

# Expression of Interest



---

---

**Establishment of  
National Center for Nano Science and Technology,  
National Center for GIS and Space Applications, and  
National Center for Human Nutrition**

---

---

**August 2018**



**Higher Education Commission  
H-9 Islamabad**

Telephone: + 92-51-9040 1200 Fax: +92- 51- 9040 1202  
Email: [mmazhar@hec.gov.pk](mailto:mmazhar@hec.gov.pk) URL: <http://www.hec.gov.pk>

## CONTENTS

Introduction	3
TOR OBJECTIVES	3
SCOPE OF CONSULTANCY SERVICES	3
PROPOSED DOCUMENT FORMAT	5
DELIVERABLES	6
MODE OF PAYMENT	7
SUBMISSION, RECEIPT AND OPENING OF PROPOSALS	7
PROPOSAL EVALUATION	7
DISCLAIMER	8
CONFIDENTIALITY	8
TIME PERIOD FOR ASSIGNMENT	8
TERMS & CONDITIONS	8
MAILING ADDRESS/CONTACT INFORMATION	9
ANNEXES	10-20

## 1- INTRODUCTION

The Higher Education Commission (HEC) has been set up to facilitate the higher education institutions to serve as an engine of growth for the socio-economic development of Pakistan. HEC plays a central role in the development of the universities of Pakistan to become world-class centers of education, research and development.

Earlier this year, HEC has established 4 National Centers for Artificial Intelligence (NCAI), Robotics and Automation (NCRA), Big Data and Cloud Computing (NCBC), and Cyber Security (NCCS). These Centers have been established as a Network of Labs across the country with a Central HQ responsible for coordinating a national response and liaising with HEC and the Planning Commission. A National Steering Committee (NSC) and a Scientific and Industrial Advisory Board (SIAB) has been set up for each of these National Centers for effective functioning and oversight.

In addition, two additional centers were established in Applied Mathematics (CMS at PIEAS) and National Center for Livestock Breeding, Genetics, and Genomics (at PMS University of Arid Agriculture).

Following the pattern of the above NCs, HEC intends to establish top-tier science and technology research centers focused on the following areas:

- i) Nano Science and Technology
- ii) GIS and Space Applications
- iii) Human Nutrition

These Centers will be established in HEC recognized universities/degree awarding institutions (both public and private).

## 2- CONCEPT OF NATIONAL CENTERS

These National Centers are designed to create national capacity in key emerging areas of science and technology that have received a lot of attention and focus in the recent years and where a bit of investment and focus may create a competitive advantage for Pakistan.

Like the recently approved National Centers, each of these new Centers shall comprise of a series of "Affiliated Labs" at a number of universities across the country selected on the basis of;

- (i) Demonstrated capability and track record of accomplishments,
- (ii) Problem-orientation that is either nationally relevant or globally cutting-edge, and
- (iii) Partnerships with leading National Institutions and Private Sector players to ensure sustainability (through generation of non-PSDP revenue) in 3-5 years.

Although HEC is open to ideas about how the specific nature of these scientific disciplines and technologies (and their set up conditions) may require a slightly different approach.

**Research Groups (existing Labs, or Universities)** interested to establish affiliated labs under one of these National Center are required to submit their expression of interest (EOI) with the following ideas in mind:

**a) Think of a 'Big Problem' (or broad area of scientific research)** that research group would like to focus on. This should be something hard and cutting-edge enough so they can get quality

publications but also be meaningful and contextually relevant. The “big” problem must be challenging but also realistic and do-able so that they can make a major dent in a 3-5 year timeframe. A Scientific and Industrial Advisory Board will evaluate the problem areas proposed and can challenge the Lab if the problem is not tough enough. The trick is to find a balance. Each Lab shall be headed by a Principal Investigator and it will focus on the big problem or scientific area.

**b) Within your broad area, think about subsidiary Problems or Application Domains** that could be addressed while answering their primary big problem. They should also think of practical solutions that could be built, or partners/clients that could be served through these practical problems. Identify a few subsidiary problems and potential partners and clients for each. Each Lab may have 2-3 application domains and each will be headed by a co-P.I. for that application domain. Preference would be given to those proposals which will identify potential industrial partners or a set of realistic application domains with real-world applications to come out of the Labs.

**c) Identify Equipment and Personnel required to solve the problem(s) along with a research plan for how to do it.** HEC may fund the basic Lab (equipment + manpower for the big problem area for a period of 3 years) within the PC-I allocation. A dedicated Research Fund may be used separately to fund smaller projects or collaborations using an open call process out every 6-12 months. The Labs must focus on establishing the underlying science or proof of principle (and perhaps build preliminary prototypes) for their respective application areas but leave the ultimate product development to be funded by a real client or industrial partner.

**Preference shall be given to those proposals where the research groups have access to allied facilities and partners to ensure that what they propose is contextualized and locally relevant or with innovative plans to quickly generate locally relevant partnerships.**

**Preference shall be given to labs and research groups suggesting meaningful research and dissemination partnerships with industry, non-profits, or government entities** that creates match funding or enable them to quickly translate research results into societal impact. Universities may also propose to initiate academic programs in the relevant disciplines as part of proposal. However, these requests will be evaluated and approved separately by HEC.

Both **public sector universities** and **research-active private sector universities** with a track record of research in relevant areas, a pool of qualified faculty, and an innovative nationally relevant idea are encouraged to apply. Public Sector R&D organizations cannot directly apply but are strongly encouraged to become part of research consortia with universities.

**The proposals shall not fund any physical infrastructure** (i.e. buildings, etc.) as these shall be the responsibility of the Universities.

Each Lab shall be carefully monitored by a National Steering Committee and will demonstrate that it has delivered a pre-agreed set of SMART KPIs, Papers, Research and Industrial Revenue, Partnerships, Startups, etc. over a 3-year period.

**Universities may also commit additional resources** to make their proposal attractive. They will have to provide free access to facilities and existing equipment as well as free up faculty time (and Masters and PhD studentships) to support and carry out research.

**Should the University seek to host the headquarters of a National Center**, it must demonstrate capability and should provide additional details for why it would be the best choice and what it offers in return. The University with the best overall offering as well as capability and organizational arrangements shall be designated as a Lead Institution for the National Center.

### **3- PROPOSAL FORMAT**

The proposal may be submitted on the attached format. Each research group must submit a separate EOI. Institutions interested in more than one National Center may submit separate proposal for each. HEC will consider only those proposals complete in all respect and supported by the documentary evidence. Incomplete applications will be rejected at the initial scrutiny.

### **4- LAST DATE FOR SUBMISSION OF PROPOSALS**

The proposals complete in all respects may be submitted by September 10, 2018 before 14:00 hours.

### **5- MAILING ADDRESS/CONTACT INFORMATION**

Following address will be used for all correspondence:

**Dr. M. Mazhar Saeed**

Director General (P&D)

Higher Education Commission (HEC), H-9, Islamabad

Telephone: +92-51-9040 1200, Fax: +92-51-9040 1202

Email: [mmazhar@hec.gov.pk](mailto:mmazhar@hec.gov.pk)

**Establishment of Affiliated Lab for the National Center \_\_\_\_\_**

<b>Full name of the Focal Person:</b>		<b>Position / Title:</b>	
<b>Name of the Institution:</b>			
<b>Name of the Department (s)</b>			
<b>Contact Information:</b>		Office phone:	
E-mail:		Fax:	
Mobile phone:		Web address:	
<b>Requested Budget: (m. Rs.)</b>	<b>Tentative Completion Time (months):</b>		<b>Date of submission:</b>

## Concept Note of the Affiliated Lab

### 1. Abstract:

Please provide summaries of the overall goal (“Big Problem” or Scientific Area) of the proposed Lab. This information will provide first overview of your proposal **(One page maximum)**

### 2. Scientific goals

Please outline the research areas of the Lab and describe the scientific goals to be achieved by the proposed Lab. Specify the value of establishing this kind of Lab to the country. Note that these explanations are the main focus of the proposal. **(One page maximum)**.

### 3. Application Domains, Specific Goals for each, and Potential National and International Partners

Describe plans for transforming the research on the “big problem” (or scientific area) to 2-3 potential application domains (or sub-problems) and list national, international and private partners to cooperate with the Lab. **(Two pages maximum)**.

### 4. Promotion of Young Researchers

Please describe strategy of the Lab for promoting early-stage researchers and graduate students. Universities may offer Scholarships to MS/PhD students from their own funds (or waive tuition fee) to attract better manpower into research. **(One page maximum)**

### 5. Implementation of Lab’s Objectives and Sustainability

Please describe measures which will be undertaken by the Lab to achieve its objectives and your plan for ensuring long-term sustainability **(One page maximum)**

### 6. Organization, Management and Infrastructure

Please describe the internal (inter-disciplinary) cooperation with different departments and institutions within university and network structures with similar institutions and industry. Also describe the administrative structure of the proposed Lab with in University. If the Lab is going to be cross-disciplinary, the sponsors must demonstrate the synergy and structural added value the cooperation will generate and expected benefit of this strategic cooperation. **(One page maximum)**

**List of available major relevant equipment accessible to the proposed Lab:**

Please mention the already available research facilities in the host institution that will supplement to achieve the objectives of the proposed center.

#	Equipment	Date of purchase	Current condition of the equipment			Current usage
			Working	Repairable	Out of order	

**7. Other facilities**

Please state other infrastructure and operational facilities and funds which will be provided by host institution to support the proposed Lab.





<b>Current Position/Title:</b>	<b>Organization:</b>	
<b>Major Field of Research:</b>	<b>Specialization with Major Field:</b>	
<b>B: Scientific Achievements</b>		
<b>Total no. of international publications</b>	<b>Total Citations</b>	<b>Book/Chapter (if any)</b>
<b>3 most recent international publications in the relevant field:</b> <i>Authors (underline your name), year, title, Journal, vol. and pages</i>		<b>Impact Factor (if any)</b>
<b>Funded Projects Won/Delivered:</b>		<b>Sponsor &amp; Amount</b>
<b>A Statement of Current Research Focus as well as Scientific achievements (such as patents granted, scientific awards and former research grants relevant to the field.</b>		

### 10. Research Plan (Five Pages Max)

Layout a brief research plan for how you propose so solve the “Big Problem” and each of the potential application domains. The proposed activities (and milestones) as well as measurable outputs and outcomes should be provided. Please also indicate the tentative budget for each application domain area.

### **11. Optional: Suggested Modifications to 'Affiliated Lab' Format (Two Pages Max):**

Any modifications to the basic HQ-Affiliated Labs Model that you may wish to propose keeping in view the specific nature, set-up requirements, and dissemination needs of the National Center. A clear and convincing case, based on prior knowledge or experience, needs to be made for the consideration of HEC.

### **12. Optional: Additional Information about University (Two Pages Max):**

Should the University seek to become the Headquarter of the National Center, it should provide additional details for why it would be the best choice and what it offers in return. For example, this section may contain information on what additional labs, equipment, human resources, partnerships it brings to the table.

### **13. Statement of Host Institution**

Host institution must show its commitment to provide facilities, cost-sharing for PIs/Co-PIs, MS/PhD Students, administrative support, infrastructure and accessibility to all central core facilities available at the host institution. The host institution must provide information on the financial support to the Lab to implement its unique role as a leading national Lab in the country and its uniqueness within the national context. The host institution must also commit to make the central core research facilities of this Lab accessible to all Pakistani researchers from research institutions and universities free of cost or with minimal costs.

**Signature of the Focal Person  
Or Principal Investigator**

**Signature of Vice Chancellor**

**Dated:**