

**University Grants Commission of Bangladesh**

**Higher Education Quality Enhancement Project  
Academic Innovation Fund  
Six Monthly Sub-project Monitoring Format**

**Reporting period : Period of January to Jun 2016**

**01. Name and Details of the Sub-Project**

<b>Name of the sub-project:</b>	Capacity Building for Postgraduate Research in Remote Health Monitoring in Bangladesh
<b>Sub-Project Number (CP Number):</b>	3137
<b>Round:</b>	Round - 3
<b>Window:</b>	Window 2
<b>Group:</b>	
<b>Name of the Sub-project Manager with position in the entity</b>	A.K.M. Ashikur Rahman ( Professor, Dept. of CSE, BUET )
<b>Area/Discipline/Subject as per section 19.2 of AIFOM:</b>	Engineering & Technological
<b>Implementing Unit [Department/Faculty/Center/Institute/University]</b>	University
<b>Name of University</b>	Bangladesh University of Engineering and Technology
<b>Collaboration with other institutions / agencies:</b>	Please Mention the Name of Partner University or institutions:
<b>Name of the Parent Industry:</b>	
<b>Inception Date : Jul 01, 2014</b>	<b>Completion Date : Jun 30, 2017 Revised Completion Date:</b>

**02. Name and Details of Internal/provisional staff/consultants included/hired in the Subproject Management Unit**

<b>Number of Internal Staff*</b>	<b>Number of Students (if any)</b>	<b>Number of Consultants***</b>	<b>Full Time(how many out of total staff)</b>		<b>Part time (how many out of total staff)</b>	<b>Number of Provisional Staff**</b>
10	0	0	4		6	0
<b>Name of Internal Staff</b>	<b>Staff Type</b>	<b>Designation (In the Entity)</b>	<b>Hiring Date (In the sub-project)</b>	<b>Type of Contract</b>	<b>Duration (Months)</b>	<b>Expected Total Cost (Lakh taka)</b>
A.K.M. Ashikur Rahman	Internal Staff	Sub-Project Manager (SPM)	01-07-2014	Part time	2 years, 2 months, 26 days	5.76
Md. Yusuf Sarwar Uddin	Internal Staff	DSPM	01-07-2014	Part time	2 years, 2 months, 26 days	2.72
S.M. Farhad	Internal Staff	Member SPMT	01-07-2014	Part time	2 years, 2 months, 26 days	1.36
Fatema Tuz Zohora	Internal Staff	Member SPMT	01-07-2014	Part time	1 years, 6 months, 3 days	0.21
Rifat Shahriyar	Internal Staff	Member SPMT	01-10-2014	Part time	1 years, 11 months, 29 days	1.36
Asia Akter	Internal Staff	Office Manager/ Secretary	03-08-2014	Full Time	9 months,	1.91
Md. Rezaur Rahman	Internal Staff	Office Manager/ Secretary Cum Accounts Officer	03-08-2014	Full Time	2 years, 1 months, 23 days	11.01
Md. Wazed Ali	Internal Staff	Data Entry Operator	03-08-2014	Full Time	2 years, 1 months, 23 days	6.00
Md. Rezaul Karim Alam	Internal Staff	MLSS	03-08-2014	Full Time	1 years, 11 months, 1 days	2.37
Md. Reza Shakhawat Hossain	Internal Staff	Lab Attendent	01-11-2015	Part time	10 months, 28 days	1.28

\* Academics engaged in sub-project management and included in SPMT  
 \*\* Support staff recruited temporarily to provide secretarial service to sub-project management e.g., accountant, office secretary, data-entry operator, MLSS etc.  
 \*\*\* Experts appointed following relevant provisions of PPR 2008 or WB Guidelines

### 03. Summary of the Activities of the sub-project [ According to the proposal ]

#### 1. Conducting post graduate research leading to M.Sc./ Ph.D. degree:

To conduct post-graduate research on application of information and communication technology in health sector, and thus innovating novel techniques for health information systems, such as health and health, that are particularly suitable in the context of Bangladesh.

#### 2. Enhancing post graduate research capability:

To strength research capabilities in the form of M.Sc./Ph.D. enrollments in the areas of health informatics, embedded systems and mobile computing through research, prototype building, academic training and collaboration home and abroad.

#### 3. Arranging regular seminars, symposiums, and workshops:

Four workshops, namely workshops on vital signals, mobile application for healthcare, health informatics, and security and privacy of health data, are proposed throughout the span of the project. A couple of seminars/talks would also be arranged. We have already arranged a workshop on iOS training specially designed for faculty members of CSE, BUET. And we also arranged Brain storming Workshop on eHealth and another Workshop 'Remote Health Monitoring Workshop' (rHealth 2016).

#### 4. Enhancing postgraduate research laboratory:

We intend to enhance the wireless networking laboratory with the state-of-the-art equipment needed for remote health monitoring of patients.

**5. Enhancing research collaboration in the department:** Arranging research visits for Ph.D. students and faculty members at the foreign university laboratories, arranging academic visits of the permanent faculty members to foreign universities. Inviting visiting professors for three months research visits, and academic training of the faculty members.

### 04. Description of the Progress so far according to Work/Activity plan

<p><b>Progress during the past six months:</b></p>	<p><b>1. Procurement:</b>          We have received goods and paid the supplier for the procurement of the following packages:          • package G3 (OTM): Supply and installation of IT equipments (Smart phones, video camera, and networking accessories). and          • package G4 (OTM): Supply and installation of Laboratory equipments (pkg-1).          Overall all procurements are in good shape.</p> <p><b>2. Workshop/Seminar :</b>          We have successfully arranged the following workshop/Seminar          • First Remote Health Monitoring Workshop (rHealth 2016)          • Thesis project show.</p>
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<b>Overall progress so far:</b>	<p>1. The project office establishment and recruitment of all office staffs have been successfully completed.</p> <p>2. To provide financial support and research training of M.Sc. and Ph.D. students at the department of CSE, BUET we have already selected four M.Sc. students under this project and now they are conducting research in remote health monitoring in Bangladesh. We are currently in search of Ph.D. students.</p> <p>3. Three faculty members, including SPM and two ASPM have attended in PPR and e-GP training that was arranged by HEQEP.</p> <p>4. Procurement of goods:</p> <ul style="list-style-type: none"> <li>• We have already completed the procurement of the following packages:</li> <li>• Package G1 (RFQ): Supply and Installation of Office equipments,</li> <li>• package G3 (OTM): Supply and installation of IT equipments (Smart phones, video camera, and networking accessories).</li> <li>• package G4 (Supply and installation of Laboratory equipments pkg-1).</li> <li>• package G6 (Supply and installation of Laptops, Printers and Photocopier).</li> <li>• package G7 (RFQ): Supply and installation of Laptops</li> <li>• Procurement process of package G2 (RFQ) 'Supply of Furniture &amp; Fixture for Office Room' has been started and preparing the specification for Package G8: 'Supply &amp; Instn of Software' also been started.</li> </ul> <p>5. Research stays of SPMT member enhances the research skills of the faculty members of the CSE department and encourages their research in the proposed field of study. As our proposed project is highly research focused, this definitely strengthens research activity in the department. Our DSPM Dr. Md. Yusuf Sarwar Uddin has completed collaboration research stay at the University of California, Irvine. He is working on the integration of heterogeneous devices (in situ and mobile sensors, mobile platforms) and networks to enable reliable and efficient execution of distributed applications.</p> <p>6. Our SPMT member Dr. S.M. Farhad has completed iOS training form DDLS Australia and he also replicated the training for faculty members in CSE, BUET.</p> <p>7. Our SPM Dr. A.K.M. Ashikur Rahman has completed Training on Network Security (Penetration Testing) form Canada a wing of Learning Tree International U.K. .</p> <p>8. Arranged regular seminars, symposiums, and workshops: The followings were organized</p> <ul style="list-style-type: none"> <li>• Seminar on Collaborative Research</li> <li>• Workshop on iOS training</li> <li>• Brainstorming Workshop on eHealth</li> <li>• Thesis project show. (2 nos.)</li> <li>• First Remote Health Monitoring Workshop (rHealth'16).</li> </ul>
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## 05. Activities planned in coming six-months period according to Work/Activity plan

### 1). Acquisition of Equipments/Assets.

To improve the wireless networking laboratory at the department of CSE, BUET, with state-of-the-art health monitoring wireless equipment to conduct innovative postgraduate research and create intellectual properties as needed and it includes

- a. Preparation of bid documents for package G5 (Supply & installation of laboratory equipments package) and package G6 (Supply & installation of Software)
  - i. Invitation to tenders
  - ii. Tender evaluation
  - iii. Vendor selection
  - iv. Purchasing new equipment
  - v. Installation, testing and commissioning of the equipment
- b. Preparation of RFQ documents for package G2 'Supply of Furniture and Fixtures for Office Room'
  - i. Invitation to RFQ Bidders
  - ii. Bid evaluation
  - iii. Vendor selection
  - iv. Purchasing new equipment
  - v. Installation of the Furnitures

### 2. Participation in customized training courses on foreign countries by the academic faculties.

Enhancing the research capacity of the faculty members through training in the courses needed for building ICT interfaces, instrumentation and infrastructure for remote health monitoring. In accordance with that we are planning to conduct following training abroad:

- Training on Embedded systems.

### 3. Visiting Professor Fellowship program.

To award fellowship to visiting professor in order to enhance research collaboration in the proposed field of research study we plan to select a Visiting Professor.

#### 4. Involvement of Medical Consultant.

Our project prototype can be used to connect reputed and experienced doctors from national and international level to investigate and research special diseases. Famous doctors in urban areas can play great role to alleviate the health care system by contributing in the treatment of neglected people across the country.

#### 5. Arranging regular seminars, symposiums, and workshops:

We expect a wide dissemination of research findings to the communities and an exchange of views and ideas with the people coming from both academia and industry. A couple of seminars/talks & four workshops, namely workshops on vital signals, mobile application for healthcare, health informatics, and security and privacy of health data are proposed throughout the span of the project. We hope among them one workshop and Three seminar/workshops will be held within next six months as follows:

- Brainstorming Workshop on eHealth
- rHealth 2017 which includes:
  - a. Forming organizing committees
  - b. Call for paper
  - c. Paper submissions and reviewing
  - d. selecting papers for presentation
  - e. Registration
  - f. Organizing the main event

#### 06. Description of implementation issues/impediments/Challenges [Issues that may hamper implementation] and proposed remedial actions

Issues/Impediments/Challenges	Remedial actions
1. e-GP: In order to successfully conduct the proposed research, a number of equipments/machineries are required. However, the overall procurement process of such equipments was completely stalled because there was a central decision that all subprojects from BUET have to complete all procurement pr	Extending project completion time.
2. Staff training By HEQEP: Although it was promised to provide necessary training by the HEQEP office to the local staffs hired under this project, no training has been conducted so far.	HEQEP Office should take action as soon as possible to start Staff training
3. Eligible Ph.D. student for research is quite difficult to find as they go abroad to get their Ph.D.	Need more time

#### 07. Update on Milestone status

Milestone	Expectation (%) till date ( )		Progress till (%) date ( )		Revised Expected Date	Comment/Justification
	Previous	New(+)	Previous	New(+)		
Enhancing post graduate research capability	50	50	34	34	30-09-2016	Application of The Ph.D. student denied by the Equivalence Committee
Enhancing postgraduate research laboratory	70	80	50	80	28-02-2016	Achieved
Organizing fellowship to a visiting professor	0	100	0	0	30-09-2016	Procurement has been delayed
Enhancing research capacity of faculty members	25	70	25	70		Achieved
Enhancing the research collaboration of faculty members	50	75	50	75		Achieved
Arranging workshops	50	75	40	75		Achieved

#### 08. Update on Performance Indicators to Evaluate Sub-project Impact

Indicators	Calculation method	Verification methods	Calculation of Base Value	Baseline		Desired Standard		Present Value	
				Year	Value	Year	Value	Date	Percentage
Increase in post-graduate research in the proposed field	Number of newly approved new researches undertaken with this sub-project's funding	Thesis registration and/or completion document of post graduate program;	N/A	2012	Nil	2017	100	31-12-2015	66
Improvement of students' research capacity in the proposed field	Number of publications by students in national and international refereed journals/conferences/workshop;	Published refereed journals/conferences/workshop;	N/A	2012	Nil	2017	100	31-12-2015	85
Improvement of faculty staffs' research capacity in the proposed field	Number of publications by faculty staffs in national and international refereed journals/conferences/workshop;	Published refereed journals/conferences/workshop;	N/A	2012	Nil	2017	100	31-12-2015	100
Improvement of research collaboration in the proposed field	Number of collaborative research stays in foreign universities;	Research visit and collaboration document; travel document;	N/A	2012	Nil	2017	100	31-12-2015	20
Enhancement of IT equipment in Wireless Laboratory	Number of new machines/ Total number of machines	Official non-objection records;	Total number of machines = number of new machines + number of existing machines	2012	Nil	2017	100	31-12-2015	100
Enhancement of laboratory equipment in Wireless Laboratory	Number of new equipment/ Total number of equipment	Official non-objection records;	Total number of equipment = number of new equipment + number of existing equipment	2012	Nil	2017	100	31-12-2015	85
Improvement in disseminating research findings in the proposed area	Number of workshops arranged	Official events records;	N/A	2012	Nil	2017	100	31-12-2015	100

### 09.1 Fund utilization entry

Description	Amount
Total Budget of the Sub-Project (Tk. In Lakh)	349.97
Total Revised Budget of the Sub-Project (Tk. In Lakh)	349.97
Fund Received up to Reporting Period June 30, 2016 (Tk. In Lakh).	223.33
Fund Utilized(Tk. In Lakh)	97.14

### 09.2 Fund utilization

Description	Amount
Total Budget of the Sub-Project (Tk. In Lakh)	349.97
Total Revised Budget of the Sub-Project (Tk. In Lakh)	
Fund Received up to Reporting Period June 30, 2016 (Tk. In Lakh).	0.00
Fund Utilized(Tk. In Lakh)	0.00
Percentage (%)of received fund against total budget of the sub-project	0.00 %
Percentage (%) of utilized fund against total budget of the sub-project	0.00 %

## 10. Result (Output) Achieved of the Sub-project

S/N	Categories of Result (Output)	Number of Achieved		Location/Who Using This / Date of Purchase
		Previous	New (+)	

## 11. Acquisition of Equipment/ Materials

S/N	Equipment/ Materials	Quantity/Unit		Location/Who Using This / Date of Purchase
		Previous	New (+)	
1.	Photocopier	1	0	Sub-Project Office
2.	Scanner	1	1	Laboratory
3.	Printer	4	4	Laboratory
4.	Laptop Computer (Windows)	10	0	Laboratory
5.	Oscilloscope	1	0	Laboratory
6.	BarCode Scanner/Reader	1	0	Laboratory
7.	BarCode Label Printer	1	0	Laboratory
8.	Video camera	0	8	Laboratory
9.	Smart Phone	0	10	Laboratory
10.	Windows Phone	0	10	Laboratory
11.	Android Phone Type-1	0	10	Laboratory
12.	Android Phone Type-2	0	10	Laboratory
13.	Wi-Fi Dual-Band N Router	0	7	Laboratory
14.	Standalone Access Point with External Antenna	0	1	Laboratory
15.	Wireless N Selectable-Band Access Point with PoE	0	2	Laboratory
16.	Wireless N Access Point with PoE	0	2	Laboratory
17.	Raspberry Pi	0	20	Laboratory
18.	Arduino (Uno)	0	20	Laboratory
19.	Arduino (Due)	0	20	Laboratory
20.	BLE Smart Sensor	0	20	Laboratory
21.	Wireless pulse oximeter	0	10	Laboratory
22.	Wireless Gluco-meter	0	10	Laboratory
23.	Fitness band	0	10	Laboratory
24.	Digital Stethoscope	0	3	Laboratory
25.	Embedded Health Sesnor Kit	0	3	Laboratory
26.	Heart Rate Monitor	0	10	Laboratory
27.	Wireless Blood Pressure Monitor	0	10	Laboratory

## 12. Acquisition of Scientific Equipment/ Chemicals/Reagent etc

Name of Equipment	Quantity		Location/Who Using This / Date of Purchase
	Previous	New (+)	
SENSOR OPTO TRANS	10	0	Laboratory
IC OPAMP GP	25	0	Laboratory

## 13. Capacity Building and Experience Sharing Programs (Workshop/ Seminar /Training/Conferences) Organized by the sub-project for Faculties, Students or External stakeholders

Event	Title	Target Groups	Number of Participants	Duration	Start Date	End Date	National/International
Workshop/Seminar	rHealth 2016	Health Service Related Personnel & Faculty Member	30	1 Day	09-01-2016	09-01-2016	National
Workshop/Seminar	Thesis Project Show	Students	109	1 Day	28-02-2016	28-02-2016	National

#### 14. External Training/ Workshop Attended by SPM Team

Name of Training/ Workshop	Training Date	Participants Name	In-country/ Overseas
Training on iOS Software Development	04-02-2015	S.M. Farhad	International
Security and Privacy'	10-06-2016	A.K.M. Ashikur Rahman	International
Embedded System	20-03-2016	A.K.M. Ashikur Rahman	National

#### 15. Post Graduate enrollment in the Department under the sub-project

Roll no.	Student name	Degrees	Subject	Start date	End date
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#### 16. Research outcome (Journal, Publication, Articles etc.) related to the sub-project since its inception. Please also provide the full list of journals published in the past six months

Name of Research outcome	Author	Title	Date of Publication	Academic field
Conference proceedings	Mehrab Bin Morshed, Maruf Hasan Zaber, and Md. Yusuf Sarwar Uddin	Phone-to-phone Video Data Spreading for Community Health Alerts	05 Jan, 2016	Engineering and Technology
Conference proceedings	Mashrura Tasnim, and Rifat Shahriyar	Statistical Analysis and Design Implication for Automatic Depression Detection and Support System	05 Jan, 2016	Engineering and Technology
Conference proceedings	Md Yusuf Sarwar Uddin, Vinay Setty, Ye Zhao, Roman, Vitenberg, Nalini and Venkatasubramanian	RichNote: Adaptive Selection and Delivery of Rich Media Notifications to Mobile Users	27 Jun, 2016	Engineering and Technology

#### 17. Number of Direct Beneficiaries of the sub-project

Category of Beneficiary	Number of Beneficiary		Remarks
	Previous	New ( + )	
Students (Undergraduate)	3	0	Using state of the art laboratory equipments
Students & Researchers(Post-graduate, Post-doctoral)	4	0	Performing collaborative research
Faculty Members	5	0	Performing collaborative research
Other University Staff	0	1	Lab attendant
Other Stakeholders	0	0	
Others	0	0	

\* Please count only the benefits that have already been realized (not the expected beneficiaries)

\*\* Please do not double-count the beneficiaries. For example, if 1 person attended 2 workshops, beneficiary is still 1 person.

#### 18. Institutional Quality Assurance Cell (IQAC) Activities

IQAC activities	Number		Total participants		Total expense		Comments
	Previous	New ( + )	Previous	New ( + )	Previous	New ( + )	

#### 19. Self-Assessment

Self-Assessment Activities	Number		Comments
	Previous	New (+)	

## 20. Self-Assessment (Workshop)

Self-Assessment Activities	Total participants		Total expense		Comments
	Previous	New (+)	Previous	New (+)	

## 21. Self-Assessment Report (SAR)

Self-Assessment Activities	Number		Comments
	Previous	New (+)	

## 22. External peer review process

Peer Review Activities	Number		Comments
	Previous	New (+)	

## 23. Name and URL of Developed Website

Name of Developed Website	URL
HEQEP Sub-Project CP-3137	<a href="http://cse.buet.ac.bd/heqep">http://cse.buet.ac.bd/heqep</a>

## 24. Other Noteworthy Achievements

## 25. Comments

### Final Agreement

All of my given six month information is CORRECT and I will not Change any information of Selected Period. Also I want to Submit Report Finally for selected Period.