

Terms of Reference for Selection of Project Consultant for Development of a Manual for Developing Functional Specifications for ITS and MIS for Urban Bus Systems

1. Background

City Bus operations in India have been impacted by two important factors — the **Motor Vehicle Act, 1988** and the **Bus Funding Scheme** under the **National Urban Renewal Mission (NURM)**. The Motor Vehicle Act, 1988 governs all road transport in the country. It endows State Governments with the responsibility for bus transport including city buses.

The Bus Funding Scheme under the NURM provided 141 cities with financial assistance to initiate or strengthen city bus services. Before the Bus Funding Scheme, city bus operations in India were largely managed either by private operators or State Road Transport Corporations (SRTCs). These organisations had limited public funding support and could not fully meet the growing demands for public transport.

Operators of intermediate public transport modes (such as auto rickshaws, jeeps, taxicabs, stage cars) increased their services in response to the commercial opportunities of growing travel demand. However, the intermediate modes were unable to meet the increased travel demand created by rapid increases in urban population and urban development.

This supplier situation led to severe crowding and congestion. People resorted to private modes of travel in absence of regulated, reliable, safe and comfortable public transport services. The rapid increase in personal motorised vehicles also led to high levels of air pollution which significantly reduced the quality of the living environment.

The Government of India (GoI) is concerned about the negative effects of the rapid increase in personal motorised vehicles and started programs to promote public transport in cities. Under the second stimulus package in 2009, GoI announced that it would provide States with financial assistance under NURM for the purchase of buses for their urban transport systems.

The objectives of the funding were to:

- Provide new, cleaner, more user-friendly buses to help cities offer a higher level of service and convenience for passengers; and
- Support the implementation of public transport institutional and service reforms, including setting up of Special Purpose Vehicles (SPV) for managing and operating NURM-financed buses.

GoI launched a second phase of the Bus Funding Scheme in 2013. Under this program, GoI provided funding for the purchase of buses to a total of 141 cities across the country. This led to the operation of new public transport (PT) systems in cities which never had any formal PT system previously. New PT agencies were formed either to directly operate the buses or to contract with private operators to provide new PT services. The new PT systems are managed in a variety of ways – SRTCs, Special Purpose Vehicles (SPVs), or by the Municipal Authorities/ Government department's bus companies.

In many cases, however, the new agencies lack the physical facilities and the technical and human resource capacity to operate and maintain the buses received under the Bus Funding

Scheme. Often, the new agencies did not have bus depots with the physical capacity to maintain the buses. The new agencies could not maintain the buses as per the accepted international standards for bus inspections, preventative maintenance and component repairs. The result has been that the new buses have prematurely aged and will not be operational over their expected useful service lives.

In a similar way, the agencies have generally lacked much of the experience, know-how, analytical tools, business systems, organisational methods and processes for efficient and effective management of their bus business. This covers multiple aspects, including financial and business planning and management; travel demand analysis; route and service planning; resource planning and optimisation; operations management methods and service quality management; customer-facing services including fare payments and passenger information; tracking of resource consumption and improvement of methods; fuel efficiency and safety; and administrative efficiency and effectiveness. Much of this is due to lack of information, ability to analyse and processes it to turn knowledge into effective action.

The result is sub-optimal deployment of buses; limited management of services; moderate management of drivers; inadequate revenue protection; limited provision of trip information to customers; and poor integration of management information. In all, the new agencies are not able to control their outputs, their costs or their revenues and develop effective service and management improvements. This has led to lower quality services, less satisfied customers, higher costs and lost revenues.

A growing number of cities have started to deploy Intelligent Transport Systems (ITS) and Management Information Systems (MIS) to address these limitations. Where these have been deployed well, they have achieved very positive results and supported needed organisational transformation.

However, there is no guarantee that ITS and/ or MIS will be deployed well or used effectively. A number of commonly-occurring limitations are observed in many installations. Most of these can be linked to the absence of in-house capacity, primarily in their ability to engage with such a project, to foresee and define future needs, and to prepare the transformation that should come with ITS/ MIS deployment. In turn, this can often be linked to the new agencies not having a well-developed organisational structure, to turnover of key personnel, and to lack of experience of bus business and operations. This is exacerbated by the fact that ITS-MIS is a technically challenging area in which consultants and vendors often focus on the cutting-edge technology elements. This makes it extremely difficult for the agency people to engage in any meaningful way in the process of defining and selecting the products that they will then use for many years to come.

The initial phases of an ITS and/ or MIS project are of greatest concern. This is the critical time when the agency should figure out what it needs, how it will use the technology and how the technology will transform processes or even the organisation itself. This critical time spans the preparation of the DPR through to the development of the functional specifications. This is the critical time for two key reasons:

- (1) It is when all parts of the organisation develop an understanding of what ITS and/or MIS can do for the services and processes that they provide or manage; and define in their own terms what they need and how they will use it; and

(2) It is when a set of functional specifications are prepared based on the specific needs of the agency, a Concept of Operations, and, ideally, on a preliminary set of Standard Operating Procedures (SOP).

However, for a variety of reasons, there often is not the needed deep engagement between the Client and the Consultant during this critical time. The immediate outcome is that the DPR and, particularly, the functional specifications are either the Consultant's best guess of what the Client needs, or is, for the most part, a reproduction of material from some other project implementation. The downstream outcome is that when the ITS and/ or MIS is installed the Client is either not prepared to use it effectively or finds that it does not seem suited to the host organisation.

It should be noted that ITS/ MIS functional specifications can be quite similar from one project to another and a best practice example is always a good place to start. The problems stem from limited engagement between the Client and the Consultancy and from not ensuring that the specifications are fully connected to Client's requirements.

- **Ministry of Housing and Urban Affairs (MoHUA)** intends to address this capacity need by hiring a competent consultancy to develop a Manual for Developing Functional Specifications for ITS and MIS for Urban Bus Systems. The manual will address the following key issues that PT agencies should address when designing their ITS and/ or MIS. Possible Business models for ITS and MIS for Urban Bus Systems
- Model RFP for each business model
 - § Functional specifications
 - § Procurement guidelines and best practices

Individual cities can best-fit adopt the model RFP based on needs & capabilities and possible business models. The Manual will not just be a technical document. It will address the upstream processes in which the Client/ agency becomes engaged and defines its requirements, and the downstream processes of transforming business processes and organising for effective deployment of the procured systems.

MoHUA intends to fund this technical effort under Component 1 of the **Efficient and Sustainable City Bus Services (ESCBS)** project.

2. GEF- 5 Project on Efficient and Sustainable City Bus Services (ESCBS)

The objective of the ESCBS project is to promote bus-based public transportation in the country. ESCBS is a step forward in the initiatives taken by the GoI through NURM and the **Sustainable Urban Transport Project (SUTP)** and is funded under GEF-5.

The ESCBS project is consistent with the GEF-5 focal area of Climate Change Mitigation. It aligns well with objective to "Promote Energy Efficient, Low- Carbon Transport and Urban Systems".

The ESCBS project is designed to complement the baseline project, Bus Funding Scheme under the NURM, through additional activities that would help realize its full potential. The proposed project will fund the incremental costs of activities aimed to enhance sustainability, energy efficiency, quality of city bus services, and thereby increase the potential for GHG emissions reductions from the baseline project.

The ESCBS project has three major program activities:

- **National Capacity Building.** Development of a comprehensive capacity building program for the nascent urban bus sector including training programs, knowledge and exchange events for sharing of best practices, and experiences among public and private stakeholders.
- **Regulatory, Institutional & Fiscal Analysis.** Review of the legal, regulatory, institutional and fiscal constraints to operation of sustainable city bus services, identification of areas for reform and development of policy notes for initiating deliberations at the national, state and city levels for addressing these issues;
- **City Demonstrations.** Targeted city level modernization interventions to showcase low cost high impact initiatives in bus operations and user responsive initiatives.

The ESCBS project is being implemented through the following three main components:

Component 1: National Capacity Building for Urban Bus Sector

Primary objective of this component is to build capacities in the field of urban bus service operations. The main activities identified under component include:

- (i) **Developing policy recommendations** to assist nodal government departments at the national and state level to address identified issues; and
- (ii) **Capacity building** of the urban bus sector through development of knowledge materials (training toolkits), training activities, knowledge sharing and cross learning events, dissemination of best practices etc. in cutting edge areas aimed at development of the overall urban bus sector in the country.

This project component is being implemented by the MoHUA.

Component 2A: City Demonstration Projects – Physical Improvements

This component supports physical improvements targeted at modernizing the city bus services in demonstration cities including:

- (i) **Modern depot equipment** for improved maintenance and life of buses,
- (ii) **Modern ITS** for vehicle-tracking, passenger information systems and automatic fare collection to make the services more user friendly,
- (iii) **Modern MIS** for improved management information systems, inventory management systems, vehicle dispatch and crew scheduling, maintenance management, improved collection management, analysis, reporting and use of data for more scientific planning to enable optimal use of facilities.

This project component is being implemented by the respective project cities.

Component 2B: City Demonstration Projects – Technical Assistance and Capacity Building

The capacity building and technical assistance component is targeted at supporting the modernization efforts of the selected four demonstration cities. This involves assistance to

improve their quality of service through technical assistance in focus areas such as service planning and route rationalization, greater private participation including mainstreaming informal sector, improved branding and overall financial sustainability, vehicle and driver performance management with a view to improving fuel efficiency, overall financial sustainability and reform implementation. It also includes assistance in capacity building through conducting workshops and training events.

This project component is being implemented by the respective project cities.

The MoHUA intends to fund the development of the Manual for Developing Functional Specifications for ITS and MIS for Urban Bus Systems under the National Capacity Building program area of the ESCBS project.

3. Objective of the Consultancy Services and Broad Scope of Work

The objective of the assignment is to develop a **Manual** that can be used by PT agencies that are involved in the planning, design and deployment of ITS and/ or MIS projects, either as completely new implementations or as extensions/ upgrades to existing ITS or MIS systems.

These agencies are usually responsible for the planning, financing and overall management of the urban bus services, and have exclusive or shared roles in the customer-facing services including fares, ticketing, passenger information, and facilities such as terminals and bus queue shelters. They either directly operate the bus services using their own employees or they contract with private companies to operate the city bus services. Since many professionals at these agencies currently have limited expertise in bus operations and in ITS/MIS, the manual shall be written in a simple style that assumes basic knowledge of bus operations and no prior knowledge of the technologies or applications associated with ITS/MIS or with IT and communications.

ITS/MIS Consultants are an important secondary audience of the Manual. The Manual should help them to identify effective methods of engagement with PT agencies and to appreciate functional specifications from their Client's perspective.

The Manual is intended to **support** implementation of ITS/MIS in the city by bringing in a **standard method that uses proven good practice**.

The manual will address the entire process of stakeholders engagement, needs assessment, user requirements, Concept of Operations and functional specifications. It will reference the key downstream activities that will lead to effective deployment and use of the ITS and/ or MIS. It will address, but not be limited to, the following topics:

- **Identification of practice and benefits of ITS and MIS.** The guidance will start by identifying the scope, practice and benefits of ITS and MIS. This will present the ITS and MIS in a structured way, beginning with their various application areas, what each does and how it is used, the benefits that can be obtained, the technical solutions involved (devices, software, supporting platform), and examples in India and abroad where it is used. The different linkages between ITS and MIS will be explained. It will present framework for deployment of ITS and MIS within a PT agency, including the IT platform, communications, and data management. It will introduce concepts such as System Architecture, data models, standards and integration, primarily from

the view of explaining what these are and why they are necessary. It will explain how a PT Agency could utilize ITS and MIS, synergies arising from integration, and migration paths for future development.

- **Engaging with Stakeholders and defining requirements.** Guidance will be provided on the end-to-end process for stakeholder engagement and defining requirements. This will cover: 1) how to engage the different stakeholders within a PT entity into an ITS/MIS project, including those who do not yet see how the project might be relevant to their activities; 2) identification of issues/problems; 3) goal-setting; 4) identifying the range of functions, and examination of activities, and services 5) identifying the internal and external users; 6) identifying and structuring user requirements; and 7) developing initial concepts and scope for the ITS and/or MIS project, with the potential for future phases.

The guidance will identify suitable methods for the scope defined above taking account of different set-ups, staffing levels and capability in different PT agencies. The Manual will also consider situations where the relevant stakeholders are not all within the same organisation, especially where the PT agency has contracted operators, or where the PT Agency will interact with a Smart City initiative. Guidance will be provided on the type of outputs each of the above steps should produce and how to make it effective and well suited for the subsequent steps.

- **Assessment of business processes and services.** Guidance will be provided on how PT Agency and bus operators should review their business processes ahead of developing what their ITS and/ or MIS will do. It will illustrate how ITS systems can be a powerful tool to help re-engineer and enhance business processes and present a unique opportunity to achieve production and business efficiencies and to introduce new external and internal services.

Guidance will cover a thorough understanding and review of the organisational structure, the business processes, and the operational processes within which the ITS and/ or MIS system will function. The guidance will address activities such as carrying out a full process review for all of the functional areas within the scope of the ITS/MIS analysis; carrying out an Opportunity Analysis to see where and how these processes and their organisational structures could be improved; and defining all new and amended processes. Guidance will be given on how to effectively document the outputs and on how to conduct a further iterative process with stakeholders to ensure a well-integrated, coherent and agreed plan on which the Concept of Operations will be based.

- **Concept of Operations.** A strong emphasis of the guidance will be on defining a Concept of Operations (ConOps) that guides the development of the ITS and/ or MIS. A brief section will be provided to explain what a ConOps is and why it is important. The ConOps guidance should cover: 1) how the ITS/MIS systems will be used in their host environment; 2) the specific way in which the systems and applications will be used; 3) the tasks and functions to be carried out; 4) the organisational arrangements or personnel who will use the ITS/MIS; 5) the organisational and operational structures that will be engaged within the PT Agency and/or Operator; 6) the processes they will perform; 7) who is doing what function and what they need to perform that function; and 8) how tasks are achieved by a combination of the organisational structure, the assigned personnel, the procedures, the technology, the information, interaction with other agencies, people, devices, and applications.

The guidance will stress that a well-written ConOps will make clear to both the Client and the designer/supplier how the ITS/ MIS should function. The guidance should emphasise the importance of having the ConOps drive the design of the ITS/ MIS and to not allow the design or limitations of the ITS/ MIS determine how the PT Agency or Operator will run its operations. It will also emphasise that specific technical solutions should not be pre-selected before either the ConOps or the functional specifications have been defined.

- **Development of Functional Specifications.** Functional Specifications are a detailed description of the processes and what the system and its components are expected to do. They describe in detail how the processes work (or should work), and should cover all options and eventualities. This is the fundamental reference framework for the technology suppliers and designers. Guidance will be given on how to develop, write and present functional specifications. It will explain style, use of language, describing options, and numbering. It will explain how incompleteness, inconsistency or ambiguity must be avoided, and note the problems that such things cause downstream so that PT Agencies can appreciate the importance of attention to detail and management oversight of the process. Guidance will be given on how to safely use specifications from elsewhere as reference material, and how to adapt them for use in the host environment.
- **Development of Business Models** for Public transport services that will contribute to build sustainable mobility solutions. A business model needs to explain how the Public Transport Agency can manage its revenues and expenditure by specifying where it is positioned in the value chain. Business models are examples that represent core aspects of a business, including purpose, offerings, strategies, infrastructure, organizational structures, trading practices, and operational processes and policies.

The Business models should illustrate if the new entity is an agency or SPV setup along public administration or commercial lines; whether it is a vertically-integrated entity or follows an outsourcing model; whether the implementing agency simply runs buses or whether it is responsible for the urban transport planning, multimodal integration etc.; Outline value capture models that could generate funding for new public transport infrastructure with a specific focus on generating upfront capital funding; Outline the conditions and structures that will encourage institutional capital to invest in new public transport infrastructure.

- **Development of Model for ITS and MIS for Urban Bus Systems.** Identification of appropriate business model for risk free implementation and bring benefits to all the stakeholders is a key task of consultancy engagement. Consultant should identify possible business models for ITS/MIS implementation based on best practices in India and, as appropriate, other countries and recommend 3-4 business models for successful implementation to bring objectivity in decision making. These business models should also link back to functional specifications from guidance and traceability perspective. Specifically, the Consultancy shall explore suitability of deploying ITS and MIS solutions as a service without the need for the Client to invest capital for ITS/MIS hardware and software. The ITS and MIS solutions to be proposed shall be in alignment with the relevant business models for operations of bus services. Models to be developed in accordance to viable business models to expedite procurement processes. Guidelines should also be provided to customize the RFP with minimal changes and should contain model technical and non-functional requirements apart from functional specifications. Furthermore, each model shall identify clearly the roles and responsibilities of various stakeholders from the ITS/ MIS perspective.

- **Development and Deployment.** The guidance will outline the activities that follow the development of the functional specifications. The activities include: 1) defining the technical solution; 2) developing the technical specifications; 3) preparing the overall deployment schedule; 4) preparing bidding documents; 5) implementing procurements; 6) managing installation including testing, verification and commissioning; 7) planning and implementing training; 8) mobilising the ITS/MIS utilities and integrating them into the business and operations; and 9) conducting post-deployment evaluation. Guidance will be provided on good practice in how PT Agencies and Operator should prepare and staff-up for these subsequent phases.

The consultancy services are expected to be carried out in four general stages:

- **Review of Existing Systems, Applications and Practice in ITS and MIS, and of Implementation Guidance.** The Consultant will identify and review existing and documented guidance on ITS, MIS, Functional Specifications and on methods for developing them. The Consultant shall identify existing guidance written for Indian operations and international guidance that could be applied to Indian bus operations. The Consultant will identify good practice examples of Concepts of Operations and of Functional specifications, both Indian and international. The Consultant shall convene an advisory panel of Indian industry experts and solicit the panel's assistance in identifying relevant materials.
- **Drafting of a Detailed Outline of Manual Contents.** The Consultant shall prepare a detailed outline of the manual contents based on its review of existing guidance and its assessment of the need to develop new materials in areas where guidance is lacking. The outline will be sufficiently detailed so that potential analysis approaches can be understood and evaluated. The Consultant shall solicit comments on the outline from the MoHUA and the advisory panel of Indian industry experts.
- **Preparation of the Manual for Developing Functional Specifications for ITS and MIS for Urban Bus Systems.** The Consultant will prepare the manual based on the work conducted in the first two phases. The manual will be written in a simple style that assumes basic knowledge of bus operations and no prior knowledge of the technologies or applications associated with ITS/MIS or with IT and communications. The Consultant shall solicit comments on the draft manual from the MoHUA and the advisory panel of Indian industry experts and incorporate the responses in the final manual.
- **Develop and Demonstrate Training Course on Use of Manual.** The Consultant will prepare a two-day training course on the use of the Manual for Developing Functional Specifications for ITS and MIS for Urban Bus Systems. The primary training medium will be PowerPoint slides. The Consultant shall prepare case study exercises to reinforce the concepts presented in the manual. The Consultant shall conduct the two-day course in Delhi.

4. Detailed Scope of Work of Consultancy Services

The scope of work is broadly divided into seven work tasks:

Task 1: Organise the Industry Expert Review Panel

The Consultant shall identify seven experienced managers from the bus industry in India to serve on an industry review panel for this project. The purpose of the panel is to provide input

at critical points of the work program and to provide review comments on draft work products. The seven managers should represent a reasonable cross section of PT agencies involved in providing public transport including managers representing: 1) SRTCs, 2) PT agencies directly operating bus services using their own employees; 3) PT agencies contracting with private companies to operate bus services; 4) Bus operating companies. Given that the deployment of ITS/ MIS is still at an early stage in India, the Consultant will also identify three experts from the ITS/ MIS or IT sectors of universities and institutes.

The Consultant will submit a proposed list of potential panel members to MoHUA for review and comment. Based on the comments received, the Consultant will invite the potential members to participate on the panel.

The Consultant will be responsible for convening the panel in Delhi twice during the project — once at the outset of the project and a second time to review the draft manual. The Consultant shall be responsible for paying all expenses for the panel members including travel, boarding-lodging and honorarium.

Task 2: Identify and Review of successful Business Models adopted by IT Industry for execution of similar projects and their Implementation Guidelines

The Consultant shall identify and review implementation of similar projects both Indian and International and explore different business models which can be adopted by PT entities in India suiting their requirements with the availability of resources and on method of developing them. The Consultancy shall explore suitability of deploying ITS and MIS solutions as a service without the need for the Client to invest the capital in the hardware and software. The Consultant shall identify existing guidance written for Indian operations and International guidance that could be applied to Indian Bus operations. The Consultant shall identify good practice examples of Concepts of Operations, both Indian and international.

Task 3: Identify and Review of Existing Systems, Applications, and Practice in ITS and MIS

The Consultant shall identify and review existing and documented guidance on ITS, MIS, Functional Specifications leading to preparation of draft RFPs. The Consultant shall identify existing guidance written for Indian operations and international guidance that could be applied to Indian bus operations. The Consultant shall identify good practice examples of Concepts of Operations and of Functional specifications, both Indian and international.

The guidance shall cover the following technical areas:

- Typology, functions, equipment, applications and services in the ITS and MIS categories, as applied to urban bus services
- Methods and practice in stakeholder engagement and determination of user requirements
- Methods and practice in business process review and redesign
- Concept of operations
- Define User Requirement & Business Rules
- Functional specifications
- Practice in Development and Deployment of ITS and MI

The Consultant shall conduct the review in two ways:

- A **literature review** of available sources including those on the Internet and available from Development Partners such as the World Bank and ADB; from national agencies and institutes such as the US DOT, TRB, APTA, European Commission; from ITS associations and organisations; and from international public transport organisations such as the International Association of Public Transport (UITP).
- **Direct interviews** with at least three large SRTCs and two large city/SPVs in India that have implemented ITS and/ or MIS (minimum two each of ITS and MIS) or which are in the post-procurement phase of deployment (maximum two in this category). The Consultant will identify the experience of these agencies in specifying, procuring and deploying ITS and MIS for their agencies. The Consultant will interview the relevant managers to gain insight on how well the guidance has worked in practice; and gain their opinions on how the guidance might be enhanced to address technological changes in buses and maintenance practices. The Consultant will also interview at least three consultancies in the ITS and MIS domain to gain their experience in working with PT agencies and their opinions on how development of functional specifications could be improved. The Consultant also will interview at least three vendors to gain their perspective on the quality, clarity and practicality of the specifications presented in bidding documents, how this influences their bid decisions, what impact it has on development of ITS/MIS products to meet the specifications, and any issues arising in the installation, commissioning and operational acceptance phases.

The Consultant shall prepare a draft interim report that summarizes the results of use of existing guidance documents for ITS/MIS and development of functional specifications.

The draft interim report will be submitted to the MoHUA for review and comment and to the expert review panel. Based on the comments received, the Consultant shall prepare the final interim report.

Task 4: Prepare a Detailed Outline of Manual Contents

The Consultant shall prepare a detailed outline of the manual contents based on its review of existing guidance and its assessment of the need to develop new materials in areas where guidance is lacking. The outline will follow the sequence of activities that a PT agency would follow from:

- Assessment and identification of goals and objectives for an ITS and/or MIS project.
- User Requirements, Business Rules and Functional Specifications
- Selection of appropriate Business Model for Project Execution
- Subsequent procurement using suitable model RFP according to chosen business model.

The outline will be sufficiently detailed so that: the suggested analysis approaches can be understood and evaluated; followed stepwise. As appropriate, the outline may include flow diagrams or other aids that can add clarity to the draft outline. The outline also should provide for a glossary of terms.

The Consultant shall prepare a draft outline of the manual contents and submit for review and comment to the MoHUA and to the expert review panel. Based on the comments received, the Consultant will prepare the final outline.

Task 5: Create the Manual including Business Models & Draft RFPs for ITS and MIS for Urban Bus Systems

The Consultant shall prepare the manual based on the manual outline prepared and approved by MoHUA in the previous task. The Consultant should write the manual in a simple style that assumes basic knowledge of bus operations and no prior knowledge of the technologies or applications associated with ITS/MIS or with IT and communications. As appropriate, the manual should include:

- A comprehensive and clear set of guidance, laid out stepwise, with easy to follow cross-references to supporting materials
- Examples of how the methodologies and analysis procedures should be applied. Considerations should be given to a few specific case study examples throughout the manual.
- Flow diagrams or other aids that can add clarity to the suggested procedures.
- Supporting material presenting typology, functionality and good practice in the different systems, services and applications in ITS and MIS in urban bus operations
- Good practice examples of Concept of Operations in India and, as appropriate, other countries.
- Possible Business models for suitable procurement & implementation of ITS/ MIS in Indian Cities and good practice examples for appropriate selection. The manual should also include suitability of procurement and deployment of ITS/MIS solutions as services.
- Recommended set of business models (3-4) for Indian cities and their selection criteria.
- Supporting material presenting various attributes and practices which would be meeting the requirements of the PT entities to identify the business model, fine tune the same to make it suitable for them.
- Good practice examples of Functional Specifications in India and, as appropriate, other countries
- Draft model RFP for recommended set of business models.
- Guidance on how to fine-tune the draft RFPs to help the PT entities to align the same with the business model as well as technical requirements.
- Resource guide, providing references to relevant toolkits, guidance notes, distance-learning modules, standards, good practice guides, sample materials, etc. This could include links to webinars and other visual materials.

As appropriate, the Consultant shall create templates and checklists that would support the use of suggested procedures in the manual.

The Consultant shall prepare an initial draft manual and submit it to the MoHUA and to the expert review panel for review and comment. Based on the comments received, the Consultant will prepare the final manual.

Task 6: Create Training Course on Use of the Manual.

The Consultant will prepare a three-day training course on the use of the Manual covering all possible implementation aspects. The primary training media will be PowerPoint slides. Short video or other materials may also be included, provided they are highly relevant and any necessary permissions have been obtained. The Consultant shall prepare case study exercises to reinforce the concepts presented in the manual.

The Consultant shall prepare draft course materials including PowerPoint slides and case study exercises shall submit the draft course materials for review and comment to the MoHUA. Based on the comments received, the Consultant will prepare the final course materials.

Task 7: Conduct Training Course on Use of Manual

The Consultant shall conduct a three-day training course in Delhi on the use of the Manual. The target audience will be urban bus transport agencies/authorities, State Transport Undertakings and private sector operators that provide contracted urban bus services. The Consultant shall be responsible for the registration of the participants and all meeting expenses such as workshop venue, training materials, meals, refreshments, etc.

The Consultant will prepare and administer a participant evaluation form. The Consultant should write a brief report documenting the workshops/training details and outcomes.

As appropriate, the Consultant shall revise the training materials based on the inputs received during training course/ workshop.

5. Schedule and Deliverables:

Task	Deliverable	Time Frame (Months from Start of Contract)
1	Inception Report and List of potential members of expert review panel	1.0
2	Review of Existing Systems, Applications and Practice in ITS and MIS, development of functional specifications, and of Implementation Guidance	3.0
3	Detailed Outline of Manual Contents	3.5
4	Manual for Developing Functional Specifications for ITS and MIS for Urban Bus Systems, including supporting materials (Business Models, Model RFPs)	7.0
5	Training Course on Use of the Manual	8.5
6	Conduct Training Course /Workshop on Use of the Manual.	9.0
7	Training Course/Workshop Report	9.5
8	Final Version of Training Course on Use of the Manual	10.0

6. Suggested Consultant's Team Requirements:

Team Composition (Numbers required)	Minimum Years of Professional Experience	Minimum Qualification/ Area of Experience
Team Leader cum Bus Transportation Specialist (1)	20	Post-graduation or equivalent with minimum 20 years of experience or Bachelor degree in Engineering with 15 years of experience in Urban Transport planning, research and operations, and maintenance management. Experience in management, business, planning, operations, and customer services of urban bus transport systems is required.
ITS Specialist (1)	10	Graduate in Engineering, IT or related technical discipline with minimum 10 years of experience in planning, design or deployment of ITS system. Previous experience in developing user needs and functional specifications for ITS for urban bus agencies or operators is required. Must have an ability to work with and understand the requirements of end-users. Ideally, the specialist participates in Indian or international fora that deal with practice and harmonization of ITS.
MIS Specialist (1)	10	Graduate in Engineering, IT, Business or Administration (or equivalent of any of these) with minimum 10 years of experience in planning, design or deployment of MIS system. Previous experience in developing user needs and functional specifications for MIS for urban bus agencies or operators is required. Experience in MIS for other sectors will be considered as long as there is at least one implementation at a bus agency. Must have an ability to work with and understand the requirements of end-users.
Bus Operations Expert (1)	20	Bachelor degree. Should have a minimum of 20 years of experience in bus operations, maintenance and management; of which at least 10 years have been in depot-based roles and at least 5 years at depot manager, operations manager or maintenance manager level. Must be conversant in all aspects of depot operations, including its organisation, administration and information flows. Ideally will have represented Client requirements in at least one ITS and one MIS project.
ITS/ IT Procurement Specialist (1)	15	Bachelor's Degree, with minimum 15 years of experience, of which at least 5 years have been in procurement. Should have been directly involved in at least 3 procurements of ITS and/ or MIS systems for bus operations (at least one in each category). Must be experienced in preparation of bidding documents and specifications for ITS and MIS.

Team Composition (Numbers required)	Minimum Years of Professional Experience	Minimum Qualification/ Area of Experience
Training Specialist (1)	20	Bachelor's degree. Should also have a minimum of 10 years of training experience in the transportation sector. Must have experience in designing of training programs, designing and development of training support materials and implementing training programs.
Communications Expert (1)	10	Graduation in Management/ Mass Communication or Graduate with advanced diploma in Mass Communication or equivalent. Experience in preparation of contents for training toolkits. Shall have excellent writing, translation and editing skills in English.
Graphic Designer (1)	7	Bachelor's degree in graphic design or related field or equivalent experience. Knowledge of media production, communication, and dissemination techniques and methods. The ideal candidate will have strong visual skills.

9. Payment Schedule:

The following payments shall be subject to the satisfactory completion of the milestones and approval by MoHUA.

Task	Milestone	Payment Percentage
1	Inception Report and List of potential members of expert review panel	10%
2	Review of Existing Systems, Applications and Practice in ITS and MIS, development of functional specifications, and of Implementation Guidance	20%
3	Manual for Developing Functional Specifications for ITS and MIS for Urban Bus Systems, including supporting materials	40%
4	Create Training Course on use of Manual and Conduct Training Course on use of Manual	15%
5	Training Course Evaluation Report and submit Final version of Course Materials	15%

R. D. Talukdar

आर.डी. तालुकदार/R.D. TALUKDAR
 अवर सचिव/Under Secretary
 आवासन और शहरी कार्य मंत्रालय
 Ministry of Housing And Urban Affairs
 भारत सरकार/Govt. of India
 नई दिल्ली/ New Delhi