

Technical Assistance
by
Consulting Agency
For
Implementation
Of
State Wide Area Network
(SWAN)



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Department of Information Technology,
Govt. of India, Electronics Niketan,
New Delhi – 110 003.

1. Background

The National e-Governance Plan (NEGP) of Government of India has a clear focus on improving delivery of government services to citizens. Towards this end, it has identified several Mission Mode Projects (MMPs) both at the Central and State levels, aimed at readying various central and state government departments and organizations for electronic delivery of services including several other e-Governance initiatives also being undertaken by the State governments and the Central Ministries.

NEGP recognizes that creation of independent infrastructure required to ensure service delivery by each department is neither cost-effective for government nor convenient for the citizen. Considering the need for creating reliable access network throughout the country, State Wide Area Network (SWAN) has been identified as one of the MMPs under the NEGP. Department of Information Technology (DIT), Government of India is the nodal department for SWAN MMP and Cabinet Committee on Economic Affairs (CCEA) has approved the SWAN Scheme for implementation in 29 States and 6 Union Territories. The SWAN Scheme proposes to establish a minimum 2 Mbps connectivity up to the block level through extension and/or creation of NICNET/ State Wide Area Networks (SWANs) across the country.

The SWAN Policy Guidelines formulated by DIT provides States with two options for implementing SWAN and these options are detailed below.

Option I: State to identify a suitable PPP model (BOO, BOOT etc.), select an appropriate agency through a suitable competitive process for outsourcing establishment, operation and maintenance of the SWAN. The State will need to designate an appropriate nodal agency to take overall responsibility for receipt of funding support, implementation and rendering accounts/ Utilization Certificates. The entire process of outsourcing, including advising on the most appropriate PPP model, could be managed by an appropriate consultancy organization to be engaged by the designated agency through a transparent process under the direction of an implementation committee to be established by the State.

Option II: Designate NIC as the prime implementation agency for establishment and maintenance of the SWAN, with an appropriate end-to-end Service Level Agreement (SLA). In this alternative, funds would be released to NICS by Department of IT and execution would be carried out by NIC.

Given the importance and the intricacies involved in implementing SWAN (especially through Option I), many States have voiced the need for technical assistance through appointment of Consulting Agency for supporting them in this initiative. Considering the implementation requirements of SWAN, the technical assistance which may be provided by the consultants can be segregated into three distinct areas relating to:

- Project Conceptualization; Preparation of Detailed Project Report, Request for Proposal (RFP) for selection of the SWAN Operator and the related Service Level Agreements (SLAs).

- Implementation assistance including support in bid process management, selection of Network Operator and Project Monitoring during Implementation
- Network Monitoring for ensuring SWAN performance in compliance with SLAs

These broad Guidelines have been prepared in order to:

- assist State Governments in defining the role and responsibilities of the Project Consultants in various phases of SWAN project;
- document the various options available to the State Governments for engaging the services of the Consulting Agency for various elements of work as outlined above and
- document the possible Payment Terms for such consulting assignments

2. Role of the Project Consultants under SWAN

Considering the size and complexity of the SWAN implementation exercise, the role of Project Consultants can be segregated into three phases. The choice of whether a single Agency is to be hired upfront to undertake all the three phases or whether separate project consultant for each phase could be hired, is left to the discretion of the State Governments. It may be mentioned though that since hiring of project consultants is often a time consuming activity, it may be appropriate for the State Governments to hire services of a reputed agency for all the three phases subject to suitable Terms and Conditions for each phase. This would help State Governments to get the most competitive offers and advantage of time.

The detailed Scope of Work to be performed by the selected consultants in each phase is described below. Depending on its readiness and requirement, the State may customise the Scope of Work suitably.

2.1 Phase I - Project Conceptualization; Preparation of Detailed Project Report, and Service Level Agreements

Suggested Time Period - 6-8 weeks

- To make a preliminary assessment of the existing network Infrastructure of the State at all the levels including State head quarters, Districts, Taluks/Blocks. For this purpose the consultants need to understand the topology of the State including the number of Districts, Taluks/Blocks, existing backbone and/or the departmental communication infrastructure, Applications used by various departments etc.
- To prepare an inventory of existing Applications and to analyse the applications and Load/Traffic/Transaction requirements based on Application deployment & usage level at Departments, Blocks, Districts and State Capital.
- To undertake Technical Feasibility Study based on the existing and desired infrastructure for effective implementation of SWAN.

- To study the scope of geographical locations of sites for deployment of the SWAN and identify the Point of Presence (POP) at various levels including State head quarters, Districts, Taluks/Blocks.
- To review the Bandwidth requirements and the number of connections required for implementation, especially the horizontal connections from PoP to user departments.
- To study the following requirements
 - Last Mile Connectivity between POPs and departments.
 - External Connectivity (Inter SWAN, Internet) to Networks (LANS) at State, Districts and blocks.
 - Inter Connectivity with NICNET as Back up
 - Inter Connectivity with the proposed National Backbone - Data centers
- To design the strategy for implementation of SWAN covering the Network Architecture, implementation phases, connectivity & bandwidth requirements, IP addressing schema, Bill of Material, specifications and other elements required for effective implementation of SWAN.
- To design the Project Implementation Plan with specific milestones, identify the potential project risks and define the mitigation strategies for ensuring successful implementation of SWAN within the defined timelines.
- To define the site requirements and to assist the state in site identification. To design the site layout for sites the PoPs at all the levels, to identify the activities to be performed and material to be procured (*including the civil works*) by the state government for ensuring site readiness and further reducing the delays during the implementation phase. To assist the state in defining the resource requirements (including funds requirements) and in appointing an agency for the job. To define a schedule for development & handing over of the sites.
- To design a 'Security Strategy and Policy Document' for implementation of effective access, authorization & monitoring controls for SWAN Infrastructure including Firewalls, IDS, IPS and Internal Server segment for Anti-Virus, Patch Management, Internal DNS, Radius, NMS etc. The security strategy should also include the Disaster Recovery and backup procedures for ensuring requisite uptime and performance requirements of SWAN.
- Development of Bill of Materials for the entire project covering all the phases of the Project and Determination of the Project cost estimates. This project cost estimates prepared by the consultant should cover the capital & operational expenditure for SWAN including site preparation and bandwidth costs.

- Structuring appropriate Business models (Budgeted, BOT, BOO, BOOT etc.) and financing patterns for implementation of SWAN and shall highlight the merits /shortcomings of each model.
- To assess the capacity building requirements and design a Change Management Plan for the State for successful management of SWAN MMP.
- To define comprehensive O & M (operations and management) requirements for SWAN steady state operations.
- To identify the Performance Indicators for monitoring the services provided by the Bandwidth Provider and the related terms and conditions for drawing the commitment and quality services from Bandwidth Providers.
- To define the detailed roles and responsibilities of the Stakeholders (State implementing Agency, Bandwidth Provider, SWAN Operator, consulting agency) involved in the execution of the Project.
- To define the Contract Agreement with the SWAN operator addressing the following at the minimum:
 - Responsibilities of the State Government
 - Responsibilities and Services to be provided by the SWAN Operator in implementation and management of SWAN
 - Expected Service Levels of SWAN and post implementation performance measures (SLAs)
 - Implementation timelines
 - Acceptance Procedure
 - Change Management Procedures
 - Payment Terms & other Conditions

2.1.1 For this phase of scope of work for the consulting agency, the following deliverables are required to be submitted by the consulting agency:

- Report on the existing ICT Infrastructure in the State including Network Infrastructure etc.
- Report on existing and expected Applications and their deployment & usage levels
- Report on Technical Feasibility in implementation of SWAN
- Report on the proposed Network Design and Architecture detailing the Numbers of POP's, number and specifications of Network components, Bandwidth Requirements, horizontal connectivity requirements, scalability requirements, IP Addressing Schema,

interconnectivity & interoperability requirements & strategy with other government/public sector networks in the country etc.

- Report on Suitable Business Model and financing Patterns for SWAN Implementation and Operations
- Report on SWAN Security Strategy & Policy
- Project Implementation Plan with project schedule, Risk Management Strategy & Guidelines
- Report on Capacity Building Requirements for the State for successful Management of SWAN MMP
- Service Level Agreements for the State Government to enter into with the Bandwidth Provider
- Service Level Agreements for the State Government to enter into with the SWAN Operator

2.2 Phase II - Assistance in Selection of Network Operator (Option 1) and Project Monitoring from Award of contract to Commissioning Stage

Suggested Time Period: 6-8 months

- To prepare the Request for Proposal (RFP) for the selection of the SWAN Operator covering the Scope of Work, evaluation criteria & selection process, contractual terms and conditions, expected service levels, payment terms etc.
- To provide the assistance in preparation & release of Notice Inviting Tender (NIT).
- Managing the Bid Process for selection of the SWAN Operator including
 - Pre-bid management and providing clarifications for queries submitted by the vendors
 - To facilitate bid opening and assistance in evaluation of bids submitted by the vendors
- To provide assistance to the State in conducting negotiations and finalization of agreement to be entered into by the State Government and SWAN Operator selected through bid process.
- Periodic review of the Project Progress, Identification of Risks and Guidance on Risk Mitigation
- To provide assistance to the State Implementing Agency in resolving the issues identified during the project implementation.

- Supervision of the supply, installation and testing of the SWAN components to ensure conformity with the requirements & specifications defined in the RFP, agreement and any further amendments issued by the state in this context
- Verification and measurement of the bills, submitted by various agencies, working for SWAN, in accordance with the technical and operational requirements prescribed in the Agreement signed between State and them.
- To ensure Co-ordination between the various Agencies (State Implementing Agency, Bandwidth Provider, SWAN Operator Vendor, NIC and different state departments)
- To provide support to the State in the `Change Management` initiatives and training programmes.
- To provide assistance to the State in acceptance Testing process to be carried out before commissioning the network for actual use.

2.2.1 For this phase of scope of work for the consulting agency, the following deliverables are required to be submitted by the consulting agency:

- Report on Procurement Strategy for SWAN Infrastructure & Related Services including Bill of Material (BOM) for the procurement of the hardware and network components, Acceptance Criteria etc.
- RFP for selection of the SWAN Operator
- Report on Identified Risks and Mitigation Strategies
- Reports on Bid Process Management including Pre-bid presentation, responses for the clarifications sought by the vendors, Vendor evaluation reports
- Project Status Reports
- Certification on the Acceptance of the SWAN as per the agreed Acceptance Procedures before commissioning

2.3 Phase III - Network monitoring

Suggested Time Period - 5 years

- Monitoring the availability and performance of SWAN services vis-à-vis the requirements defined in the agreement.
- Monitoring the SWAN Infrastructure utilization including hardware & bandwidth utilization vis-à-vis the performance thresholds defined for SWAN and to forecast the requirements of SWAN in terms of additional infrastructure & bandwidth to address the growing needs of the State

- To ensure Co-ordination between the various agencies (State Implementing Agency, Bandwidth Provider, SWAN Operator, State Government Departments & their service providers, NIC etc)
- To provide regular MIS reports relating to the uptime and performance measures on weekly, monthly and Quarterly basis.
- Calculation of Quarterly Guaranteed Revenue (QGR) to be paid to the SWAN Operator based overall uptime & performance of SWAN on a quarterly basis.
- Monitoring the Security Alerts & Intrusions into SWAN and reporting the security measures to be implemented for SWAN on a time to time basis
- To track Project issues and risks and to design mitigation strategies (Bandwidth Management related issues, Security related issues, Network Expansion related issues, Manpower related issues)
- Provide recommendations and guidance to the State with ongoing issues as in the following
 - Identification of SWAN expansion requirements and options for implementation
 - Bandwidth Allocation & QoS Management

2.3.1 For the above activities, the following deliverables are suggested:

- SLA Audit Reports of the operations of SWAN and Bandwidth Operators
- Project Issues and risks with Risk mitigation Strategies Report
- Report on expansion strategies for the SWAN
- MIS reports regarding uptime/downtime of the network and the bandwidth failures
- Report on Project and change management Requirements and of the ongoing operations

3. Appointment of Project Consultants

For appointment of Project Consultants, some basic methods are suggested below. It is felt that assignments under SWAN implementation are of technical nature and the other techno-administrative issues are critical to State and thus there may be a need to balance between the cost and quality. Keeping the same in view, QCBS and Least Cost Selection are the most appropriate methods. However, It is left to the discretion of the State Governments to choose one of the models suggested below for appointment of the Consulting Agency taking into account their own procedures and process.

3.1. Quality and Cost Based Selection (QCBS)

QCBS uses a competitive process among “short-listed” agencies that takes into account the quality of the proposal and the cost of the services in the selection of the successful firm. Cost as

a factor of selection shall be used judiciously. The relative weight age to be given to the quality and cost shall be determined for each case depending on the nature of the assignment. Typically the ratio between quality and cost is 70:30. The evaluation of the proposals under this system shall be carried out in two stages: first the quality, and then the cost. Evaluators of technical proposals shall not have access to the financial proposals until the technical evaluation. Financial proposals shall be opened only thereafter. The quality evaluation shall be carried out in full conformity with the provisions of the RFP which would clearly state the process and weight age. State Governments can evaluate each technical proposal (using an Evaluation Committee of three or more specialists in the sector), taking into account several criteria: (a) the Consultant's relevant experience for the assignment, (b) the quality of the methodology proposed, (c) the qualifications of the key staff proposed, (d) transfer of knowledge, and (e) the extent of participation among key staff in the performance of the assignment.

3.1.1 At the end of the quality evaluation process, State Governments shall prepare an Evaluation Report on the "quality" of the proposals. The report shall substantiate the results of the evaluation and describe the relative strengths and weaknesses of the proposals. All records relating to the evaluation, such as individual mark sheets, shall be retained until completion of the project and its audit. After the evaluation of quality is completed, the State Government shall notify those consultants whose proposals did not meet the minimum qualifying mark or were considered non responsive to the RFP and Scope of Work, indicating that their financial proposals will be returned unopened after completing the selection process. State Governments shall simultaneously notify the consultants that have secured the minimum qualifying mark, and indicate the date and time set for opening the financial proposals. The financial proposals shall be opened publicly in the presence of representatives of the consultants who choose to attend. The name of the consultant, the quality scores, and the proposed prices shall be recorded when the financial proposals are opened. The total score shall be obtained by weighting the quality and cost scores and adding them. The weight for the "cost" shall be pre-defined taking into account the complexity of the assignment and the relative importance of quality.

3.2. Quality-Based Selection (QBS)

QBS is appropriate for the following types of assignments:

- complex or highly specialized assignments for which it is difficult to define precise TOR and the required input from the consultants
- assignments that have a high downstream impact and in which the objective is to have the best experts; and
- assignments that can be carried out in substantially different ways, such that proposals will not be comparable

3.2.1 In QBS, the RFP may request submission of a technical proposal only (without the financial proposal), or request submission of both technical and financial proposals at the same time, but in

separate envelopes (two-envelope system). The RFP shall not provide the estimated budget, but it may provide the estimated number of key staff time, specifying that this information is given as an indication only, and that consultants shall be free to propose their own estimates. If technical proposals alone were invited, after evaluating the technical proposals using the same methodology as in QCBS, the State Government shall ask the Consultant with the highest ranked technical proposal to submit a detailed financial proposal. The State Government and the Consultant shall then negotiate the financial proposal and the contract. All other aspects of the selection process shall be identical to those of QCBS. If, however, consultants were requested to provide financial proposals initially together with the technical proposals, safeguards shall be built to ensure that the price envelope of only the selected proposal is opened and the rest returned unopened, after the negotiations are successfully concluded. It may be noted that the above process requires significant expertise on behalf of the Government to undertake a proper technical evaluation so that subjectivity does not creep. This process also does not provide for cost competitiveness.

3.3. Selection under a Fixed Budget

This method is appropriate only when the assignment is simple and can be precisely defined and also when the budget for consultancy is fixed. The RFP shall indicate the available budget and request the consultants to provide their best technical and financial proposals in separate envelopes, within the budget. TOR should be particularly well prepared to make sure that the budget is sufficient for the consultants to perform the expected tasks. Evaluation of all technical proposals shall be carried out first as in the QCBS method. Then the price envelopes shall be opened in public. Proposals that exceed the indicated budget shall be rejected. The Consultant who has submitted the highest ranked technical proposal among the rest shall be selected and invited to negotiate a contract.

3.4. Least-Cost Selection

This method is more appropriate to selection of consultants for assignments of a standard or routine nature where well-established practices and standards exist, and in which the contract amount is small. Under this method, a "minimum" qualifying mark for the "quality" is established. Proposals to be submitted in two envelopes are invited from a short list. Technical envelopes are opened first and evaluated. Those securing less than the minimum are rejected and the financial envelopes of the rest are opened in public. The firm with the lowest price shall then be selected. Under this method, the qualifying minimum mark shall be established, keeping in view that all proposals above the minimum qualifying mark compete only on "cost." The minimum mark shall be stated in the RFP.

3.5. Single-Source Selection

Single-source selection of consultants does not provide the benefits of competition in regard to quality and cost. It lacks transparency in selection, and could encourage unacceptable practices. Therefore, single-source selection shall be used only in exceptional cases. The justification for

single-source selection shall be examined in the context of the overall interests of the State Government and the project

4. Suggested Payment Terms

All the activities, being multifarious and involving numerous agencies, necessitate involvement of a competent, unbiased and professional consultant agency and a competent project manager to assist the State Government. The responsibility lies with the State Government to select such a professional agency that can help them to achieve their objective of setting up the communication backbone network for e-governance applications. While the State may consider adopting any of the models mentioned below for finalizing the payment terms (contract) to the project consulting agency based on its requirements & procedures, Firm Fixed Price Contract & Firm Fixed Price Contract/Time Based Contract are the most appropriate ones for Phase I & II and Phase III respectively.

4.1. Lump Sum (Firm Fixed Price) Contract

Lump sum contracts can be used in which the content and the duration of the services and the required output of the consultants are clearly defined (Phase I in 7.1 & Phase II in Section 7.1). They are widely used for simple planning and feasibility studies, environmental studies, detailed design of standard or common structures, preparation of data processing systems, and so forth. Payments are linked to outputs (deliverables), such as DPR, SLA, bills of quantities, bidding documents, etc. Lump sum contracts are easy to administer because payments are due on clearly specified outputs.

4.2. Time-Based Contract

This type of contract is appropriate when it is difficult to define the Scope and the length of services, either because the services are related to external activities by others for which the completion period may vary, or because the input of the consultants required to attain the objectives of the assignment is difficult to assess. This type of contract is widely used for complex studies, supervision of implementation (Phase II in 7.2 & Phase III in Section 7.3), advisory services, and most training assignments. Payments are based on agreed hourly, daily, weekly, or monthly rates for staff (who are normally named in the contract) and on reimbursable items using actual expenses and/or agreed unit prices. The rates for staff include salary, social costs, overhead, fee (or profit), and, where appropriate, special allowances. This type of contract shall include a maximum amount of total payments to be made to the consultants. This ceiling amount should include a contingency allowance for unforeseen work and duration, and provision for price adjustments, where appropriate. Time-based contracts need to be closely monitored and administered by the client to ensure that the assignment is progressing satisfactorily, and payments claimed by the consultants are appropriate.

4.3. Retainer and/or Contingency (Success) Fee Contract

The remuneration of the Consultant includes a retainer and a success fee, the latter being normally expressed as a percentage of a price. In the instant case, it could be applicable for Phase II & III, and it could be a percentage of the contract value.

4.4. Percentage Contract

These contracts are commonly used only for architectural and construction services. They may be also used for procurement and project monitoring (Phase III). Percentage contracts directly relate the fees paid to the Consultant to the estimated or actual project construction cost, or the cost of the goods procured or inspected. The contracts are negotiated on the basis of market norms for the services and/or estimated staff-month costs for the services, or competitively bid.

4.5. Indefinite Delivery Contract (Price Agreement)

These contracts are used to have "on call" specialized services to provide advice on a particular activity, the extent and timing of which cannot be defined in advance. These are commonly used to retain "advisers" normally for a period of a year or more. The State Government and the agency have to agree on the unit rates to be paid for the experts, and payments are made on the basis of the time actually used.