



REPUBLIC OF GHANA

## **Ministry of Communications**

### **eTransform Project Additional Financing (P170910: IDA 6741-GH)**

#### **Terms of Reference For**

#### **Design and Supervision of Implementation of Tertiary Institutions Campus Network**

Contract ID: eTP/AF/Comp/3.3.1 -



## **Terms of Reference**

### **Design and Supervision of Implementation of Tertiary Institutions Campus Network**

#### **1.0 BACKGROUND**

Over the last decade, the business world and higher education have relied on computer networks that have become central and mission critical to every business process as well as education instructional service delivery and research. Our reliance on computer networks is roughly comparable to dependence on the power grid. The expansion of the Internet and the technological advancement facilitated by information technology has brought about globalization of higher educational institutions and institutional communities. This globalization is the evolutionary force behind the way we should comprehend campus networks. It is therefore more critical for institutions of higher learning to establish an efficient and reliable campus network with the capacity to support increasing technology requirements on the campus and of the marketplace.

On higher education as well as corporate or research campuses in Ghana, most of the network architecture and supporting infrastructure that exist support at the maximum, basic email and general web access. This obviously limits the institutions ability to communicate effectively between departments including the ability use ICT for innovative research applications that require high-speed performance and large storage capacity. Inevitably, higher learning and research institutions in Ghana are unable to compete with their African peers and the rest of the world. The culprit is the exorbitant and often low-quality existing communications infrastructure as mentioned above.

To help solve the above problem, the Government of Ghana, supported by the World Bank, carried out a campus network needs assessment to determine the status of higher institutions' campus networks and determine future needs to ensure reliable connectivity and modern network infrastructure on the various campuses. The higher institutions' campus network infrastructure would allow:

- Dedicated access to network resources in different buildings
- Ability to share high speed Internet connections
- Host email locally for greater control and collaboration instead of webmail
- Distribute ICT resources across multiple buildings including but not limited to triple play applications (Voice, Data, Video) and platform for e-learning applications
- Wireless campus wide network access for students and faculty
- Connection to the Ghanaian Academic and Research Network (GARNET)

MoC intends hiring a consultant, in collaboration with the selected tertiary institutions, to plan, design and supervise the implementation of a state-of-the-art campus networks.

The results of this work would provide key inputs into an engagement between World Bank, Government of Ghana, and the private sector to assist selected tertiary institutions build robust campus networks.

## **2.0 OBJECTIVE**

The objective of the assignment is to hire an Individual Consultant to plan, design, and supervise the implementation of beneficiary tertiary institutions' campus networks, which will support campus operations and allow more functionality and information sharing including internet accessibility. In addition, the beneficiary institutions should have all the requisite systems to ensure that the ground is set for campus interconnection with GARNET (Ghanaian Academic and Research Network).

## **3.0 SCOPE OF SERVICES**

The Consultant will:

- ❑ Conduct physical site visit of geographic locations of each institutions campus and familiarize him/her with existing network infrastructure.
- ❑ Gather the requirements of each beneficiary Institutions client's services considering the entirety of the operations of the institution and their interactions with students, faculty and administration and provide a planning report identifying the needs of each tertiary institution
- ❑ Design each of the beneficiary institutions campus network, providing detailed diagrams for both logical and physical proposed network. Consider that the existing network will integrate with the proposed infrastructure
- ❑ Assess the connectivity options between the campus network infrastructure and GARNET
- ❑ Assess the level of security of the existing network infrastructure against viruses, spam, malware, intruder attacks, and all ways in which the campus network could be compromised and mitigate them
- ❑ Design the functional, technical, and business model for the system in consultation with Institution stakeholders
- ❑ Design the network architecture system in consultation with each Institution's constituents and in accordance with Interoperability standards.
- ❑ Draft SLAs for ensuring Quality of Service for each of beneficiary Institution's campus fiber network Infrastructure
- ❑ Provide a transition plan for migration from the current mode of operation to the proposed system.
- ❑ Provide recommendations on network operation, management, monitoring and reporting.
- ❑ Provide recommendations on training required to upgrade the skills of existing technical personnel to acceptable levels and capable of supporting the new campus

- Assess costs for each of the beneficiary Institution and overall project cost.
- Prepare tender documents for agreed and approved procurement packages of the desired systems based on World Bank procurement rules and guidelines
- Assist MoC and institutions in the evaluation and selection of a vendor for implementation of campus network.

### **Project Supervision and Execution**

- The consultant shall execute continuous supervision of all works including the monitoring of work progress and adherence to specified work standards (quality control).
- Check and approve the contractors’ work plans and implementation for the most efficient and expeditious methods of carrying out works
- Monitor actual work progress against schedule and report to MoC, the beneficiary institutions and the World Bank.
- Develop procedure with contractor for testing and commissioning
- Check and monitor testing and commissioning of the project.
- On completion of the project, get copies of the final records from the contractor; e.g.: drawings, design data, operation instructions, maintenance manual, etc. and deliver all to the MoC and the beneficiary Institutions
- If the project has completed in accordance with the contract, issue acceptance certificates and approve contractors' invoices
- Submit monthly progress reports and, if necessary amend original construction time schedules

### **4.0 REPORTING AND TIME SCHEDULES**

The Consultant will report to the MoC through the Project Coordinator and liaise closely with the beneficiary tertiary institutions. The schedule of deliverables under the assignment will be as follows:

<b>Deliverable</b>	<b>Subject</b>	<b>Number of weeks from start of assignment</b>	<b>Percentage of contract amount payable (%)</b>
Contract	Contract Signature	0	0%
Report	Planning Report on Beneficiary Institutions	Commencement + 1 week	20%
Report	Facilitation of Stakeholder Validation Workshop report	Commencement + 2 weeks	0%

<b>Deliverable</b>	<b>Subject</b>	<b>Number of weeks from start of assignment</b>	<b>Percentage of contract amount payable (%)</b>
Design	Draft Campus Network infrastructure and last mile design report	Commencement + 2 weeks	20%
Report	Facilitation and Validation of Campus Network Design by stakeholders	Commencement + 3 weeks	0%
Bidding Document	Final Design Report and Bidding Document	Commencement + 4 weeks	10%
Report	Bidding Process and Contract Documentations	Commencement + 12 weeks	0%
Supervision	Supervision of implementation	Commencement + 36 weeks	40%
	Monthly Reports		0%
Report	Final Completion Report	Commencement + 40 weeks	10%
<b>Total</b>			<b>100%</b>

Provide all deliverables in electronic form on a flash drive and in two hard copies.

The MoC will review respective reports and Consultant will receive comments within two weeks of report submission.

### **Planning Report**

The Consultant will submit a Draft Report, which will contain an update and a more comprehensive understanding of the scope of work and methods to be used to accomplish the work, based on inception interviews with clients and stakeholders. The report will include

- i) a summary of findings to date and identification of any problems, issues or questions on which the Consultant requires guidance, decision or action by Institutions involved
- ii) a conceptual design for each of the beneficiary institutions
- iii) A detailed work plan for the execution of the project

The Consultant will make a presentation of the planning report in a stakeholder workshop.

## **Campus Network Infrastructure and Last mile Draft Network Design**

The MoC will require the Consultant to carry out a comprehensive requirement analysis study for each of the institutions' campus network including a last mile connectivity. This is to get a clear understanding of the network solutions to implement at the various University campuses with a produced report describing the business contexts in which developed campus fiber networks will streamline the operations and activities of the various institutions. This analysis report must enable prospective solution developers and integrators to understand the business context in which their proposed solution will apply.

### **Facilitation of workshop to validate network design by stakeholders**

The consultant will make presentations and produce a recommended campus network architecture design to serve as an indicative representation of the desired network solutions to implement at the institutions.

### **Preparation of Bidding Document and Approval**

The consultant will produce a set of tender documents in accordance with agreed procurement packages. World Bank's Procurement standard bidding documents refers

### **Bidding Process and Contract Documentation**

The consultant will provide all the necessary support to MoC and the beneficiary Institutions for the efficient and professional management of the bidding process. This includes facilitating structured engagement between the institutions and MoC to communicate effectively with bidders.

MoC and institutions assisted by the consultant will evaluate bids as per the evaluation criteria laid down in the bidding documents. A draft evaluation report will be prepared at the end of the assignment. To ensure fairness and transparency of the bidding process, the consultant will not feature in the bidding process

### **Final Report**

A final report will be prepared at the end of the assignment and will finalize in consultation with the MoC and the Institutions. The finalized report will contain findings, conclusions, and recommendations for the smooth implementation and sustainability of the campus network infrastructure.

## **5.0 QUALIFICATIONS**

The criteria for selecting the Consultant will based on experience and capacity in carrying out this type of work. The consultant undertaking this assignment should demonstrate

results of similar assignments. At a minimum, the consultant selected for the assignment must satisfy the following requirements:

- ❑ Demonstrated 10 years' experience, knowledge and expertise in the design and implementation of Campus Area Networks, server and storage systems, and methodologies needed to facilitate successful participation in National and Regional Research and Education Networks.
- ❑ Ability to demonstrate prior successful implementations of similar projects
- ❑ Prior experience in the formulation and administration of policies and strategies relating to higher education institutions to facilitate more effective integration of ICT into their core mandate of teaching, learning, research, and information management.
- ❑ Wide-ranging experience in managing large scale ICT projects in the education settings.
- ❑ Leadership, communication and presentation abilities demonstrated by past assignments

## **6.0 FACILITIES, DATA AND INFORMATION TO BE PROVIDED BY CLIENT**

MoC will facilitate contacts to all tertiary institution officers during the project cycle. Each beneficiary Institution will provide one person as counterpart to the consultant.