REQUEST FOR PROPOSAL

for Engagement of Individual Consultant for carrying out a study

Research Opportunities for Pakistan in Next Generation Mobile Telecommunications Technology 2013-2020

National ICT R&D Fund

Ministry of Information Technology

Government of Pakistan

10th September, 2013

National ICT R&D Fund, 6th Floor of HBL Tower, Blue Area, Islamabad, Pakistan.

Table of Contents

1 About National ICT R&D Fund (The Company)

The government of Pakistan has mandated that a certain percentage of gross revenue generated by all telecom service providers be allocated to development and research in the field of information and communication technologies. The goal is to promote efficient, sustainable and effective ICT initiatives through synergistic development of industrial and academic resources. The National ICT R&D Fund (the Company) was set up to further these objectives. *It is a federally governed company established under section 42 of the Companies Ordinance 1984. More details about the company are available at http://www.ictrdf.org.pk.*

2 Overview of Proposal

National ICT R&D Fund invites proposals from individual Pakistanis for carrying out the a study to determine "Research Opportunities in Mobile Telecommunications Technologies within the Pakistani context" as per the guidelines described in this RFP.

2.1 Background and Introduction

Information and Communication Technologies (ICTs) hold a significant promise for socio-economic impact for our nation, improving services, incubating innovation and increasing national harmony. In common with other countries, Pakistan has benefited tremendously by the advancements in mobile telephony, with it's liberal telecommunications regime resulting in a massive growth in mobile ownership, and the innovative use of the Universal Services Fund resulting in the provisioning of mobile network infrastructure even in the most inhospitable and far flung areas of the country. With a teledensity approaching nearly 70%, nearly every adult Pakistani is connected to the mobile phone network, thus ensuring equitable access and opportunity to participate in and benefit from the socio economic impact that this mobile revolution has brought about.

In spite of such advances in the use of technology, and foreign direct investment to the tune of several billions of US Dollars over the past many years, the fact remains that Pakistan is a user of technology products and has very little ability to contribute towards the technological advancements in the area of mobile telecommunications networks.

A new mobile generation has appeared approximately every 10th year since the first 1G system, Nordic Mobile Telephone, was introduced in 1981. The first 2G system started to roll out in 1992, the first 3G system first appeared in 2001 and 4G systems fully compliant with IMT Advanced were standardized in 2012. The development of the 2G (GSM) and 3G (IMT-2000 and UMTS) standards took about 10 years from the official start of the R&D projects, and development of 4G systems started in 2001 or 2002. Predecessor technologies have occurred on the market a few years before the new mobile generation, for example the pre-3G system CDMAOne/IS95 in the U.S. in 1995, and the pre-4G systems Mobile WiMAX in South-Korea 2006, and first release-LTE in Scandinavia 2009.

Mobile generations typically refer to non–backwards-compatible cellular standards following requirements stated by ITU-R, such as IMT-2000 for 3G and IMT-Advanced for 4G. In parallel

with the development of the ITU-R mobile generations, IEEE and other standardization bodies also develop wireless communication technologies, often for higher data rates and higher frequencies but shorter transmission ranges.

Based on the above observations, some sources suggest that a new generation of 5G standards may be introduced approximately in the early 2020s. However, still no transnational 5G development projects have officially been launched, and there is still a large extent of debate on what 5G is exactly about. Prior to 2012, some industry representatives have expressed skepticism towards 5G but the trends clearly changed since 2012.

There has been an evolution of technologies, standards, and deployment from second to fifth generation mobile networks. A deep understanding of current and future trends in the areas of wireless networking, multimedia technology, network architecture, and network services is required within the country. Related research in the development of future mobile systems needs to be highlighted. Issues of system integration, global roaming capabilities, handoff, high speed multimedia support, ad-hoc networking, quality of service, and physical layer problems need to be addressed. In addition, global developments in multimedia network services and terminals need to be analysed.

2.2 Scope of Work

The study is intended to map the current and emerging global value chain in the mobile communications technology space. This would require looking at the various stakeholders that play a part in defining technology standards for mobile communications networks, the equipment manufacturers and how they utilize these standards in their products, the mobile network operators that not only purchase the equipment but also drive specifications based on their business requirements. Details on the particular roles played by all the stakeholders will be needed, and the manner in which they interact with each other will need to be defined. The role of bodies such as Internet Engineering Task Force (IETF) and the Internet Research Task Force (IRTF) in defining and creating standards needs to be explained in depth. The role of vendors such as Cisco, Huawei and others needs to be understood in the context of research and development in this context.

A number of countries have made known their commitment to take the lead in the development of future mobile networks. For instance, the EU Commission states that they "*want 5G be pioneered by European industry, based on European research and creating jobs in Europe – and they will put our money where their mouth is." (www.metis2020.com).*

In keeping with these trends, the objective of the study is to see what role, if any, Pakistani researchers in academia and industry can play in this global value chain. A five to ten year road map to achieve the goals identified in the study will also need to be developed. Whilst evaluating the various options available to undertake research and development, an evaluation criteria/matrix needs to be developed against which each option could be measured and the most optimum fit could be explored further.

In particular, the proposed study will serve as the base document to develop a national strategy to undertake future work in Mobile Network Technologies within the Pakistani context. The study will have multiple components including the following:

1. Mapping of global value chain in the area of mobile communication networks.
    a. Who are the stakeholders, what role do they play, how do they interact with others; what formal and informal mechanisms are in place for this interaction.
2. State of R&D in Mobile Communication Networks in Pakistan
    a. Determine the status of any research and development activity in this space in Pakistan.
    b. Map this to the global value chain. Carry out SWOT analysis with respect to the current and projected capacities, both monetary and intellectual, within the country.
3. Best Practices for Developing R&D Capabilities
    a. What are best practices of development of R&D capacity, if any, in at least two countries with similar challenges to Pakistan and with active national programs in this area?
    b. What is the current strategy of development of R&D in this space in Pakistan, if any?
    c. What scope exists for Pakistani researchers to plug themselves into ongoing initiatives such as the MITES programme in the EU and other similar multinational initiatives for 4G and 5G.
4. Gap between R&D and Need
    a. Determine, both in quantitative as well as in qualitative terms, the benefits of undertaking R&D in selected areas of mobile communication technologies.
    b. Recommend strategies for positioning Pakistan as a source of R&D in selected areas of mobile communication technologies.
    c. Provide justification in terms of results versus effort and expense for any recommended strategy/ies.

The report will be used as the basis of a national level event in early 2014 to which all the relevant stakeholders will be invited to discuss the report and to make subsequent recommendations that could form the basis for a national research agenda in the area of Next Generation Mobile Telecommunication Technologies. The event itself is outside the scope of this assignment, however.

2.3 Desired Outcomes/Deliverables

The desired outcome of the proposed study will be a report comprising of a set of recommendations to develop a long term plan for Pakistan to play a part in the global R&D value chain in mobile telecommunication technologies, including the following dimensions.

a. Mapping of the global value chain as it pertains to R&D in mobile telecom technologies.
b. Opportunities for Pakistani R&D experts and institutions within this value chain
c. SWOT analysis for selected options

d. Capacity building and institutionalizing such R&D initiatives
e. Quantifiable and qualitative indicators that could be used to evaluate progress
f. Commercialization opportunities
g. Any other area in consultation with the R&D Fund before the start of the study.

2.4 Proposed Methodology

The work will consist of two primary components. The first component will focus on mapping, in some depth, the global value chain and the processes involved, that range from academic work in basic and applied research, then its dissemination and debate at global forums such as IRTF and IETF, the involvement of equipment manufacturers and vendors, the role played by the mobile network operators, and so on. The second component will require field work within Pakistan to assess the current and future capabilities within academia and industry and to determine where these could be utilized to give the best value for money. Drafting a strategy and roadmap to achieve goals and sub goals will be a part of this component. The individual conducting the study may engage up to two suitably qualified individual researchers to assist in this work.

The study should emphasize on areas, as far as possible, which can have concrete economic and/or social benefits for Pakistan. The study should also consider the measures which would need to be undertaken to sustain continued work in this area in commercial and academic sectors.

The study should include examining published work, other resources available on the internet, personal and professional networks to address the first component of this study. For the second component, appropriate stakeholders and key informants should be consulted to determine the more relevant areas of research and development in the context of Pakistan. Similarly, key informants should also be consulted in the process of developing the recommendations, including those involved in the activities of the IETF and IRTF, as well as those involved in using the technology.

The report must be finalized and submitted in 150 days.

2.5 Level of Effort Required

Given that this is an exercise in mapping the future, there could be varying levels of effort corresponding to the degree of accuracy that is required. To ensure that all the responses are on the same page, the National ICT R&D Fund has estimated that the study shall require a maximum of 90 days of work spread over a maximum period of 150 days by an individual consultant. Consultants responding to this RFP should hence keep this level of effort in mind. Extensive meetings and consultations with a wide range of stakeholders, including individuals and entities based abroad, will need to be conducted. No foreign travel is expected from the consultant, though it is naturally expected that the consultant will make full use of ICTs such as Skype and other similar technologies to interact with experts in the field.

2.6 Essential Eligibility Criteria for Applicant

The study will be conducted by an individual who has an advanced degree (preferably a PhD but at least 18 years of formal education) in the relevant field with an overall professional work experience of 10+ years including a minimum of 5 years of hands on R&D experience in the area of Mobile Telecommunications Networks. An applicant having less than 5 years of experience in this domain will not be considered for the assignment. It is also mandatory for the applicant to be a Pakistani national.

3 Standard Instructions

a. Proposals will be accepted and evaluated using **Single Stage, Two Envelope Procedure** (separate sealed envelopes of technical and financial proposals).

b. Final assignment award will be on the basis of combined technical and financial score in the following manner:

Proposal	**Weight**
Technical	70%
Financial	30%
Total	**100%**

c. Proposals shall be submitted in English language.

d. The proposals shall be clear and elaborate. Different sections of the proposals shall be separated using color separators, flags or tags. The proposals shall be prepared without any interlineations or overwriting.

e. Applicants may request in writing, for clarification of any of the provisions of this RFP up till 07 (seven) calendar days before the submission date. All queries may be sent to nelofar.arshad@ictrdf.org.pk. Responses to queries will be emailed and also placed on the Company's website.

f. The Company reserves the right to accept or reject all of the proposals submitted at any time in accordance with applicable PPRA rules.

g. The costs of preparing the proposal and of negotiating any subsequent funding, including visits for discussion with the Company are not reimbursable.

h. Proposals submitted should remain valid for a period of 3 months from the last date of submission of proposals.

i. A bidder conference/meeting will be held at R&D office in which all prospective bidders are welcome to put in any suggestions or make any contributions to add value to the RFP exercise being under taken. However, such suggestions have to be brought on to meeting in writing, duly signed and dated.

   It will remain an option of R&D Fund as to which suggestions will be discussed in the meeting or incorporated in the RFP.

   An amendment, if made, on the basis of above feedback/suggestions will be communicated to all participants and displayed on our website within 4 working days.

3.1 Contract Term and Work Schedule

The contract term and work schedule set out herein represent the Company's best estimate of the schedule that will be followed. If a component of this schedule, such as the opening date, is delayed, the rest of the schedule will be shifted by the same number of days. The approximate contract schedule is as follows:

Serial No.	Activity	Dates
1	RFP Issue Date	8th September, 2013
2	Bidders conference/meeting for feedback on the floated RFP	16th September at 1600 hrs
3	Proposal Submission Deadline	24th September till 1500 hrs
4	Opening of Technical Proposals (in front of applicants at 6th Floor, HBL Tower, Jinnah Avenue, Blue Area, Islamabad)	24th September at 1530 hrs
5	Opening of Financial Proposals (in front of applicants at 6th Floor, HBL Tower, Jinnah Avenue, Blue Area, Islamabad)	11th October at 1530 hrs
6	Notice of Intent to Award (LOI)	25th October,2013

4 Proposal Submission Requirements

Technical Proposals (Section B) shall be in compliance with the requirements laid down in the RFP document. The technical proposals shall include the following:

- **a.** A covering letter from the applicant (Form B1).
- **b.** Table of Contents with page numbers
- **c.** A detailed CV of the applicant/consultant profile (Form B2) including academic and professional accomplishments, details of similar assignments completed, names of clients, duration and contract value, (Form B3), etc.
- **d.** CV of team members/consultants (if any) (Form B6 & B7)
- **e.** Details of accomplishments, R&D work in the Mobile Telecom Technologies domain over a period of 5+ years. (This could be in the form of publications including books, reports, journal publications, conference papers, etc., relevant research and development projects undertaken, memberships in relevant national and international bodies, conferences organized, patents, products, etc.), (Form B4)
- **f.** Proposed Assignment Work methodology and Plan. At this stage the Company perceives that the assignment can be completed within a period of sixty (90) days spread over a 150 day period, (Form B5).

5 Copyrights

All outcomes of the project (both hard and soft formats) including but not limited to study instruments; data, reports etc. will be the sole property of National ICT R&D Fund.

6 Financial Proposals

a. A sealed financial proposal is to be submitted along with the technical proposal in the format attached as Annex-A.

b. The Company will not pay for purchase of any capital good such as computers/laptops, etc.

7 Payment Plan

The payment will be disbursed according to the following plan upon formal acceptance of the deliverable. Withholding tax will be deducted as per rules.

No.	Project Milestone	Amount Payable
1	Mobilization Advance	10%
2	Submission of draft report	50%
3	Submission of final report*	40%

* In case of non-acceptance of report within 10 working days, the matter will be automatically escalated to Project Management Committee (PMC), which will decide further improvements needed if any or acceptance of the existing report as is.

8 Proposal Submission

a. Each technical proposal shall be submitted as two printed copies (one marked as ORIGINAL, the other as COPY) and one soft copy on a CD or DVD (MS Word compatible file format).

b. A sealed financial proposal is to be submitted along with the technical proposal in the format attached as Annex-A Proposals must be delivered at the address given below before 1500 hrs. (PST), on September 24, 2013.

Manager Administration
National ICT R&D Fund
6th Floor, HBL Tower, Jinnah Avenue
Blue Area, Islamabad, Pakistan
Tel: 051-9215360 to 65
Email: nelofar.arshad@ictrdf.org.pk

c. Technical Proposals shall be opened at 1530 hrs on September 24, 2013 in presence of all applicants who choose to be present.

9 Evaluation Criteria

1.1. Technical proposals will be evaluated on the basis of Scoring Criteria as provided below. Financial proposals would be opened only for those applicants obtaining 65% or higher marks in Technical Evaluation. Financial proposals of those applicants obtaining less than 65% marks in Technical Evaluation shall remain un-opened & would be returned to the applicants.

1.2. An evaluation committee appointed by the Company will evaluate the technical proposals on the basis of their compliance with the RFP and by applying the evaluation criteria and the point system as specified below. A technical proposal shall be rejected at this stage if it fails to achieve the minimum score indicated below:

9.1 Scoring Criteria

Following is the scoring criteria for Technical & Financial Evaluation.

#	Technical Evaluation	Marks	Obtained
a.	Qualifications of the applicant	10	
b.	Total work experience of applicant (minimum 10 years required)	20	
c.	Experience of applicant in conducting related R&D locally or internationally (minimum 5+ years required).	20	
d.	Specific experience and expertise of applicant in conducting similar assignment(s) in the past	10	
f.	Proposed assignment duration and work plan	10	
Total Points		**70**	
Minimum qualification score (65%)		45.5	
Sub Total		**70**	

Financial Evaluation

		Marks	Obtained
Bid Price		30	
Grand Total (Technical + Financial)		**100**	

9.2 Financial Proposal Scoring

Formula to convert Financial Proposal amount to points

In order to determine the final bid score following example may be considered:

STEP 1

List all proposal prices:

Bidder #1 – Rs. 1,000,000 Bidder #2 – Rs. 2,000,000 Bidder #3 – Rs. 3,000,000

STEP 2

Convert cost to points using this formula.

(Price of Lowest Financial Proposal) x (Maximum Points for Financial Evaluation)

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POINTS

(Value of each bidder's Financial Proposal)

The RFP allotted 30% (30 points) of the total of 100 points for financial evaluation.
Being the lowest, bidder #1 receives 30 points.
Bidder # 2 receives 15 points Rs. 1,000,000/Rs. 2,000,000 x 30 = 15
Bidder # 3 receives 10 points Rs. 1,000,000/Rs. 3,000,000 x 30 = 10

The scores of financial bid will be added to technical scores and final award of contract decision will be based on total of technical score plus financial score.

Section B. Technical Proposal - Standard Forms

B1. Technical Proposal submission form.

B2. Consultant's Profile

B3. Similar Assignments Completed by Consultant

B4. R&D work in Next Generation Mobile Technologies Domain by Consultant

B5. Description of the methodology and work plan for performing the assignment.

B6. Team Members

B1. TECHNICAL PROPOSAL SUBMISSION FORM

[*Location, Date*]

To:
Manager Administration
National ICT R&D Fund
6th Floor, HBL Tower
Islamabad, Pakistan
Tel: (92-51) 9215360-65
Fax: (92-51) 9215360
Email: nelofar.arshard@ictrdf.org.pk

Sir,

I/We, the undersigned, offer to provide the consulting services for **Next Generation Mobile Telecommunications Technologies Study 2013** in accordance with your Request for Proposal dated [*Advertisement Date*]. I/We are hereby submitting our Proposal, which includes this Technical Proposal, and a Financial Proposal sealed under a separate envelope.

If negotiations are held during the period of validity of the Proposal, i.e., before [*Date*] I/we undertake to negotiate on the basis of the proposed staff. My/Our Proposal is binding upon me/us and subject to the modifications resulting from Contract negotiations.

I/We understand you are not bound to accept any Proposal you receive.

I/We remain,

Yours sincerely,

Authorized Signature:
Name and Title of Signatory:
Name of Consultant:
Address:

B2. CONSULTANT PROFILE

1. Academic Accomplishments

S #	Criteria	Remarks/Justifications (for evaluators ONLY)
1	Academic Accomplishments i. Highest Degree obtained and Name of awarding institution ii. Published Research (Complete list may be attached) iii. Other	

2. Professional Accomplishments (Positions Held)

DD/MM/YY		Company/Project/Position/Specific Tech experience
From	To	

B3. – SIMILAR ASSIGNMENTS COMPLETED BY CONSULTANT

NAME OF CLIENT	NAME OF ASSIGNMENT/ PROJECT	PERIOD OF ASSIGNMENT/ PROJECT	VALUE OF ASSIGNEMNT / PROJECT	PRESENT STATUS OF THE ASSIGNMENT/ PROJECT

B4. – R&D WORK IN NEXT GENERATION MOBILE DOMAIN BY CONSULTANT

Title of R&D Work	Funding Agency (if any)	R&D Duration	Journal Application	Published Conference Proceedings	Patents (if any)	Products (if any)

B5. – DESCRIPTION OF THE METHODOLOGY AND WORK PLAN FOR PERFORMING THE ASSIGNMENT

B6. – TEAM MEMBERS

Personnel Summary (Complete for each Team Member)

Name of Employee/Consultant:

Position		
General Information	Name:	Date of Birth:
	Telephone:	
	Fax:	
	Years with Present Employer:	

Employment Record:

Summarize professional experience in reverse chronological order. Indicate particular technical and managerial experience relevant to the project:

DD/MM/YY		**Company/Project/Position/Specific Tech experience**
From	**To**	

Relevant Education:

Highest Level of Degree	Relevance of Degree to the Assignment
PhD	
MPhil	
Masters	

Section C. Financial Proposal - Standard Forms

C1. Financial Proposal submission form.

C2. Summary of costs.

C3. Breakdown of price per activity.

C1. – Financial Proposal Submission Form

[*Location, Date*]

To:
Manager Administration
National ICT R&D Fund
6th Floor, HBL Tower
Islamabad, Pakistan
Tel: (92-51) 9215360-65
Fax: (92-51) 9215360
Email: nelofar.arshard@ictrdf.org.pk

Sir,

I/We, the undersigned, offer to provide the consulting services for **Next Generation Mobile Telecommunications Technologies Study 2013** in accordance with your Request for Proposal dated [*Date of Advertisement*] and my/our Proposal (Technical and Financial Proposals). My/Our attached Financial Proposal is for the sum of [*Amount in words and figures*]. This amount is inclusive of all the local taxes, duties, fees, levies and other charges applicable on me/us, my/our sub-contractors and collaborations under the Pakistani law.

My/Our Financial Proposal shall be binding upon us subject to the modifications resulting from Contract negotiations, up to expiration of the validity period of the Proposal, i.e., [*Date*].

Though included in the above mentioned fee, Commissions and gratuities, if any, paid or to be paid by me/us to agents relating to this Proposal and Contract execution, if I/we are awarded the Contract, are listed below:

Name and Address of Agents	Amount in Pak Rs.	Purpose of Commission or Gratuity
_____	_____	_____
_____	_____	_____
_____	_____	_____

I/We understand you are not bound to accept any Proposal you receive.

I/We remain,

Yours sincerely,
Authorized Signature:
Name and Title of Signatory:
Name of Consultant:
Address:

C2. – Summary of Costs

Costs (Taken from Form C3)	Pak Rupees
Subtotal	
Local Taxes	
Total Amount of Financial Proposal	

C3. – Breakdown of Price per Activity

Financial Proposal Submission Form for Next Generation Mobile Telecommunications Technologies Study 2013

HR Cost

	Daily Rate (Pak Rs)	No. of Days (Max 90)	Sub-Total
Principal Consultant			
Support Person # 1			
Support Person # 2			

Total HR Cost _____ **(A)**

Other Expenses

	Unit	Qty	Unit Cost (Pak Rs)	Sub-total
Air Travel	Per trip			
Road Travel	Per trip			
Boarding & Lodging	Per night			
Meetings/Events	Per Meeting/Event			
Misc. Expenses	Lump Sum			

Total Other Expenses _____ **(B)**

Total Assignment Cost (Pak Rs)

HR Cost (A)	
Other Expenses (B)	

Grand Total _____

Total Assignment Cost in Words: _____

Applicant Name: _____

Signature of Applicant with Date: _____

Annex A

Single Stage Two envelope Procedure for Bidding

Public Procurement Rules 2004

Single stage - Two envelope procedure.-

(i) The bid shall comprise a single package containing two separate envelopes. Each envelope shall contain separately the financial proposal and the technical proposal;

(ii) The envelopes shall be marked as “FINANCIAL PROPOSAL” and “TECHNICAL PROPOSAL” in bold and legible letters to avoid confusion;

(iii) Initially, only the envelope marked “TECHNICAL PROPOSAL” shall be opened;

(iv) The envelope marked as “FINANCIAL PROPOSAL” shall be retained in the custody of the procuring agency without being opened;

(v) The procuring agency shall evaluate the technical proposal in a manner prescribed in advance, without reference to the price and reject any proposal which do not conform to the specified requirements;

(vi) During the technical evaluation no amendments in the technical proposal shall be permitted;

(vii) The financial proposals of bids shall be opened publicly at a time, date and venue announced and communicated to the bidders in advance;

(viii) After the evaluation and approval of the technical proposal the procuring agency, shall at a time within the bid validity period, publicly open the **financial proposals of the technically accepted bids only.** The financial proposal of bids found technically non-responsive shall be returned un-opened to the respective bidders; and

(ix) The bid found to be the lowest evaluated bid shall be accepted.

Annex B

10 Eligibility Criteria (Mandatory Criteria)

All proposals must meet the mandatory eligibility criteria. The Proposals that does not meet mandatory eligibility criteria shall be rejected and shall not be evaluated further.

#	Mandatory Eligibility Criteria	Yes	No
1	Advanced Degree (Preferable a PhD, at least 18 years of formal education)	☐	☐
2	Overall Professional Experience of 10+ years	☐	☐
3	Out of 10+ years, minimum of 5 years of hands on R&D experience in area of Mobile Communications	☐	☐
4	Pakistani National	☐	☐
5	Proof of NTN Certificate	☐	☐