TELECOM REGULATORY AUTHORITY OF INDIA
Mahanagar Doorsanchar Bhawan
Jawaharlal Nehru Marg(Old Minto Road)
New Delhi -110002

Invitation for Expression of Interest (EOI)

for consultancy services on

Migration to Next Generation Network (NGN).

1. **Purpose of this EOI**

The Telecom Regulatory Authority of India (TRAI) intends to engage a consultant/consultancy firm (hereafter referred to as the "Consultant") to assist in establishing appropriate policy and regulatory framework on Next Generation Networks (NGNs). The consultants are expected to prepare an exhaustive report on technical and commercial issues relating to NGNs as mentioned in the 'scope of work' section of this document. The work would also entail preparation of a consultation paper that would be used by TRAI to engage the stakeholders in an exhaustive consultation process on all relevant issues. After the consultation process is over, the consultant would be required to assist TRAI in evaluating the comments and arriving at suitable conclusions.

2. **Overview of TRAI**

The Telecom Regulatory Authority of India (TRAI) was established under the Act of parliament in 1997 as a statutory body. TRAI is responsible for regulating affairs for telecommunications and broadcasting sector. Its mission is to nurture conditions for growth of telecommunications, broadcasting and cable services in a manner and at a pace which will enable India to play a leading role in the emerging global information society while ensuring that interests of consumers are protected. As an integrated regulator for the telecom and broadcasting sector, TRAI is directly responsible for regulating the areas of interconnection between the service providers, quality of service and tariff. TRAI also makes recommendations to the Government on the policy issues, licensing and spectrum management.

3.   Description of the current environment

TRAI has taken a number of steps for the smooth transition to an era of convergence of services and technologies in Next Generation Network environment. One of the important steps taken was to create awareness about NGN among various stakeholders. An industry seminar on "Awareness Building on NGN" was conducted by TRAI in December, 2007. A consultation paper on "Issues Pertaining to Next Generation Networks (NGN)" was released by TRAI in January 2006. On the basis of inputs received from the stakeholders, recommendations were sent to the Department of Telecommunications on 20th March 2006. Another step taken by TRAI was creation of a high-level cross-industry coordination committee for NGN viz NGN-eCo in 2006. The proceedings of the NGN-eCO committee and its report may be seen at TRAI website www.trai.gov.in .

In India migration to NGN is likely to happen in stages. Major telecommunications operators in India have already implemented IP based core transport network for carrying voice and data traffic. In some cases IP/Ethernet elements have extended into access and aggregation networks. Many operators have indicated that they have plans for increasing investment in NGN infrastructure. The operators are looking at solutions that would cut across various technologies in fixed and mobile voice and data, reduce cost and enable them to innovate and give new applications/content and services faster. The regulatory environment should promote certainty and motivate operators to invest in the new infrastructure. It might be necessary to have a comprehensive regime that would address issues such as migration from Legacy network to NGN, regulatory issues in NGN deployment and its implications, technical aspects of NGN like interconnection architecture, points/layers/planes at which interconnection would take place, technical interfaces, issue of stranded assets, structural separation, methods of calculation if Interconnect Usage Charges (IUC) in the evolving heterogeneous and impending NGN environment, licensing, security and quality of service considerations.

4.   Scope of work

The work involves:

(1) Preparation of an exhaustive report including appropriate analysis discussing pro and cons of various options along with international practices and other supporting documents and finally suggest a suitable regulatory framework for migration to NGN in India. The consultants are expected to draw on their experience of similar work carried out in other countries and from their extensive knowledge of NGN migration.

(2) A seminar is proposed to be organized by TRAI to provide a platform for discussion, collaboration and intellectual exchange of information on different aspects of NGN. The selected consultant may participate in and contribute to the proposed seminar organized by TRAI. The seminar would provide opportunity to Consultant to interact with the stakeholders and understand current regulatory framework and interconnection environment, therefore may be useful for collection of inputs for preparation for consultation paper on the subject.

(3) Prepare a draft consultation paper highlighting appropriate issues and giving relevant details for eliciting stakeholders' opinion.

(4) Workshop for Industry: 2 or 3 days workshop may be conducted by the consultant for the TRAI officials and industry so that industry can get acquainted with the issue raised in the consultation paper and able to provide useful inputs.

(5) Assist TRAI in post consultation evaluation work for about 15 days.

The specific tasks to be undertaken by the consultants include, but are not limited to, the following:

4.1   Report on NGN: The Consultant is expected to carry out the followings works:

(i)   Study and analyse the current status of NGN deployment in India define relevant issues and give suggestions on creating conditions for faster rollout.

(ii)   On the basis of their experiences and lessons learned from NGN deployment in the other countries, the consultant has to examine and critically evaluate the impact of NGN deployment in India and the effect it will have on

customers, network operators, service providers, policies of the government and regulatory framework.

(iii) Carry out comprehensive analysis of interconnection, quality of service and licensing issues and include the following in the report:

(a)   Interconnection:

(i)   Interconnection architecture and location of Points of Interconnection (POIs), between PSTN/PLMN/non-NGN with NGN networks and also between NGN networks, for all type of services;

(ii)   Layers and planes at which interconnection would be appropriate

(iii)   Whether peer-to-peer interconnection, interconnection exchange or a combination would be preferable

(iv)   Standards and interfaces that should be adopted

(v)   Numbering/Addressing scheme as it exists, its suitability for NGN environment and changes that should be made

(vi)   Network up-gradation or modifications that would be required to be made by the operators to facilitate interconnection

(vii)   Costing methodologies and approaches used for calculation of interconnection usage charges

(viii)   Charging principles for voice/data/content services

(ix)   Traffic measurement and Routing Procedures,

(x)   NGN standards adopted by various countries.

(b)   Quality of Service:

(i)   Issues related to the end-to-end quality of service to the customers across multiple NGNs including both classes of parameters: network centric and customer centric.

(ii)   Network centric parameters may include Latency, Jitter, Packet Error, Packet Loss, Toll Quality voice, Call Completion Rate, Availability of Network.

(iii)   Customer centric parameters may include Service Activation Time, Service De-activation Time, Service Restoration Time, Clarity of Tariff Plans, Ease of switching between plans, Ease of getting Billing information, Ease of Bill payments, Ease of getting refunds, Network

Availability, Billing Accuracy, Security of customer information, Grievance Redressal, Access to senior executives/ officers, Round the clock availability of customer care, Fault Repair Service, Redressal of Excess Metering Cases, Service availability etc.

(iv) Service specific QoS Parameters e.g. call set-up delay, call completion rate and speech quality for real-time voice service. Jitter and the Zap time etc. for IPTV.

(c) Licencing

(i) Policy framework for facilitating migration;

(ii) Network availability to content and value added service providers;

(iii) IPR and regulation of content;

(iv) location of switches;

(v) Calling and called party identification and security issues;

(vi) Security and Lawful Interception,

(vii) consumer information and disclosure;

(viii) Access to emergency services

(ix) Examine licensing conditions of various service providers and suggest appropriate amendments in the existing licensing conditions for enabling migration to NGN

(d) General

(i) Creating conducive environment for NGNs to flourish,

(ii) Suggest appropriate regulatory intervention in the short term, medium term and long term.

4.2   **Preparation of Consultation Paper**: The selected Consultant would be required to prepare a consultation paper that would give background information on NGN raise issues to elicit response from the stakeholders. Broad issues that need to be covered in the consultation paper are as follows:

(i) An overview on NGN, prevalent architectures and migration issues;

(ii) Detailed discussion on appropriate regulatory framework and different approaches for NGN interconnection, principle used in charging, billing,

and revenue in the multi-operator Next Generation Network (NGN) environment; Quality of Service and Licensing issues;

(iii) Detailed analysis of the technical, operational, commercial, legal, policy and regulatory issues in NGN deployment;

(iv) Practices being followed by following the 22 countries in relation to the relevant issues: Australia, Brazil, Canada, China, Egypt, France, Germany, Indonesia, Italy, Japan, Korea, Malaysia, Mexico, New-Zealand, Nigeria, Pakistan, Philippines, Russia, South Africa, Turkey, UK and USA;.

(v) Frame appropriate questions for eliciting requisite responses from the stakeholders.

4.3   Post consultation evaluation

The comments and counter-comments on the consultation paper need to be analyzed and used for arriving at an appropriate regulatory framework. The consultant would have to assist TRAI in this process for about 15 days.

The scope mentioned in Para 4.1 to 4.3 has been given for the purpose of indicating the type of work to be carried out and framing initial response. A more detailed scope of work would be included in the bid document in the second stage of the selection process.

5.   Deliverables

(i) **Consultation Report** – covering the scope of work described in para 4.1. The report must include international practices on various technical, commercial, costing concepts from the as many countries as possible from the list of 22 countries mentioned in para 4.2(iv) above. All supporting documents, Copies of important regulations and policies in context the NGN should also be part of the report.

(ii) **Draft Consultation paper** – The Consultant should submit a Draft Consultation Paper covering various issues mentioned in 4.2 above;

(iii) **Post consultation evaluation** – The Consultant would have to be available for about 15 days for evaluation of comments of the stakeholders including analysis of the data available with TRAI / collected from the stakeholders. The consultant should provide its analytical inputs to TRAI in the form of an evaluation report for assisting TRAI in finalizing appropriate regulatory framework to address key concerns.

(iv) Workshop: The Consultant is required to conduct a 2 or 3 days workshop for the TRAI officials and industry so that industry can get acquainted with the issue raised in the consultation paper and able to provide useful inputs.

5.1 Review

The consultancy work will be reviewed weekly or as considered appropriate by TRAI and the Consultant is expected to present/explain progress of the work and clarifications on various issues raised by TRAI's officials over the period of the consultancy. If, as a result of discussions, the submitted report requires changes the consultant would carry it out in consultation with TRAI.

5.2 Documentation and copyright

All documentation prepared by the consultant should be submitted in hard and soft form. All Excel spreadsheets, PowerPoint files prepared during the consultancy should also be submitted to TRAI. TRAI would have copyright over all the original documents produced by the Consultant as per requirement of the consultancy project.

6. Eligibility conditions:

6.1 The purpose of this EOI is to shortlist consultants based on their capability of carrying out the work mentioned under 'scope of work' and experience of carrying out similar work in other countries. The short listed consultants would be invited to participate in the second stage of the selection process consisting of technical and financial bidding.

(i) The selection of the consultants at the EOI stage will be on the basis of following eligibility conditions:

Sl.No.	Area	Points
1.	Technical aspect of NGN interconnection architecture, functional requirement and signalling interfaces.	10
2.	Routing and traffic measurement.	10
3.	Security aspects related to Voice over IP and NGN, Consumer information safety.	10
4.	Costing methodology and charging principles for interconnection charges in NGN environment and in heterogeneous environment (TDM-NGN-TDM).	10
5.	NGN numbering / addressing schemes.	10
6.	Quality of Service Issues	20
7.	Licensing issues	20
8.	Exposure to Indian telecom network, national fundamental plan, Indian counterpart in the consulting firm or any other relevant experience.	10

The points for serial number 1 to 7 would be awarded mainly on the basis of the following :-

(a) Expertise in related areas/ in-house expertise/ type and extent of experience in relevant areas;

(b) Exposure to the international best practices and experience in carrying out similar work in countries out of the list of 22 countries mentioned at para 4.2 (iv);

(c) Recommendation letters, brochures, newspaper reports, magazine articles, web-articles, case studies etc. in support of the relevant work experience.

The minimum qualifying points would be 60. In Sr. Number 1 and 4 a prospective Consultant has to score at least 5 points each.

(ii)   The Consultant should have experience of carrying out similar work in atleast two countries out of 22 listed countries one of which should be out of the following: USA, Canada, A country in Europe, Australia and New Zealand.

(iii)   The Consultants are requested to additionally submit a detailed note outlining why they are eligible to carry out and if selected how they would carry out the assignment giving the timelines for various activities.

(iv)   The Consultant should provide a list of the expert(s) in the team likely to be deputed for this work in response to this EOI along with their detailed bio-data. If the Consultants wish to replace an expert while the work is in progress, they can do so only with prior approval of TRAI. It is desirable that one of the team members should be familiar with the telecommunications environment in India.

(v)   All work will be carried out in English. It is therefore required that all members of the Consultant's team should be able to communicate well through written and oral English.

6.2   All the documents mentioned in 6.1 are to be necessarily submitted. Any other document that the consultant consider necessary as proof of meeting the eligibility condition may also be provided. Incomplete proposals are liable to be rejected.

7.   Organisation of work.

The successful consultants would derive the overall guidance from the Project Manager assigned by TRAI who will be closely involved in reviewing reports, providing guidelines as necessary and would act as interface between the Consultants and the Authority.

TRAI would provide reasonable office support within TRAI premises and will facilitate access to data, reports etc. available in TRAI under a non-disclosure agreement. The Consultants is expected to identify all the resources necessary in completion of the work. The assignment is expected to be completed within **two months** from the date of signing of the agreement between the TRAI and the Consultant.

8.   Submission by willing consultants

8.1   The Consultants who fulfil the eligibility conditions may submit their proposals along with the required documents in support of their eligibility for the project in a cover superscribed "Migration to NGN Consultancy" to the following address latest by **1st February 2011**:

> **Anant Ram Gupta**
> **Senior Research Officer (TDRA), TRAI**
> **Mahanagar Door Sanchar Bhawan**
> **Jawahar Lal Nehru Marg**
> **New Delhi 110002**
> Email: tdra@trai.gov.in, tdra.trai@gmail.com
> Phone: +91-11-23222450
> Fax No. +91-11-23230056

If the submission is made in soft form it should be followed up with two sets of documents in hard format.

8.2   The Consultant may be required to give a presentation to the Authority on the technical aspects as part of the short listing process. All aspects of eligibility would be taken into account and due care will be given to the assessment process. The consultant would be short-listed based on their eligibility and suitability. The decision of TRAI in this regard shall be final. The short-listed Consultants would be eligible to participate in the second and the final stage through a Request For Proposal (RFP) giving detailed terms of reference and requesting the consultants to submit their technical and financial offers. **No financial bids should be submitted in response to this EOI**.

8.3   TRAI reserves the right to accept or reject any proposal or to annul the EOI process and reject all proposals, at any time prior to finalization of the consultants without assigning any reason whatsoever and without any liability towards the affected EOI participant on the ground of TRAI's action.

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