

Transportation Management Center (TMC)
For the City of Addis Ababa & its Metropolitan Region:
Ethiopia
(Conceptual Framework)

By
Abiyu Berlie
ITS Specialist
Ethiopian Diaspora Volunteer Program
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Glossary:

1. ITS – Intelligent Transportation Systems
2. TMS – Transportation Management Systems
3. TMC – Transportation Management Center
4. ATMS- Advanced Transportation Management Systems
5. CCTV- Closed Circuit Television Video (cameras)
6. VMS – Variable Message Signs
7. MAR-TMCC – Metropolitan Addis Regional Transportation Management & Coordination Council

1. Background:

Before we discuss the concept of Transportation Management Center (TMC) and forward a project proposal for the City of Addis Ababa and its Metropolitan Regions, it is important first to have an overview of the existing conditions and the rationale that gave rise to the idea of a TMC.

Addis Ababa, the capital city of Ethiopia, is a vibrant, rapidly growing and fast changing urban metropolitan city, with an estimated population of approximately 3 million. The relatively rapid economic growth and population explosion in the city in recent years, has resulted in serious challenges and stresses to the socio-economic infrastructure, including in its transportation network. The population explosion in the city has been triggered partly by the migration of people from rural areas, towns and regions around the country, seeking better economic opportunities.

The recent boom in economic activity has given rise to mushrooming residential, business and sub-urban centers and settlements, which are getting increasingly over-crowded and choked by traffic jams, congestion and air pollution; in particular during the peak hours. As a result, due to the strains on the road networks and the limited public transportation services as well as overcrowding, the city has been experiencing severe congestion and frequent traffic accidents. Despite the great accomplishments of the city and an unprecedented expansion of the transportation network in recent years, the congestion level and delays in traffic seems unabated.

These problems are aggravated by the lack of a modern transportation management system in the city, which could provide relief by optimizing the capacity of the transportation networks and increasing efficiency through implementation of various measures. The higher demand for efficient transportation services, resulting from the growth of population and economic activities necessitates not only the building of roads, highways and public transportation systems to close the gap, but also requires developing a modern transportation management system.

Due to increasing traffic congestions and delays, getting proper access to residential, business and service centers has gotten very difficult in many areas of the city. The threat from accidents has become a part of life for the city residents and its visitors, in particular to pedestrians (including students), along much of the city's transportation corridors. The lack of adequate walking facilities along the roads and inefficient traffic control and management systems and services have led to the deterioration of safety conditions and a rise in the frequency of accidents. The city of Addis Ababa and the country as a whole has one of the highest number of accidents per capita in the world.

A. Major Transportation Studies made for Addis Ababa & Metro. Region:

Two important studies are used as a reference in this conceptual framework proposal for building a TMC for the City of Addis Ababa, and its metropolitan region. These studies are:

- 1) The National Urban Transportation Master Plan Study – 2006
- 2) The Addis Ababa Urban Transport Study - 2005

These important studies together, have made a comprehensive evaluation of the transportation networks and systems in selected major cities of Ethiopia, including Addis Ababa. The studies identified critical issues, conditions, constraints and the improvement needs of the transportation

networks and systems of the City of Addis Ababa and its metropolitan region. They provided detailed recommendations for possible solutions, with a view of an anticipated and continued growth of the City and its metropolitan region, both in population and economic activities. Their recommendations take into account the expected growing demand and resulting strain in the city's transportation network, unless adequate measures are taken to alleviate the problems.

Below are highlights of the key deficiencies, problems and constraints that the studies identified in the transportation system of the City of Addis Ababa and its metropolitan regions, along with their recommendations. For a detailed review of the findings and recommendations of the studies, please refer to the documents.

B. Major issues identified in the Transportation Studies:

Highlights of issues identified in the two studies, for the transportation network and services of the city of Addis Ababa and its metropolitan region include:

- Absence of a modern Transportation Management System (TMS) in the city, which can provide efficient services, in such areas as mobility, traffic control, incident management, regional coordination, safety and traveler information.
- Absence of a comprehensive, integrated and sustainable urban transportation policy and planning system for the city and its metropolitan region.
- Lack of adequate and effective Public Transportation Systems (PTS), such as Bus Rapid Transit (BRT) and Light Rail Transit (LRT).
- Lack of adequate pedestrian & bicycle facilities to meet the demand of Non-Motorized Travelers (which constitute approx. 61% of the total travel)
- Absence of effective and adequate off-street and on-street parking facilities to meet demand
- Inefficient and ineffective coordination among the organizations in the city and the region, which are responsible for planning, operating and managing the transportation networks and services
- Lack of proper institutional framework and skilled manpower capacity to address the pressing transportation issues and manage the network efficiently
- Very high incidence of traffic accidents, in particular on pedestrians
- Absence of sustainable funding sources

C. Highlights of Recommendations forwarded by the Transportation Studies:

- Improving the road network and services in the city to increase capacity and meet the growing demand (in particular on major North-South and East-West corridors)
- Building a sound Public Transportation System (PTS) network, which includes BRT & LRT
- Building a strong Transportation Management System (TMS), which will facilitate effective planning, operations and management of the transportation network and services to enhance mobility and safety.
- Building of adequate pedestrian, bicycling, parking and terminal facilities with integrated urban planning and development approaches.

- Making “safety a priority” and reducing accidents through proper policies, planning, design, traffic control, engineering and management measures.
- Creating a proper policy, institutional and legal framework, which will be conducive for building an advanced transportation infrastructure and network and enable the delivery of quality services to travelers.
- Use of the latest and state-of-the-art applicable information and communications technologies, traffic engineering and management techniques to build and expand the capacity of the transportation network, optimize its capacity and improve services.

2. Why is a modern Transportation Management System (TMS) essential for Addis?

The idea of building a TMC for the city and its metropolitan region stems from one of the key recommendations made in the studies, as highlighted above. This recommendation is development of an effective and modern Transportation Management Systems (TMS). A TMC is the first step to building a strong Transportation Management System (TMS), which is critical for developing effective planning, operations and management of the transportation network and services of the city and its metropolitan regions.

TMCs are valuable traffic management system tools for reducing congestion, improving mobility, enhancing safety and managing traffic flow. They are an ideal instrument to optimize and maximize the capacity of an existing transportation network, improve its operational efficiency and ensure the safety of motor vehicle drivers, passengers and pedestrians. Adding buses or building BRTs and LRT lines alone will not be enough to improve the efficiency of the city’s transportation network and effectively meet the service needs of its residents and the business community.

As a result, the primary goal of this proposal is to propose building an advanced Transportation Management Center (TMC) for the city of Addis Ababa and its Metropolitan Regions, which can serve as a foundation for developing an Advanced Transportation Management System (ATMS).

3. What is ITS (Intelligent Transportation Systems)?

ITS is a multidisciplinary field that brings together several transportation stakeholders including planners, policy makers, traffic engineers, facility operators, managers and transportation service providers, from the public and private sectors. The technologies and services in ITS are valuable to transportation security, safety, law enforcement, emergency management and medical personnel, who provide critical services to travelers and the public at large.

ITS systems involve the application of a variety of Information and Communications Technologies (ICTs) for gathering, processing and disseminating traffic information to transportation stakeholders and the public. This information is used to facilitate several transportation related services such as to detect, manage and clear incidents; control and manage traffic flow; coordinate emergency situations (e.g. disaster recovery) and special events (e.g. marathons); improve mobility of traffic and pedestrians; as well as ensure the safety and security of travelers.

ITS is a well known and an established field throughout the developed and developing world, including in the USA, Canada, Europe, China, South Africa, as well as in Latin American and Asian countries. For instance in Africa, South Africa has made significant progress in recent years, in

deploying ITS technologies for managing the country's intricate transportation networks and to provide quality and efficient services by improving the mobility, safety and security of its travelers.

ITS technologies are also used in many parts of the world (including in South Africa) for collecting toll revenues (please see ETC, Electronic Toll Collection applications of ITS). In this context, it is strongly advised to consider the application of ETC technologies for the proposed toll collection system, planned on the new Addis-Adama (Nazret) highway corridor.

For further information about ITS, please visit the following websites: www.itsa.org, www.sasits.com, www.eritco.com and others.

4. What is the relationship between ITS & TMC?

ITS technologies are the building blocks of a TMC. They serve as the eyes and ears of the TMC, enabling operators to see, hear and feel the conditions of the transportation network and systems in real-time. They serve essentially as nerve centers and branches leading to the "brain", which is in this case, the TMC. The ITS technologies provide the TMC or traffic operators a mechanism for gathering information about the transportation network, traffic flow, pedestrian movement and incidents. They serve as a bridge to link the transportation, law enforcement and other stakeholder agencies between themselves and with the public. The ITS technologies, systems and sub-systems that get integrated into the TMC could range from simple field devices (such as ground sensors) to complex communications networks and central processors in the TMC.

For instance, by placing on strategic locations CCTV (Closed Circuit Television) cameras, which are one of the key ITS technologies, along the Addis Ababa-Nazret highway corridor, the ring road or the North-South and East-West corridors of the City, the traffic operators in the TMC will be able to continuously monitor (7/24) in real-time the traffic conditions on these critical junctions. This is possible because the CCTV cameras will be integrated to the TMC, which will be built on an ideal location. Through the CCTVs on the field, traffic scenes from these transportation corridors will be continuously fed to the TMC, and displayed on wide screens. As a result, congestions, delays, accidents and any unusual traffic conditions can be observed immediately, and communicated to the appropriate stakeholders such as operators, traffic police or EMS (Emergency Management Service) providers right away.

If it is an accident, it will be reported from the TMC to the city and regional traffic police, law enforcement officials and facility operators simultaneously in real-time, through various communications media such as a regional video network, mobile radio, e-mail alert, instant messaging and phone calls. The various stake holders will be able to see the accident at the same time on a video screen, whether in their TMCs, control rooms or emergency vehicles. If the accident is major and necessitates traffic diversions or lane closures, it can be communicated immediately to travelers through various ITS devices and systems including VMS (Variable Message Signs), radios, e-mail alerts and instant messages and alarms. This helps travelers plan their routes and save time. It in-turn reduces the risk of secondary accidents from gridlocks, unexpected stoppages and high speeds.

All of these can only be made effective, if there is a central point to manage and coordinate activities, involving efficient gathering and dissemination of information and data inputs and outputs. That central point, which serves as a brain to process and disseminate this information is non other than a TMC. The ITS technologies (including CCTV, VMS and various sensors such as radars) are essentially the nerve centers and branches connecting the TMC to the field devices, operators and travelers.

5. Why TMC for Addis Ababa?

The two most important functions of a Transportation (Traffic) Management Center are: Management and Coordination.

In an urban area such as Addis Ababa, where there are various major players and stakeholders in the transportation sector, it will be very difficult, if not impossible to effectively manage the transportation network, coordinate and provide efficient services to the public, unless a sound transportation system and a modern transportation center or centers are established.

These organs, which are known as Transportation or Traffic Management Centers (TMC) serve as a forum for communications, interaction and coordination among agencies and service providers, both public and private entities. Coordination and communication among the stake holders including transportation, emergency management, law enforcement and security agencies are critical factors for building an efficient transportation system for a big and growing metropolitan city like Addis. Coordination and communications among the stakeholders are especially vital during emergencies, major incidents and special events. A TMC serves as a great platform to bring together these stakeholders and enable them to act in concert and manage these situations effectively.

For instance, if there is a major traffic accident on a critical transportation corridor (such as major intersections, highways or squares), several agencies will have to be involved to quickly clear the incident, manage the traffic flow, and resume normal services. Traffic police, emergency management personnel, transportation managers, traffic engineers and facility operators, as well as utility service providers will have to respond to the situation quickly, coordinate their activities and clear the incident promptly to resume normal traffic flow.

In addition, other non-emergency service related stake holders such as transportation policy makers, planners, roadway designers and contractors may also have to be directly or indirectly involved, to assess the situation, analyze the problems and provide remedies. For instance, transportation planners may be interested in the situation to find out what causes accidents or chronic traffic congestions in the area. This helps them devise solutions to avoid similar incidents in the future.

A TMC therefore facilitates routine or day-to-day communications and coordination of stakeholders and effective operation and management of the transportation system. It supports planning studies and policy analysis. It also serves the traffic operators and transportation managers as an effective tool to conduct traffic surveillance and monitor its flow in real time. It alerts operations staff immediately, when emergencies and incidents occur. In addition, a TMC can serve as a data storage and information clearing house for member agencies. It enables gathering, analyzing and dissemination of transportation related information and data to stakeholders including public and private agencies and travelers. This information will be used for improving facility operations, safety, security and traffic flow as well as project management and coordination among the member agencies.

One of the most important advantages of a TMC is its function to serve as a single source for disseminating traveler information to the public. Information on adverse weather conditions, traffic congestion and delays, incidents, lane closures, construction plans and schedules, and special events can be readily transmitted through various communications media, by using the TMC as a central source.

6. Highlights of the potential advantages of a TMC for the City of Addis Ababa and its metropolitan region.

- Enables effective traffic management & coordination among stakeholders (including traffic operators, planners, traffic police, law enforcement, security and EMS).
- Enables effective coordination between all transportation services, including private vehicles & Public Transportation Services (Rail, Bus, and Taxi).
- Serves as a good platform to build PPP (Public-Private-Partnerships), for providing effective and comprehensive transportation services.
- Serves to monitor in real-time, traffic conditions and pedestrian movements in the transportation system and maximize network capacity.
- Enables to quickly identify accidents, incidents and unusual situations and communicate to stakeholders in real-time.
- Enables to protect and enhance the safety and security of travelers and the public at large as well as ensure the integrity of the transportation network.
- Serves as a center to provide ATIS (Adv. Traveler Info. Systems) to the public through various communications medium, including radio, VMS and other systems. Promotes public awareness of safety through education and advisories.
- Serves as an ideal platform to develop and manage a Traffic Signal Control system for the city's roadways (including LRT and BRT crossings)
- Enables effective management of the transportation network during special events and national holidays (e.g. the great Marathon, Meskel and Idd).
- Serves as an effective tool to mobilize and coordinate the public and private transportation agencies in case of major emergencies such as disasters
- Serves as an important tool for security and safety of the transportation network and the public at large.
- Serves as a medium to coordinate construction schedules and plans among the agencies (including utility service providers).
- Serves as a clearing house for transportation information and data, which can be used by traffic operators, urban planners, safety and law enforcement officials.
- Serves as a forum to bring stakeholders together to coordinate special regional transportation projects such as deployment of new ITS technologies and systems.

7. Getting Started: Recommendations:

A. Institutional Framework:

The National Transportation Master Plan Study (NTMP) states that “practically, there is no City Administration Office, which takes responsibility of traffic management in the city of Addis”. The study further states “the three prime responsible government offices, ATMB (Addis Ababa Transport Branch); AACRA

(Addis Ababa City Road Authority); and AATP (Addis Ababa Traffic Police) have formed a committee to tackle traffic management issues including pavement markings, signage and enforcement of traffic regulations. However, all parties agree that this is a weak solution, with lack of clarity on decision-making and lack of human resources for it to operate effectively”.

Actually, this arrangement initiated by the Addis Ababa city agencies is the first step in the right direction. It is in line with a vision to establish a TMC for the city. This brief conceptual framework and needs assessment reinforces that vision.

The main questions that need to be addressed should therefore include

- a. How can the TMC goal be implemented?
- b. Who should build and/or operate the TMC?
- c. What should be the governing rules and regulations to operate the TMC?
- d. What is the appropriate institutional arrangement for the TMC to function effectively?

This proposal aims to provide a few insights, which might help seek answers for these important institutional and operational questions. The suggestions presented here build upon the recommendations of the NTMP (the National Transportation Master Plan) and UTPPS (Urban Transportation Policy and Planning Study), conducted for the City of Addis Ababa, as mentioned above.

B. The concept of a Regional TMC:

It is highly recommended that before the TMC project is initiated the institutional framework governing the City’s transportation system be well established. As noted in the various studies mentioned above, the roles and responsibilities for overseeing and managing the City’s transportation system are not well defined, primarily because there are several institutions, which are uncoordinated and for the most part disconnected or with weak communication links and unspecified boundaries. Currently (as of April 2010), there is no strong central body responsible for providing a single leadership and managing the transportation system of the City. The establishment of this central body, which may be known as the Addis Ababa Transportation Department (DOT) or Bureau is very critical. It should be a prerequisite for initiating the various projects of the City, including the TMC.

In addition, this draft proposal recommends that a new organization be formed to coordinate transportation activities for the wider metropolitan region of the city, including the Addis-Adama highway corridor, which is a critical network both for the city and the country as a whole. This organization can serve as a regional forum to bring transportation stakeholders together and the newly formed Addis Transportation Department or Bureau along with the Ethiopian Ministry of Transportation and Communications can take a leading role to build this forum.

The regional forum may be named, for the purpose of this Draft the Metropolitan Addis Regional Transportation Management & Coordination Council (MAR-TMCC) be established. This organization can serve as a nucleus or forum for management and coordination of regional transportation activities including traffic and incident management, traveler

information, construction and special events. It will bring in all of the major stakeholders of the city and its metropolitan region, in order to provide a concerted and efficient transportation service to the public. In essence, the MAR-TMCC is nothing other than a central facilitator. It will serve as a metropolitan council of the regional and the City's transportation and law enforcement agencies, to facilitate and coordinate regional transportation services and activities.

The MAR-TMCC can be governed by an Executive Board, whose members represent the major transportation stakeholders in the City of Addis Ababa and the Region (including the Federal Transportation and Communications Ministry; the Ethiopian Road authority; the Addis Ababa City Road Authority, Addis Ababa Traffic Police; the Addis Ababa Transit & Rail Authority (newly proposed agency), private transportation service providers (such as commercial vehicles serving the region) and others. The agency heads from these stakeholders or their designees can serve in the Executive Board of the MAR-TMCC.

The rules and regulations governing the MAR-TMCC should be established in a charter, which could be developed and ratified by the member agency heads (including federal agencies). Members of the MAR-TMCC should join the council on their free will, and have equal votes on decisions pertaining to regional transportation issues. However, they need to strive to build consensus, and work in a team environment, to serve well the city and the region.

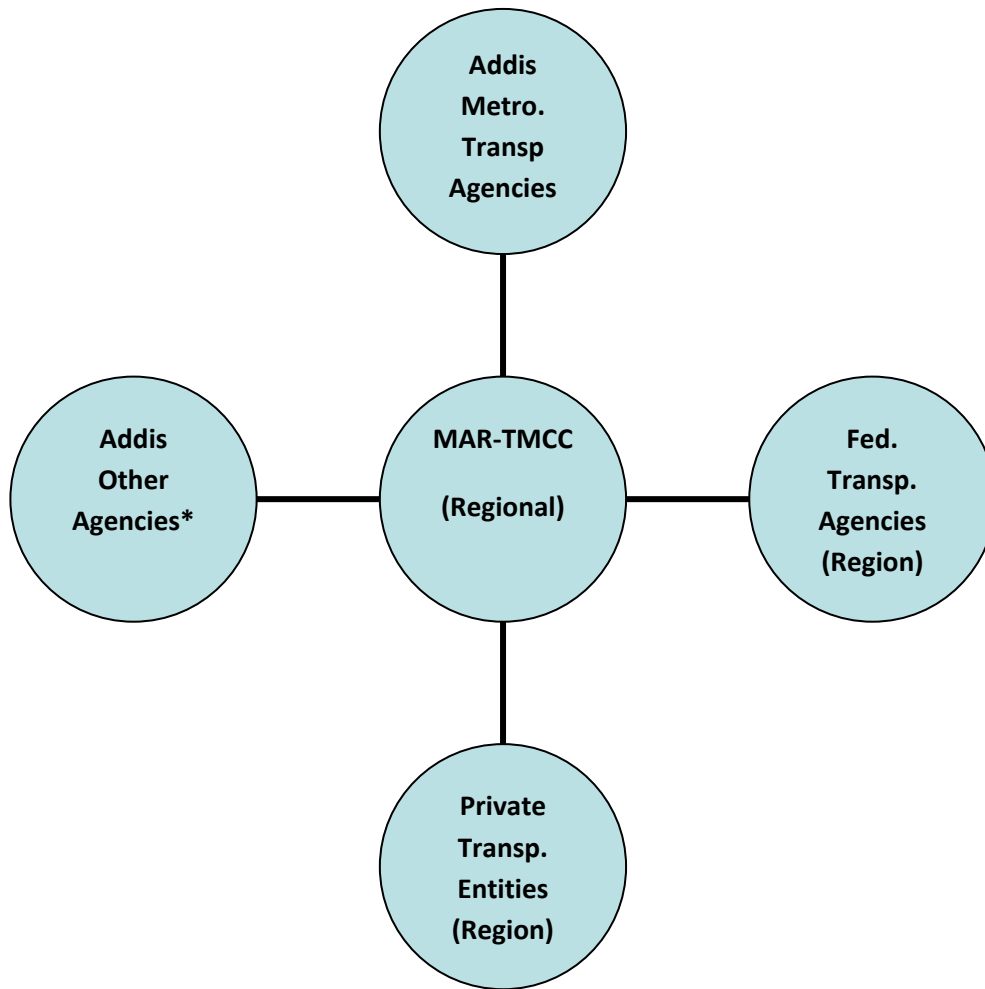
The chairmanship of this newly established MAR-TMCC Executive Board could be rotating, serving a one year term. The MAR-TMCC is simply a forum for information exchange and coordination. Member agencies join the organization for the purpose of solving regional transportation issues in a joint effort; share experiences, information and best practices; manage major incidents; coordinate regional projects and special events; and ultimately provide efficient services to the public.

It is important to remember here that this arrangement will not circumvent each member agency's power and responsibilities, to manage and operate the transportation systems in its jurisdictions. The individual agencies will still have full power for running their networks on their jurisdictions and responsibility areas. The MAR-TMCC shouldn't interfere in those individual agency operations and jurisdictions. The organization is essentially at the service of the individual member agencies, not the other way around. The MAR-TMCC will be bound and governed by the general guidelines, policy directives and decisions of the Executive Board. The Executive Board approves its operating budgets, staffing and regional projects, which the MAR-TMCC may be asked to sponsor, initiate or manage.

It is also important to note here that establishment of the MAR-TMCC will not contradict the recommendation of UTPPS to establish the Addis Ababa Integrated Transportation Board (AAITB). The primary responsibility of this City Board can be centered on running the City transportation agencies, while the newly proposed MAR-TMCC brings together the city, regional and national agencies, which have a stake in the city and regional transportation networks and corridors. The aim of the MAR-TMCC is to better facilitate communication, management and coordination of regional services. The AM-TMCC includes not only City transportation agencies, but also others both in the City jurisdiction and the wider Region,

for instance, a possible agency or TMC operating the Addis-Nazret Highway Corridor and/or the City of Nazret traffic as well.

The Federal agencies such as the Ministry of Transportation and Communications should be represented in the MAR-TMCC and play a key role. For instance, they can provide financing for special regional projects, encourage regional coordination efforts and support the growth and development of similar institutions like the MAR-TMCC in other regions, by facilitating information exchange and sharing of best practices, across the country. If the federal agencies wish, they can be represented in the MAR-TMCC as observers and facilitators rather than as voting members, because of their special power and influence.



The Organizational Concept of the Metropolitan Addis Regional Transportation Management & Coordination Council (MAR-TMCC)

* Addis Other Agencies could include EMS providers, Police, Airport Operators, and PTS etc.

C. City TMC or Regional TMC? What is good for the City & the Region?

The Regional TMC should essentially be an arm of the MAR-TMCC. It can be run by an Executive Director, who will be appointed by the Executive Board of the AM-TMCC.

For the purpose of this proposal, a reference is made to the Regional TMC, instead of just a TMC for the City of Addis Ababa only. The aim is to emphasize the importance of regional coordination. However, it is important to note that more than one TMC could be built in the Metropolitan Region. For instance, if capacity allows and funding is available, the Addis Ababa City Administration or its City Transportation Agency could have its own TMC to manage the City transportation systems, parallel to a Regional TMC, which serves the entire Metropolitan Region, including the City. The City Transportation Agency, though having its own TMC, can still play a leading role in the Regional TMC, through its representatives, to sponsor and coordinate regional activities.

If desired, the Addis City Administration could establish for the time being its City TMC, which could also serve as a Regional TMC, until the latter's roles and institutional capacity (mainly the MAR-TMCC) is fully defined and developed. A few other agencies responsible for running adjacent metropolitan transportation services, including management of the Addis-Nazret Highway Corridor could still be represented in the Addis TMC, for a while.

Finally, it is highly recommended that the Regional TMC or the City TMC be built at a convenient location to serve the whole region equally, even though it could be run for the time being by the Addis Ababa City Administration, rather than the MAR-TMCC, which may need sometime to develop.

Operation of the TMCs (regional or city's) should be seven days-twenty four hours (7/24). Funding for the TMC should come from various sources including annual membership fees from the individual participating agencies; support from the Federal Government Transportation Agencies such as the Ministry of Transport and Communications and the Ethiopian Road Authority (ERA), and private entities.

D. ITS Technologies for building the TMCs:

Building a TMC is a complex undertaking. Careful planning and execution is essential in such areas as selection of qualified vendors and cost effective ITS technologies and systems that could effectively meet the stakeholders' needs and user services, with careful planning, design, installation and testing of systems. Fortunately, there are well qualified and experienced vendors worldwide in planning, design, deployment, building and testing as well as management, operations and maintenance of ITS systems including TMCs. The City of Addis Ababa should tap on these valuable resources.

The selection of technologies should always be the last resort in the planning process of a TMC deployment. The TMC should be need driven rather than technology. The initial critical steps in the planning process of a TMC building should include identifying the stakeholders' needs properly; defining the requirements (technical and organizational) and understanding alternative procurement options.

Overall, the ITS systems, sub-systems and technologies for building a sound TMC for an urban area like Addis involve a complex set of hardware/software and communications requirements. These requirements need to be defined carefully by knowledgeable and experienced experts in ITS, who are intimately familiar with the transportation conditions,

needs, constraints and issues of the City of Addis Ababa and the region or the country as a whole. This should be a team effort between the local resources (policy makers, planners, engineers etc) and outside expertise. To this end, the professionals in the Ethiopian Diaspora could play an important role to bridge these two worlds and facilitate know-how and technology transfer.

The Core ITS technologies, systems and sub-systems that need to be considered while planning and designing the Regional or Addis TMC should include the following.

- CCTV cameras - along the core regional transportation corridors
- Traffic Signals and controls
- VMS (Variable Message Signs) for traveler information
- Ground sensors (for volume, queue and congestion measurement)
- Hardware/Software for TMC (including encoders/decoders), video screens etc
- Mobile radios for city-wide communications among agencies (traffic police, EMS, operations staff, Transit operators)
- Wireless/Wire line (Fiber) network for communications infrastructure
- Several communications and control systems that apply to improve PTS (Public Transportation Systems) such as signal control on rail crossings; priority lanes; train arrival/departure information; dispatching; security alarms etc.
- A citywide GIS that is supported by aerial photography and base map, with critical layers including transportation networks and utilities.

E. Project Implementation:

The final recommendation of this proposal is to initiate a pilot project in the initial phase keeping in mind the larger goal of building the Regional TMC. It is advisable to deploy key ITS devices especially CCTV cameras on major transportation corridors (such as the Ring Road, Meskel Square and Gotera Interchange) and connect them to a control center (which will serve as incubator for the TMC). It is also critical to plan the ITS systems including traffic signal controls for the new Addis-Adama Highway. Since this highway is expected to be a major corridor for transportation including commercial (truck) traffic, it is extremely important ITS systems such as CCTV cameras, traffic detections, VMS and others be implemented and integrated as part of the system. As a result building of the TMC (the “nerve center”) to control, manage and use these systems for providing reliable, efficient, safe and advanced transportation services to the public along this corridor is critical.

This pilot test for deploying the various ITS systems, integrating and building the TMC should be carried out by an experienced vendor and ITS expert, which will serve as a “Systems Manager” or “Prime Contractor”. It is advisable that this vendor be identified through an open and competitive procurement process with an RFI (Request for Information) or RFP (Request For Proposal). The project should involve both national and international partners, and be sponsored by the major stakeholders. Involving local partners in particular the private sector will be valuable to facilitate knowledge and

technology transfer, and avoid a potential risk often associated with full dependency on a foreign firm.

Simultaneously with the pilot project, it is advisable to develop a comprehensive Strategic Plan, which should include an ITS Implementation Plan for the City of Addis Ababa and the Region as a whole. In addition, developing a comprehensive national ITS Program and a Strategic Plan is crucial to provide leadership by formulating appropriate policies and creating the right environment for its growth.

The national, regional and/or the City Strategic Plans should build on the recommendations of the two major studies mentioned above i.e. the National Urban Transportation Master Plan and Addis Ababa Transportation Study. This plan can serve as a road map for implementing strategic goals and objectives designed to modernize the transportation systems in the city and the region, as well as the entire country including the application of ITS systems and technologies. Among other advantages, this Strategic Plan will help prioritize and phase projects and develop five, ten and 20 year capital programs for sustaining the transportation network and service improvements.

End of Draft.

Note: This Paper is presented to stakeholders for discussion and consideration purposes only. The views and recommendations made in this Draft are of the author's, and don't represent policy statements by the government or other stakeholders.