

***ICT for Local Governance:  
Needs Analysis and Research Priorities for Addis Ababa  
City Government***

***A Research Report Submitted for  
LOG-IN Africa Pre-Project Workshop***

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## Executive Summary

The role of ICT for increased efficiency in the different sectors such as governance, economy, social affairs, etc. is increasingly becoming a necessity in such a way that in the new millennium many activities will practically be impossible to cope with the development standard without its use. African countries thus, have no choice but to do their best in implementing the usage of ICT tools for the activities in their economy and governance.

Ethiopia, as one of the developing countries, has to do a lot to improve the socio-economic situation and the local governance of its cities thereby attracting industries that contribute to the growth of its economy.

The constitution of 1994 gives to Ethiopia a federal structure with 9 regional states and 2 Special City Administrations, namely Addis Ababa and Dire Dawa. Addis Ababa, the capital city is not only the largest city in Ethiopia but also a major diplomatic city in the world. Administratively, it is organized into sub-cities; themselves divided into Kebeles (lowest level administrative units).

The possible realities in the near future regarding ICT Infrastructure indicate that there is a conducive environment for development of ICT applications for local governance. Some indicators for a promising future are that:

- Initiatives are already in place to fully leverage the coverage, penetration as well as quality of telecom and ICT services at the national level,
- ICT is gaining priority in the government plan and its availability especially in the rural and remote areas of Ethiopia has been given special considerations, and

To overcome the problem of ICT human resource requirements, there are several initiatives of establishing tertiary level learning institutions both by the private sector and the government. Currently, there are more than twenty emerging tertiary level higher education institutions/colleges that have started to train at a Diploma and Degree level in the fields of ICT.

In a recent survey conducted by the Department of Computer Science, Addis Ababa University, a number of problems faced by the city government of Addis Ababa in the implementation of ICT projects have been identified. Among which the following are the most important ones:

- Lack of policies and guidelines for sharing and owning data,
- Limited consideration for security and risk of data,
- Use of incompatible technologies that make information interchange very difficult and that does not allow efficient use of resources, and
- Limited localization in spite of the fact that Amharic is the working language of the city administration.

Based on this assessment, this pre-project proposal have identified the research and development problems listed below in priority order:

1. Development of ICT strategies that serves the local governments,
2. Localization of systems,
3. Development of ICT standards that can improve the quality, interoperability and coherence of data, and
4. Development of Guidelines for ICT Practices.

After selecting the research issues to deal with, the research group intends to prepare a proposal that will be duly reviewed by stakeholders. The research will have both theoretical and practical components and will focus on three local administrations (sub-cities) in Addis Ababa and two other local administrations (woredas) outside Addis Ababa.

# 1. Introduction

This document gives an overview of the national governance organization of Ethiopia and the current ICT infrastructure situations of the country. In particular, it provides some information about how the Federal government structure of Ethiopia is organized by giving emphasis on local administrations in Addis Ababa, the capital of the country. It also presents the major issues that need to be addressed in the envisaged research project for enabling local administrations to use ICTs to its potential.

Starting from the last two years the ICT infrastructure of the country has shown major improvement, whereby conducive environment for using ICT as tool for local governance has been created. This research proposal has used previous research findings of the Computer Science Department of the Addis Ababa University as input to identify potential research problem areas that need to be addressed in a priority manner.

The problems that need to be addressed on the move towards enabling local governments with ICT tools are many and diverse in nature. Therefore, the research group has to first develop an inventory of problems surfaced in the existing system, and prepare a proposal targeting the most crucial problems. The local scientific communities as well as various stakeholders shall duly criticize the local project proposal. Subsequently, by selecting representative cities and sub-cities, the project will be kicked off as per the plan that will be prepared along with the project proposal. The research will consider three local administrations (sub-cities) in Addis Ababa and two other local administrations (woredas) outside Addis Ababa. The research will have theoretical and practical components.

## 2. General overview of Ethiopia

Ethiopia is the second most populated country in sub-Saharan Africa with an estimated population size of more than 70 Million. However, the country's development has suffered greatly from the decades long internal war and recurring draught. As a result, Ethiopia is rated as one of the poorest country in the world with a GDP of around 120 USD [1].

The population of Ethiopia is mainly rural and young. Almost 85% of the population lives in the countryside. Nonetheless, the proportion of the urban population is increasing rapidly; it nearly doubled in every 25 years [2]. Ethiopia's population's another major feature is its youth. In 2002, 45% of the population was under 15 years. Ethiopia also enjoys a relatively high annual population growth rate of about 2.4%.

Even though, the Ethiopian economy is still mainly agrarian - 52% of the GDP is earned by agriculture compared with the average of 17% for sub-Saharan Africa – service and industry contribute for 48% of the GDP and are considered the sectors on which the country should rely in the future due to the degradation of the land and the limited land available for the increasing

population. Therefore, in the last few years, the Ethiopian government and donor agencies are giving more and more emphasis for the development of cities and industries within cities.

### **3. National governance structure**

In 1994, Ethiopia has adopted a new constitution that organizes the country under a federal structure. Currently, the country is divided into nine National Regional States and two Special City Administrations, namely Addis Ababa and Dire Dawa. Under this constitution, the states, mostly organized on ethnic and language lines, enjoy great autonomy. In particular, the states can “formulate and execute economic, social and development policies, strategies and plans, ... administer land and other resources, ... levy and collect taxes”, etc. [3].

The States are divided into woredas (local administration districts). Currently, there are 556 woredas that are coordinated by 66 zonal administrations. Woredas are considered and structured to be centers of decentralized system of the local governments with an average population of 100,000 [4]. Each wereda is organized into several kebeles, the lowest administrative offices.

The formal structure of government at woreda level includes a Woreda council, an executive committee and sector offices. The council consists of directly elected representatives from each kebele in the woreda. The kebeles are structured in terms of an administration consisting of a kebele council, executive committee, the social court, and various socio-economic and security bodies. However, institutional and capacity limitations are prevalent at all levels of government, contributing to poor service delivery [4].

The Ethiopian decentralization process accords an important role to woredas in the planning and decision-making processes. Measures are being taken to pave the ground to render woredas the center of socio economic development [4]. It is believed that the decentralization process will bring a lot of benefits since Woreda level officials will be more responsible for micro planning and monitoring and the actual implementation of programs. The woredas are expected to be active in the provision of basic infrastructures such as setting up and administering schools, health facilities, roads, drinking water supply, agricultural development, etc.

Addis Ababa is the capital and the largest city of the country. It has been given by the constitution a special status that authorizes it to exercise higher level of autonomy. Even though the Addis Ababa Administration is accountable to the Federal Government of Ethiopia, it is mainly governed by a charter that insures its autonomy. Recently, in the first time of the history of Ethiopia, Addis Ababa residents voted out the city administration. The new administration who obtained a plebiscite of the residents is expected to make major changes in the city to improve the lives of the residents and to make the city a real international city.

Until recently, the city was organized into 28 woredas and more than two hundred kebeles. However, in 2002, the provisional government of the city has implemented a new structure that organizes the city into 10 sub-cities throwing out woredas. The number of kebeles has also been reduced to 103. Consequently, as shown in the organization structure of the city administration

(Annex 2), the kebeles report directly to the sub-cities. The sub-cities shoulder many of the responsibilities of the weredas and some of the responsibilities of city administration, which make them center of the public administration for Addis Abeba residents.

Addis Ababa is one of the major diplomatic cities in Africa that hosts offices such as the Headquarters of the then Organization of African Union (OAU) since 1963, which has recently been restructured and named as Africa Union (AU) and the Headquarters of the United Nations Economic Commission for Africa (UNECA) since 1958. Addis Ababa also hosts more than 90 embassies and consular representatives, which makes it the fourth diplomatic center in the world. In recent years, Addis Ababa is struggling to establish an efficient administration that matches its international importance.

## **4. Overview of Ethiopia's ICTs and e-Government: Policy and Strategy**

Ethiopia has developed a draft national ICT policy and strategies a couple of years back, which is yet not yet finalized. The ICT policy and strategy of the country is expected to play a major role in the country's effort to drag out of poverty. In line with its draft ICT policy, in recent years there are initiatives of the likes of "WoredaNet" and "SchoolNet", which are still underway. The "WoredaNet" project has been kicked off two years ago, which is mainly a move towards realizing the potential of ICTs in e-governance by connecting the federal government with the rest of the regions through a telecommunication infrastructure, which already has been in place.

The importance of ICTs towards bringing efficiencies, effectiveness and transparency in the civil and public services has been well recognized by the country. However, like many other developing countries in the world, the potential of ICTs is highly untapped.

The country is still working in the preliminary stages of the expeditions of e-governance. Therefore, there are many more factors that need to be addressed for the rapid and smooth implementation of e-governance in the country. In this section the country's ICTs policy and strategy is briefly described.

### **4.1. Policy statements**

The Ethiopian government intends to utilize ICTs as enabler for the implementation of the country's development program. To this end, the national ICT policy is under development to ensure the maximization of the potentials of ICT in the country in light of improving the efficiency, transparency, and accountability of public sectors and integrating citizen or public services using ICT as a tool.

For the sake of brevity the country's draft ICT policy is enumerated in the following sentences[5], it reiterates:

- The establishment and development of national ICTs resources and services being an integral part of the national development plan;
- Making the deployment and exploitations of ICTs potentials to support the operation and activities of the civil and public service part of the civil and public service development continuum;
- Enabling public administration organs, at the federal, regional and zone level to be connected into a comprehensive electronic service network. Thus, providing the opportunity of for informed decision making and offering better services to the citizens;
- Speeding up the deployment and exploitation of ICTs potentials within the education, health, finance, integrated rural development and agriculture sectors so as to bring in broader socio economic impact;
- Speeding up the establishment of collaborative environment among stakeholders;
- Making information accessible resources for public and private sectors.
- Establishing the necessary mechanisms so as to ensure the speedy development of human resource in information and computer sciences;
- Working out effective legal and regulatory frameworks so as to integrate, speed up and monitor the development of ICTs;
- Supporting and strengthening community based services;
- Establishing enabling environment for the disabled in obtaining the necessary skills in and access to ICTs;
- Establishing enabling environment for women in ICTs development and leveraging their empowerment.

## **4.2. National Strategies**

Materializing any ICTs policy greatly relies on the national strategies that a country has developed. As part of the move towards using ICTs as a tool to promote e-governance in the country, Ethiopia has devised national a draft ICTs strategies. The country's ICTs strategies do the groundwork to smooth out the implementation of the ICTs policy.

For the sake of brevity the country's draft ICT strategies is enumerated in the following sentences[5]:

- Design service networks that allow citizens and private companies to communicate with public authorities;
- Setup executing and coordinating structures within federal and regional governments for the implementation of the national ICTs policy;
- Setup organizational structure for information technology service division in federal and regional government sectors;
- Design a national policy work plan for the development of national and institutional ICTs resources and services as an integral part of the overall national development plans;
- Formulate national legal frameworks pertinent to the development of information resources and services and for its integration into the national development policies;

- Adopt methods and procedures to ensure the contributions and support of government institutions to the development, operation, and coordination of government information system;
- Institute programs, activities and organizational structures that ensure the integration and support of ICTs in institutional strategic development programs;
- Develop and implement a comprehensive ICTs human resource development program;
- Incorporate ICTs as an education and as an enabler in the national education system;

Despite the development of both draft ICT policy and strategies and the establishment of the necessary telecommunication infrastructure for promoting e-governance in the country, the country has still a long way to go to reach the required level of e-governance readiness. That is, factors such as people computer literacy level, security issues and the availability of funds for financing e-governance projects have to be well addressed to use ICTs to its full potential in leveraging e-governance.

## **5. Needs Analysis**

This section briefly summarizes the current status of ICT infrastructure (Telecom, Internet, Computers, TV, and Radio) and the ICT human resource situation in Ethiopia. Emphasis is given to the future trend of development of the sector, due to its importance to LOG-IN Africa project.

### **5.1 ICT Infrastructure**

Telecommunications infrastructure, Internet Service, TV, and Radio are owned and operated by the government. Particularly, the Telecom and Internet service sectors are operated by the Ethiopian Telecommunications Corporation (ETC). The services provided by the ETC include the whole range of services that include: regular phone, wireless local loop, mobile phone, and the Internet [6]. Internet was introduced by ETC in 1996 [7]. Since then, there is a growing need and interest of Internet connection among the public, the private sector, and government organizations. With a recent connectivity project of the government called “WoredaNet”, more than 600 Woredas (local administrative districts) all around the country possess a VSAT based connection that provides sufficient bandwidth for video conferencing. Another connectivity project called “SchoolNet” enabled more than 550 High Schools around the county to have access to similar VSAT based connection. With this project, high schools have benefited for standardized distance education through Video Conferencing.

In general, though communication infrastructure in Ethiopia was not at a satisfactory level until 2002, currently there are encouraging initiatives for a paradigm shift and new and ambitious projects are being implemented by the ETC [7, 8]. Some indicators for a promising future are that:

- Initiatives are already in place to fully leverage the coverage, penetration as well as quality of telecom and ICT services at the national level,

- ICT is gaining priority in the government plan and its availability especially in the rural and remote areas of Ethiopia has been given special considerations, and
- There are ongoing encouraging broadband multimedia infrastructure deployment programs that combines wired, wireless and satellite technologies.

The current projects in ICT infrastructure development are listed in the Annex 1. These initiatives are promising communication infrastructure to deploy ICT applications that can enhance the efficiency of local governments. Hence a number of ICT projects can be deployed.

With about 512, 000 fixed lines in the country in 2000/01; telephone density had been among the least in the world [7]. However, the recent ambitious plans and use of modern technologies by the ETC are promising. Regarding mobile telephones, the ETC is engaged in increasing the number of subscribers from the current 300,000 to two million in the near future [8].

## ***5.2 Human Resource Capacity***

Like many other developing countries, ICT human resource in Ethiopia is in short of the requirements in many organizations [7, 9]. A recent survey made in [9] identified the problems related to human resource in ICT. Based on this survey, though the available ICT-human resource is not known exactly, an overall shortage of ICT professionals at all levels are observed. In most of the employing organizations, there are no strategies for staff retention. Furthermore, the available small number of ICT professionals is concentrated within few organizations and in the capital.

To fill the gap in ICT human resource needs, there are several initiatives of establishing tertiary level learning institutions both by the private sector and the government. Currently, there are more than twenty emerging tertiary level higher education institutions/colleges that have started to train at a Diploma and Degree level in the fields of ICT [9].

Studies have also identified that there are more than one hundred fifty private Computer Service Institutions/Centers in the country [4, 9], though 81.72% of them are in the capital, Addis Ababa. Most of these institutions provide trainings on application packages as their major activity. Trainings in these institutions include training on Microsoft Office packages, database systems, programming languages, specialized software packages, etc. Surveys indicate that 72% of the service centers provide training, 44.7% engaged in computer and accessories sales, 25.6% in web design, 42.7% on Networking, and 34.8% on software development.

After assessing the current situation and future development trend of the ICT infrastructure and human resource, we clearly observe that any ICT project should also incorporate the planned and ongoing development of ICT infrastructure in its plan. Furthermore, the ICT human resource training, retention, and development plans should be considered in order to make any project sustainable. Based on the current initiatives, Ethiopia's ICT infrastructure will be able to support powerful applications. However, currently there is little or no work done on developing a strategy that facilitates the use of this new infrastructure for local governance.

Addis Ababa is currently enjoying a modern ICT infrastructure development due to: a fiber optics ring a round the city, a higher tele-density compared to other cities and localities, and the opportunity to get qualified ICT professionals. These gives better chance to the city government of Addis Ababa to exploit opportunities for increasing the efficiency of local administration.

## **6. Research priorities**

In the past few years the Addis Ababa Administration has been spending a big sum of money to improve the services it offers to the public using ICT as a tool. However, the result of the researches conducted by the Department of Computer Science, Addis Ababa University has revealed that the investment has not lived up to the expectations in that the potential of ICTs is not used to its full advantages due the problems mentioned below. The following are some of the problems identified during the study [11]:

- Problems in the production and use of data:
  - Limited use of the existing data sets due to lack of knowledge of the existence of the data by agencies other than those who developed the data sets, lack of connectivity, lack of interoperability and inadequacy of organization and documentation of the data sets
  - Existence of duplicated data which inevitably creates inconsistency and increases cost
- Lack of policies on data ownership and maintenance,
- Lack of incentives, tools, and guidelines for sharing data,
- Limited consideration for security and risk,
- Use of different and incompatible technologies that make information interchange very difficult and does not allow efficient use of resources,
- Limited localization in spite of the fact that Amharic is the working language of the city administration.,
- Absence of city-level ICT leadership and policy that could enable the city administration to take advantage of its increasing ICT assets

The city administration has started implementing a new decentralized administrative structure without rectifying the aforementioned problems. The new decentralization scheme is intended to give more powers to the sub-cities. Though the decentralization has brought some changes to the public, the shortage of trained and qualified manpower at lower administrative levels has posed serious problems thereby hindering the decentralization process from bearing satisfactory results.

The decentralization process can undoubtedly be strengthened and smoothed out through ICT. However, any move towards computerization without rectifying the problems that have been

identified would not bring the required changes. Therefore, the move to ICT is also can be seen as part of the effort towards rectifying the problems that have surfaced in the existing system. In this research project, an attempt will be made to develop an inventory of problems surfaced in the existing system, and the required solutions of the problems will be proposed.

Most problems if not all surfaced in the existing system are related directly or indirectly with the items listed below. Therefore, this project proposal considers the items listed below in priority order as major potential research problems that can be addressed in the envisaged research project:

1. ICT strategy development: Currently, every department or agency of the city purchases equipment, software, etc. without an overall ICT strategy, which has created several incompatible islands of computerized systems. For example, different GIS systems have been used by different agencies in the same cities. Moreover, the opportunities brought by free and open source software have not been well explored. The development of an ICT technology development strategy will help solve the above-mentioned problems and allow an integrated development of ICT systems in the whole city. This strategy can also be later adopted by local administrations throughout the country.
2. Development of localized systems: The working language of Addis Ababa city as well as many of regional states and the federal government is Amharic. However, due to the use of incompatible encoding systems and keyboard layouts etc. information interchange in Amharic script is very difficult. This problem is even more serious with the decentralization process, which is still in progress, for the reason that the lower level administration units use largely local languages and in rare occasions English. This work should therefore consider localization as serious problem to be dealt with towards promoting e-governance.
3. Development of ICT standards: development of ICT standards that can improve the quality, interoperability and coherence of data such as standards and guidelines for the Information Exchange. Currently, there is very limited electronic information exchange between ICT systems. This creates redundant data at various organizations which is not only expensive to maintain but also creates some inconsistencies. In addition, since the few data exchanges that exist are made without using standard protocols, techniques and metadata, integration of the various communication systems is becoming an impossible task. Successful implementation of this project will facilitate information exchange between various ICT systems in various organizations. The standards and guidelines will allow easy information exchange across the city under a common framework that will make accessing other ICT systems a simple task for developers as they may exploit commonality in the interfaces and reuse software code. Design of the information exchange modules is also simplified as service designers have access to a growing “data dictionary”.

4. Development of Guidelines for ICT Practices: The main objective of this work is to develop generic guidelines that organizations will use to develop in-house guidelines and standards for quality management, integrity and security management, risk management, configuration management, disaster prevention and recovery management and document archival practices. This will improve the quality and security of ICT services, increase the success rate of ICT projects by minimizing risks and preserve electronic documents.

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## Annex 1: Profile of ongoing ICTs Projects

Project Title	Project Objectives	Implementing Organization	Project Leader	Project Time Line	Collaborating Partners	Project Status/ Project Outcomes
<b>SchoolNet</b>	To connect more than 550 high schools in the country with VSAT based broadband for delivery of video-based distance and standardized education	ETC	ETC	Major part Completed	Ministry of Education, Ministry of Capacity Building, World Bank	Currently on practical implementation
<b>WoredaNet</b>	To connect more than 600 woredas (local administrative districts) in the country with broadband Internet access for the purpose of enhancing local administration	ETC	ETC	Major part Completed	Ministry of Capacity Building	Currently on practical implementation
<b>AgreeNet</b>	To connect about 26 agricultural research institutions in the country with broadband Internet access	ETC	ETC	Planned	Ethiopian Agricultural Research Center	Planned
<b>EthERNet</b>	To connect all public higher learning institutions at campus, local institutional, regional and national levels.	ETC	Ministry of Education	On process	Ministry of Education	On process
<b>RevenueNet</b>	To network the inland revenue and customs offices all over the country to primarily support relevant data exchange	ETC	Ministry of Finance	Planned	Ministry of Finance & Revenue	Planned

Abbreviation: ETC – Ethiopian Telecommunication Corporation  
 Ongoing ICT projects in Ethiopia (Source [5]).

# Annex 2: Addis Ababa City Administration Organizational Structure

