deliver products quickly, favors decentralized implementation and management, and is appropriate for the organizational structure of MOFT. The proposed model is shown in Figure 10.1.

Figure 10.1
Recommended EA Model
For the MOFT

	Work Views	Functional View	Information Views	Infrastructure Views
MOFT Level	External Entities	Sector Model	Data Model	IT Architecture
		MOFT Goals	Data Macro	Principles
Sector Level	GD/CD Locations	Areas Functions Processes Activities	Data Middle	Architecture Components Standards
		Application Architecture Applications	Data Micro	Items/Products
Functional Area	User Groups			

Source: Federal Enterprise Architecture Framework

Using descriptive concepts from the Zachman Model and the modified FEAF Model to develop the EA for the MOFT, IT initiatives (IT projects) would include contextual definitions of why (problem definition), who (users), what (processes that will improve or supported and associated information needs), and where the IT component would be deployed (location of physical and logical deployments). Contextual descriptions will be stored at the project documentation and will be part of the portfolio of IT initiatives for implementation within the next five years.

The MOFT Level includes entity relationships, the internal organization, associated strategic objectives, information flows at a macro level, and the complete data

model for the Ministry. It will also contain the entire IT architecture (wide area network) and principles associated to that particular level.

The Sector Level will contain entity relationships and information flows between sectors and associated General or Central Departments. It will also include mapping of processes and functions and specific activities for each process. Information flows will be more detailed than those for the MOFT level, and IT infrastructure (sector networks) will be documented in the specific model cell.

The Functional Area Level will contain all details needed to support the implementation of projects/applications, and deployment of IT infrastructure.

11.0 Suggested Standards for Immediate New Proposed IT Initiatives

In the interim and until the MOFT has developed its baseline and target EA, and the associated implementation plan, the ATR project and Sectors can use the following methodology to ensure that projects that will be implemented within the next 10 months (estimated time to produce a comprehensive definition of IT initiatives to reach the target EA) can be easily integrated within the baseline and/or target EA³.

11.1 Suggested standards for projects implemented during the transition period

Within the EA implementation perspective, the transition period is the time between two major events: The production of the Principles and Standards and the production of the target EA. Projects defined during this period should contain the following contextual descriptions:

- The problem or limitation being addressed needs to be clearly defined. The impact or improvement to the current business process should be documented. This standard meets the “**why**” requirement.
- As applicable, requirements should be prepared at the application level. The project designer should include the contextual description of requirements and the technical specifications. Technical requirements should comply with principles and standards defined under the EA project implementation. This standard meets the “**what**” requirement.
- Specify who will be the direct user or group of users for the proposed component. It should also describe the physical location for deployment of the proposed component and the specific integration requirements for the

³ These suggestions assume that Principles and Standards have been defined, approved and adopted for the four architectural components.

component with current IT infrastructure. This standard meets the “**who**” and “**where**” requirement.

- Assign a code and a name to the IT initiative. This action will generate a project that will be added to the portfolio of projects under implementation by the specific Sector. In the interim, use the Sector acronym plus a sequential number as the code for the initiative.
- EA taskforce will be responsible for conducting quality assurance for projects implemented by Sectors to ensure that Policies and Standards have been observed.

11.2 Standards for IT Projects to reach the Target EA

Once the EA target is established, project definition should contain the following minimum contextual definition:

- **Why:** Document the problem or limitation. Specify the process that will be supported by the proposed application/component. A predefined form could be established to simplify the documentation.
- **What:** Document the requirements in the contextual form. If the initiative is already part of one project/system/application, then use the appropriate reference. If the application does not have requirements identified, then the requestor should prepare the corresponding documentation. Application requirements could be mapped to one or more processes.

Technical requirements should comply with corresponding principles and standards associated with the four architectural blocks. Principles and standards are stored in Target EA repository. Information and IT infrastructure requirements should be defined in accord to the corresponding architectural design and product specification in the Target EA repository.

System/Application design requirements should be met using the corresponding cells of the Target EA repository.

- **When:** This requirement has two components. Sectors should specify the expected timeframe within which this requirement should be met. Periodic cycles for delivering information from the implementation of this component (e.g. ad-hoc, monthly, quarterly, online) should be documented. If other components are dependent on the component in the request, the project designer should specifically mention the dependencies and the expected timeframe for those components to be ready.
- **Who.** Specify who will be using the information resulting from the implementation of the component. Include here internal and/or external users.

- **Where.** Specify where the component should be delivered. For hardware and network components, project designer should specify the physical location, building, and office.
- **How.** Specify how the implementation would be carried out. (e.g. in-house design and development, outsourced implementation, procurement strategy). Define here the integration requirements with current or modified process.
- **Cost.** Estimate the total cost of the IT project
- **Impact on the business process.** Include a descriptive impact of the current process and organizational changes needed to properly integrate the IT component.

11.3 Standards for Project Implementers

Sectors responsible for project implementation should observe the following project implementation standards:

- **What.** Translate the information needs into technical functional information requirements. This should include information requirements, application requirements, and hardware, telecommunications, and software requirements. Verify consistency with Policies and Principles defined under the EA framework strategy and corresponding cells of the EA repository.
- **How.** Evaluate whether commercial off-the-shelf software (COTS) meets more than 50% of the requirements. If so, include the identified COTS and prepare the terms of reference (TOR) for enhancements/customization. Prepare the product compliance evaluation criteria (PCEC) and interim and final quality assurance checkpoints and associated checklists. Prepare the initiative implementation plan and incorporate the necessary QA activities as needed. Prepare TOR for contracting the work and/or hardware, software, and telecommunications configurations and specifications. Verify compliance with EA Standards.
- **Where.** Evaluate the appropriate technical location to integrate the requested component. The component might fit within one existing application. Evaluate the integration requirements where the component will be installed. Analyze the existing configurations in the location specified by the project designer from the perspective of existing hardware, communications, and software architecture.
- Document any additional component that needs to be procured in accord to the EA Target Repository.

12.0 Establishing the Enterprise Architecture for the MOFT

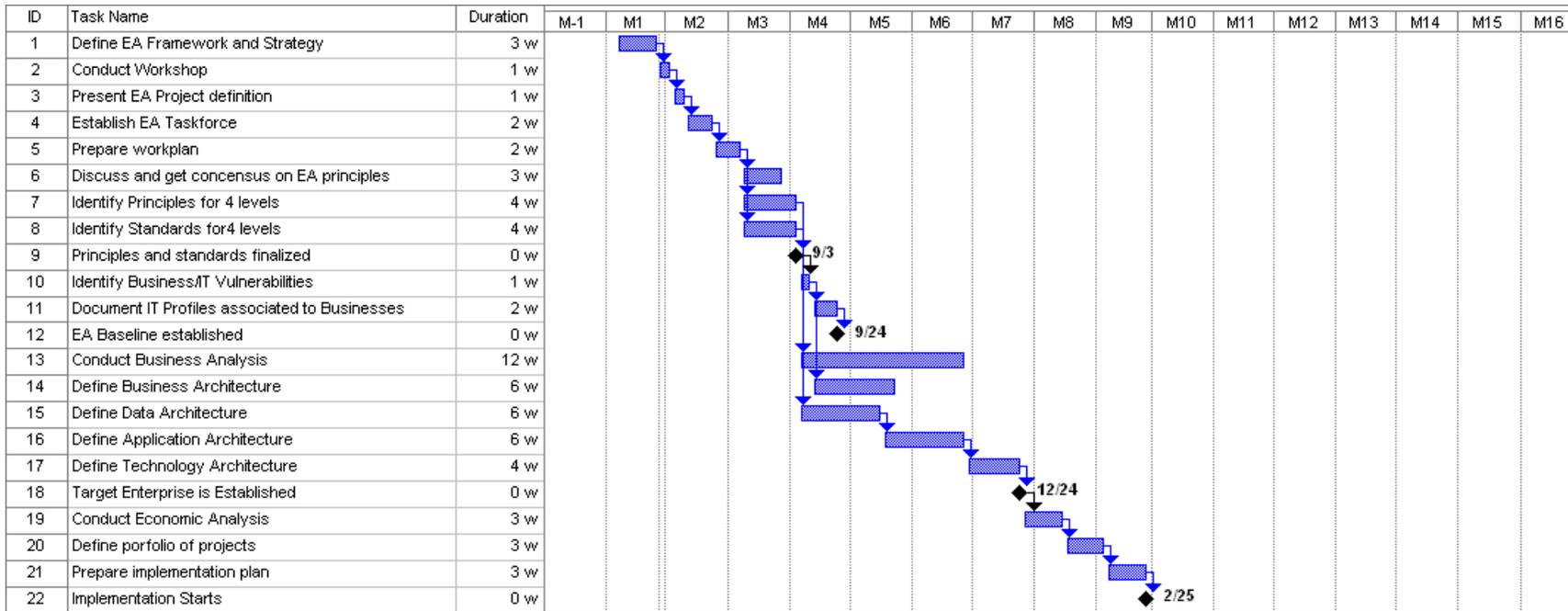
To implement the project for establishing the EA for the MOFT, the following main activities should be considered for inclusion in the project plan:

- Conduct a workshop at the MOFT with IT managers and Chairmen of the MOFT Sectors/Organizations.
- Each Sector conducts a workshop with middle managers to discuss their own strategic objectives and processes.
- The EA taskforce is created and staffed.
- Procure the necessary EA software tools, install and train users (EA taskforce).
- Define, document, and get consensus on EA principles.
- Define, document, and get consensus on EA standards.
- Identify IT vulnerabilities
- Define the Scope for the EA preparing contextual descriptions of mission, objectives, critical success factors, and business processes of included entities.
- Identify data, applications, network, and hardware profiles associated with current processes.
- Document IT profiles associated with current processes in the baseline EA.
- **Basic EA Enterprise Architecture is established.**
- Conduct Business Analysis (identify possible improvements to current processes and associated information needs).
- Produce the Business Process Model and the conceptual Enterprise Model components.
- Define and document the Data Architecture.
- Define and document Application Architecture.
- Define and document Technological Architecture.
- Assess impact on MOFT for implementing the Target Enterprise Architecture
- Define portfolio of IT initiatives/projects.
- Conduct Economic Analysis.
- **Target EA Enterprise is established.**
- **Prepare EA Implementation Management Plan** (QA and CM processes are incorporated in the Program Management Plan)

The proposed project plan for establishing the EA for the MOFT is shown in Figure 12-1.

Figure 12-1

Overall EA Project Plan



13.0 Process to Define and Implement EA Principles and Standards

The EA taskforce needs to produce the first major deliverable expeditiously. The Principles and Standards product is a critical success factor for the EA initiative. The proposed process to prepare this product is shown in the next page. This process contains 10 activities and the time needed to complete the work will depend on the skills of the team members, and the time allotted by each individual to perform the specific work.

Activity 7 requires the execution of an embedded process to define the compliance procedures and steps needed to ensure that IT components of the four architectural blocks comply with defined principals and standards. Each principal/standard might require a different procedure to verify compliance.

The process will yield two deliverables: (1) Compliance Procedures for Adopted Principles and Standards and (2) Principles and Standards for the MOFT's Enterprise Architecture. This product will be stored in the EA Target Repository using the EA system management tool. The information will be accessible from any desktop connected to the MOFT's intranet. We envision that a well-selected working team with the appropriate technical assistance could complete the work and preparation of the two deliverables from this process in approximately two months.

14.0 Project Management Organization

The implementation of the EA project requires an appropriate management organization to define the work plan, assign responsibilities, and conduct quality assurance of the implementation process and project deliverables. We recommend that the MOFT create a taskforce responsible for the EA implementation. The composition of this task force would vary depending on the activities, scope, and skills requirements for each particular task/activity.

We suggest that the taskforce responsible for defining the work plan be staffed with IT managers of the main MOFT Sectors, with at least 50% of their work time devoted to the project. In addition, the taskforce would need representatives of the main sectors to participate in the definition of the principles, standards, and contextual information on mission, objectives, critical success factors, and processes for the MOFT and Sectors. The taskforce will need to have a leader with full time participation to provide guidance, project management, and organization skills to manage the project and define Quality Assurance activities of implementation processes and deliverables.

The taskforce will have a dynamic composition depending on the nature of the work and the specific deliverable to be prepared. The taskforce would report to a Steering Committee created with the Heads of the Sectors and the representative of the MOFT Minister. The taskforce leader should perform the following major tasks/activities.

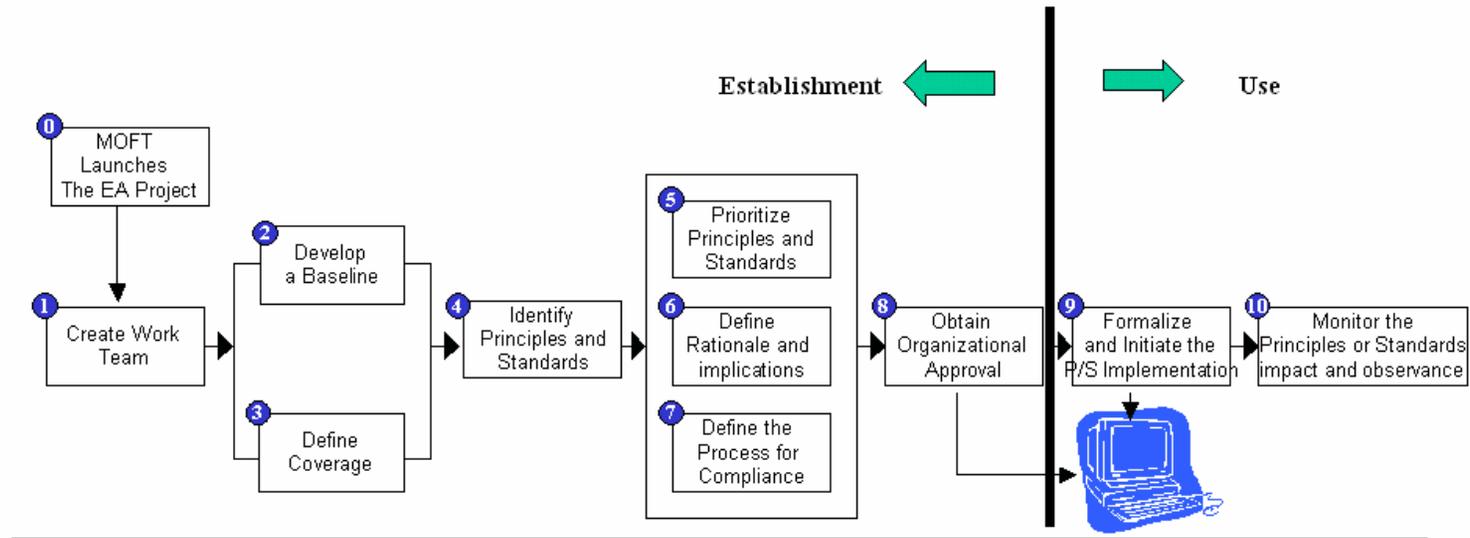
- Review the proposed macro plan and define and prepare a work plan to implement the EA project.
- Assign responsibilities to taskforce members
- Evaluate the necessary skills requirements for executing each task and ensure that the appropriate resource is assigned to the taskforce.
- Maintain the Steering Committee informed on the progress of project implementation.
- Conduct periodic QA activities and ensure that deliverables comply with EA establishment principles and guidelines.
- Define configuration management procedures to upgrade EA Target information cells based on business or technological changes.
- Provide technical and management guidance to taskforce members to ensure that activities and products are properly defined and documented.
- Analyze the recommended software tool to document the EA baseline and the EA target.
- Install the EA management tool in the MOFT's Web application server.
- Train the taskforce members on the use of the EA tool
- Using the EA software tool, document the contextual information on the MOFT, sectors, General Organizations, Central Departments, and principles and standards for the four architectural components of the EA.
- Provide leadership in the preparation of the four major deliverables resulted from the EA implementation.
- Define the permanent functions that the EA should carry out to monitor the implementation of the 3 to 5 year implementation plan.
- Use project management collaboration tools (web-enabled) to monitor project implementation progress.

The taskforce will be responsible for delivering the following products:

- Principles and Standards for the four EA architectural components
- Procedures for compliance of Principles and Standards
- Activities and procedures to conduct Quality Assurance (QA) of the EA implementation process and associated deliverables.
- Vulnerabilities of current IT Architecture

- EA baseline with products associated to the 12 cells of the modified FEAF framework model.
- Target EA with products associated to the 12 cells of the modified FEAF framework model.
- Portfolio of IT initiatives.
- Analysis of cost and viability of successful implementation
- Prioritized Portfolio of IT initiatives
- Implementation plan

Process to Develop EA Principles and Standards



0 MOFT Approves the Strategy and Approach for Implementing the EA Project.

2 Identify existing policies in Egypt and International regulations related to information technology.

4 Identify principles or standards applicable to the MOFT.

5 Prioritize and select principles or standards.

8 Obtain Approval and commitment from Senior Management

9 The Principles or Standards should apply to the EA using the who, what, when, where, and how. Assign responsibilities and maintenance.

10 Ensure that the process continues to work—develop strong support from all levels.

1 Select participants - for principles should be functional managers and/or business process stakeholders, for standards these will be IT Managers

3 Determine what IT components should be covered (e.g., data, telecommunications links, hardware, software)

6 Define rationale and implications.

7 Define the process for institutionalizing the principles and standards. How MOFT will enforce compliance



15.0 Contextual Definitions

Contextual concepts of products of the Enterprise Architecture model are a critical component of the Enterprise Architecture. Sectors' top managers through workshops should generate these statements. The EA taskforce should document the results of the discussions and make them available in the intranet for further access and discussion .

15.1 MOFT Definitions

The EA project should include the entire organization. This means the 14 sectors and associated general and organizations and central departments. The starting point for analysis should be the MOFT as the top entity responsible for carrying the mission assigned when it was created. The scope of the business analysis should include the following:

- MOFT Mission, Vision, and Goals
- Specific MOFT strategic objectives
- Organization of the MOFT
- MOFT Processes
- Location of MOFT Users
- Organizations important to the MOFT
- Major Internal Sectors/Entities

15.2 ATR-Supported Sectors

The following descriptions for the ATR-supported sectors and entities, which were identified in ATR reports, provide a macro definition of missions, goals, objectives, critical success factors and business processes. The future EA taskforce will need to verify, expand and complete the analysis of all sectors during the Business Analysis Task of the EA overall implementation plan.

15.2.1 GOEIC

Mission

Facilitate foreign trade, promote exports, and protect importers/consumers assuring acceptable international and Egyptian standards for quality of imported/exported goods.

Goals

- Expand and Facilitate Foreign Trade

- Assure the Quality of Import/Exports
- Provide accessible and reliable information to trade stakeholders on trade activity.

Strategic Objectives

- Facilitate the application of foreign trade to increase exports
- Carry out professional standard testing and inspection services
- Develop and maintain international standards in technical facilities for testing and inspection
- Develop and maintain integrated information systems to provide trade stakeholders with reliable and updated information on world and Egyptian trade activities.
- Develop Institutional Capabilities within the GOEIC.

Critical Success Factors

- Build a reliable information source on trade opportunities and make it available to active and potential exporters.
- Identify international industry quality standards associated with each exported good and establish the appropriate infrastructure to conduct tests and inspections.
- Define an ongoing training plan to develop and maintain the appropriate skills of GOEIC personnel to conduct inspections and issue certifications that are accepted internationally.
- Implement a human resource management system to identify training requirements to increase the performance of middle managers and operational employees.

Business Processes

- Quality Control for Imports/Exports
- Dissemination of Information to Trade Stakeholders
- Registration of the Business Community
- Certification of Origins
- Temporary Admission
- Sorting and Arbitration of Grains

Support Processes

- Human Resources Development
- Finance and Administration
- Purchase and Storage
- Communications (Email, Correspondence and Filing)

Management Processes

- Quality Assurance Management

- Project Management

Location of GOEIC Users

The GOEIC headquarters is located approximately 10 kilometers from the MOFT building. They have 26 satellite offices; five out of the 26 are located in main ports. From these offices at ports, the biggest one in functions and employees is the one located at the Cairo Airport with an Information Center, and a the Trade Service Center to serve Trade organizations and public in general. All satellite GOEIC offices have a Laboratory to analyze samples of export and import goods and certify compliance.

Currently the five main port offices are connected to the GOEIC headquarters through point-to-point leased lines. No IT applications have been deployed and the current links between ports and the HQ do not seem to be utilized.

The GOEIC needs information from the Egyptian Customs Service. Each port has a Customs Office and GOEIC is requesting information on export and import manifests on paper.

Current and potential exporters that are users of GOEIC information and services are located all over the world.

15.2.2 Trade Agreement Sector (TAS)

Mission

Establish trade policies to promote trade expansion and sustainable economic growth through the negotiation of, administration of, and coordination and compliance with bilateral, regional, and WTO trade agreements, and to ensure that Egyptian rights are preserved under all trade agreements.

Goals

- Promote trade expansion
- Promote sustainable economic growth
- Protect national economy of Egypt from unfair trade practices

Strategic Objectives

- Negotiate and administer bilateral, regional, and multilateral agreements as consistent with the trade policies of MOFT
- Develop and maintain information systems to protect the national economy of Egypt from unfair trade practices.
- Promote public awareness on Egypt's rights and obligations in world trade practices.

- Strengthen institutional capacity within TAS.
- Develop and maintain integrated information systems to provide trade stakeholders with reliable and updated information on trade agreements, and Egyptian's rights and obligations.

Critical Success Factors

- Maintain an active participation in the WTO to ensure that Egypt rights are respected.
- Establish a reliable information system for tracking and managing complaints resulted from unfair trade practices.
- Establish a reliable system than can deliver timely and useful information on trade agreements.
- Establish a reliable and easy to access information system that can be available to all trade stakeholders on opportunities and comparative advantages of trade practices resulted from trade agreements.
- Develop and implement a comprehensive human resource management information system that identifies training needs at all management and operational levels of TAS to improve the effectiveness that TAS serves trade stakeholders.

Location of Users

TAS receives information from CAPMAS (Center Agency for Public Mobilization and Statistics), and provides information to other internal sectors in the Ministry through its the Information Center. Users are located in Egypt and the world. GOEIC and FTSP are users of TAS information.

15.2.3 Foreign Trade Policy Sector (FTPS)

Mission

Establish and permanently evaluate GOE foreign trade policies to ensure that such policies contribute to the expansion of foreign trade, establishment of trade liberalization, and Egypt's economic growth.

Goals

Establish the best comprehensive foreign trade policies to maximize foreign trade

Strategic Objectives

- Evaluate the impact of foreign trade policies on Egyptian exports/imports

- Develop institutional capacity with FTPS to increase the effectiveness in policy initiation and evaluation.
- Disseminate reliable and up-to-date information on current trade policies and regulatory statements to implement policies.

Critical Success Factors

- Establish a two-way information system to capture opinions from trade stakeholders to be used in the evaluation of foreign trade policies.
- Establish an information system with up-to-date information on key economic indicators linked to foreign trade.
- Develop a Human Resource Management System that can identify gaps in skills of personnel to perform specific job functions. This information would be used to define comprehensive training plans for FTPS personnel.

Location of Users

- TAS internal users (MOFT building)
- Cabinet Information Support Center (Cairo, Egypt)
- Foreign trade stakeholders (World)

15.2.4 ECS

Egyptian Commercial Services (ECS) works with 62 representations in Egyptian consulates around the world and 55 organizations in Egypt. ECS provides information on opportunities for exports and imports, economic indices, competitive prices, duties, trade agreements, etc. ECS conducts follow-ups on information they sent to the 55 domestic representations. Information from overseas offices is sent to ECS by email. ECS extracts the information manually and loads it into paper forms. Analysis then is done manually on the data and information generated is published in the ECS website. Mission, goals, objectives, critical success factors, and processes will be identified during the business analysis task of the overall EA implementation plan. Mission, goals, strategic objectives, critical success factors, and processes need definitions.

ANNEX I

Current ATR Initiatives

ATR has supported components of overall IT projects that are part of the current MOFT application portfolio and should be analyzed and documented following the guidelines for the establishment of the EA baseline. The ATR-supported initiatives for IT are described below.

1. Email Servers and Network components

This component is part of the MOFT initiative to implement E-mail services and office support functions to all MOFT employees of the central IT Department. This initiative is under implementation. It will provide email services to 2,000+ employees under one domain name @moft.gov.eg. The ATR project has contributed to this initiative with 3 servers (email and web servers), network components (a router), and 5 workstations.

The integration of the ATR-supported components was supposed to occur in the new MOFT building. A recent inspection of the building shows that at least nine months are still needed to complete the civil work. Horizontal passive components have been installed on some floors but no active components have been deployed. Active components (routers, firewalls and main switches) have been procured but not yet installed. Vertical backbone cabling also needs to be installed. The network completion is not in the critical path for readiness of the building to host the MOFT infrastructure. Taking into account this delay in finishing the civil work, the Email Implementation will take place in the existing MOFT building.

An additional finding resulted from the building inspection and the review of the MOFT-prepared network layouts was the lack of availability of a current documented plan to connect offices of the Ministry that will not move to the new building. The MOFT IT department needs to prepare a Wide Area Network architecture that contemplates the connectivity links for GOEIC and Human Resources departments of several MOFT sectors. From the WAN architecture perspective, the integration of links and resources is critical to reduce data redundancy and increase data consistency and utilization of the network infrastructure.

2. GOEIC. Training Center

This initiative is being implemented. A training center for the GOEIC personnel was established, located at its building in Dekheila. The ATR project was primarily responsible for procuring two servers and desktop computers and establishing a LAN. The training center was established to provide computer training, language training, and

Internet access. Although the IT infrastructure is in place, the staff of the Center have yet to complete their training in the Center's operations and full operation has not yet begun.

3. GOEIC. DDTAS

DDTAS System. Three (3) offices were established to process temporary admissions declarations for customs in Damietta, Suez, and Port Said. This involved the installation in each office of small networks with five or fewer computers and one server. The Customs Service developed the application to capture information on unfinished and raw material products imported temporarily that will be re-exported with product value-added. GOEIC uses this information in conjunction with Customs to monitor temporary admissions. The offices communicate with the corresponding Customs office of the port at which they are located and also with the central temporary admissions office using analog dedicated leased lines.

ATR has found out that the volume of transactions is much lower than anticipated in all ports that it supported. GOEIC is monitoring transaction load activity and will determine the adequacy of communications links. So far, the links for low volume of transactions are adequate. NCR, under outsourcing by GOEIC and funded by ATR, is supporting the system administration function. GOEIC has not assigned personnel to absorb NCR's role. The system has been accepted by GOEIC. NCR is supporting the operation in all sites and responding to the system problems on a call basis.

4. TAS. ERC

Electronic Research Center. Established an electronic research center, which is a well-furnished room with eleven computers connected to a server in a local area network with fast Internet access, a server, trade data, and analytical software. This initiative is fully operational. Stata and SPSS were installed for data analysis. The use of the Center is limited at this time and it has significant idle capacity.

5. TAS. AWFS

An automated workflow system (AWFS) for managing trade remedies cases for antidumping, subsidies, and safeguards. This is still an ongoing activity in the final stage of implementation. AWAFS provided tracking capabilities for case remedies. It handles electronically documents added throughout the process for each particular case. A module to handle and organize documents was also developed. This project involved the requirements analysis, and preparation of the terms of reference to compete the development and implementation of the software. The outsourced company Sakhr is an ISO certified software developer. Sakhr is conducting the pilot implementation. ATR has provided TAS IT department with a template and form to register the results of the Pilot

Testing. Once this phase is successfully completed, ATR will accept the software, using QA customer acceptance guideline and checklists.

6. GOEIC. TSC

Established a Trade Services Center at Cairo Airport. The project established an Information Support Center for the local import inspection agency. The Trade Service Center also hosts a web site to provide traders with information about the procedure to get goods inspected quickly, regulations and procedures to import or export, etc. Information is also provided on rules of origin, registration of business community as importers or exporters of specific goods. This activity is under implementation. Site is under preparation and will be located at the GOEIC site at the Cairo Airport. The deployed infrastructure includes 2 servers, 30 workstations, website development tools, and hosting capabilities for the website.

7. TAS. WTO UNIT

Developed a Website for the WTO Unit. ATR project provided technical and knowledge support to the IT department of the TAS Sector to host the Website. ATR Project also contributed with an IT basic infrastructure for the newly created WTO unit to support office automation, including email services. Currently the website is hosted by an ISP.

ANNEX II

ATR-Supported IT Initiatives for the next two years

The implementation of new IT initiatives for the next two years should comply with standards and principles defined under the EA implementation initiative. In addition, they should include the contextual definitions (why, where, who, etc), the integration requirements, and a complete list of activities to carry out the project implementation. The following section includes some already defined IT initiatives under the ATR project with critical activities for inclusion in the IT implementation work plan. ATR will need to complete the definition of these initiatives including the contextual definitions, and critical activities. This list is indicative only and is not complete. Ultimately, all ATR IT projects will have to be prepared in a manner consistent with the Ministry EA.

1.0 Ministry's Office

Strengthen the Central IT Department

- Assess the network infrastructure for the new building
- Assess institutional E-mail needs as a corporate IT strategy

Assist in the implementation of the MOFT's EA

- Prepare an Enterprise Architecture Framework and Strategy proposal for the Ministry
- Conduct a workshop to discuss the EA Framework and Concept
- Assist the MOFT in implementing the EA function.
- Identify hardware and software tools to assist in the implementation of the EA Function.
- Assist the EA team in defining principles and standards for all levels in the IT Enterprise Model.
- Conduct QA and CM activities as needed to meet EA standards and principles.

Facilitate Data Integration

- Prepare a proposal to establish a Portal for MOFT information services

2.0 Trade Agreement Sector

Strengthen Human Resources Process

- Document the problem or limitation (why)

- Evaluate HR and payroll information needs (graphic representations of users, entities, locations, and information flows)
- Define application functional and operational requirements (contextual)
- Complete contextual scope for the HR application (how, where, who, when, why)
- Determine Hardware, Software, and Telecommunications requirements
- Verify compliance with data, application, and network standards and principles
- Determine implementation approach
- Estimate project cost
- Identify external and internal activity dependencies
- Prepare terms of reference (TOR) to outsource the procurement of HR and payroll modules for the TAS Sector.
- Define QA activities for the planning and implementation process.
- Define integration requirements and organizational changes
- Migrate data to the new data structure
- Conduct pilot implementation
- Accept system from contractor

Strengthen the Correspondence and Filing Management Process for the Trade Agreement Sector

- Define the problem or limitation (“why”)
- Analyze current process and identify possible changes
- Conduct needs assessment to support the target process (graphic representations of users, entities, locations, and information flows)
- Prepare system/application functional requirements (“what”, contextual)
- Complete contextual scope for the HR application (how, where, who, when, why)
- Determine hardware, software, and network requirements
- Verify compliance with data, application, and network standards
- Complete contextual scope documentation for project scope
- Determine implementation approach
- Identify dependencies and interactions with other initiatives
- Estimate project cost
- Prepare work plan
- Prepare terms of reference to outsource the system/application implementation.
- Define QA Activities for planning and implementation process and incorporate them in the work plan
- Define document/data migration requirements
- Implement document/data migration requirements
- Accept system from contractor as applicable

Strengthen the TAS IT Department

IT Department:

- Analyze IT support processes to TAS processes
- Integrate IT support processes with management processes (QA, CM, and PM processes)
- Identify technical service and support requirements
- Identify personal requirements to support integrated processes
- Define the IT organization
- Define functions
- Map functions to technical and management requirements
- Define position descriptions
- Analyze current personnel resources skills
- Map technical and management personnel requirements to current personnel
- Identify gaps
- Identify training requirements for current and new personnel

Email Services:

- Analyze email information requirements
- Evaluate current infrastructure to support email requirements
- Identify IT infrastructure to meet email requirements
- Verify compliance with IT EA principals and standards
- Procure IT components as needed
- Install hardware and software
- Create accounts
- Integrate IT infrastructure with current infrastructure
- Conduct QA of products and services

TAS Web Site

- Define information scope to be published
- Design website
- Define website administration function
- Test website in the intranet
- Conduct QA
- Host website in Web Server

TAS Intranet (current location)

- Assess feasibility
- Conduct network requirements

- Design Intranet
- Identify activity dependencies
- Verify specs with network principles and standards
- Procure intranet components
- Install components
- Conduct QA

Develop Data Warehouse

This initiative will be implemented in the final year of the project.

Strengthen the CD/WTO

Implement a correspondence and filing system

- Identify users requirements
- Identify IT infrastructure requirements
- Customize system as needed
- Procure hardware and software furniture
- Install equipment and system
- Conduct training
- Integrate system with CD/WTO
- Conduct QA

3.0 Foreign Trade Policies Sector

Improvements to the Egyptian Center for Export Development Sector

- Define the problem or limitation
- Analyze processes and functions
- Identify possible improvements to current processes
- Assign priorities
- Seek concurrence from Head Sector's Manager
- Identify information needs to support current/modified process
- Define applications and IT infrastructure requirements
- Verify compliance with data, application, and network standards
- Complete contextual scope documentation for project scope
- Prepare Terms of Reference for procurement of IT components
- Conduct QA, configuration management, and Project Management for IT components as needed.
- Procure IT components to support selected IT infrastructure requirements.
- Integrate components with current infrastructure.