

REPUBLIC OF KOSOVA

MINISTRY OF ECONOMIC DEVELOPMENT (MED) KOSOVO DIGITAL ECONOMY (KODE) PROJECT

REQUEST FOR EXPRESSIONS OF INTEREST

Consulting Services – Local Individual Consultant

Country: Kosovo

Project: Kosovo Digital Economy (KODE)

Project ID. P164188

Loan No.: 6285-XK

Assignment Title: Local Individual Consultant for Setting up network for Kosovo's National Research Education Network (NREN).

Ref No. KODE/IC/2.2.1/2019

Issued on: May 16, 2019

I. BACKGROUND

The Government of Kosovo has received credit from the International Development Association (IDA) (hereinafter 'the Bank') for a Kosovo Digital Economy (KODE) Project in the amount of 20,7 million EUR. The KODE Project aims to improve access to better quality and high-speed broadband services in project areas and to online knowledge sources, services and labor markets among citizens, and public and academic institutions.

It is foreseen that **the Project will achieve its development objective through two main sets of activities:** (1) expanding access of Kosovars to high-speed and better quality digital infrastructure; and (2) support Kosovars to take advantage of regional and global Digital Economy (DE) opportunities, especially for income generation, usage of services, and learning, thus triggering the growth of a DE in Kosovo.

The Project is structured along three components: (1) Digital Inclusion, (2) Digital Work and Empowerment, and (3) Project Implementation Support. It is foreseen that subcomponent 2.2. under the component (2) will finance (i) set up a National Research and Education Network (NREN) to improve access of students, researches and educators of Higher Educational Institutions (HEIs) in Kosovo to knowledge, research networks and (ii) connect NREN to the pan-European academic network GEANT. MED plans to conduct a set of feasibility studies to inform implementation of the subcomponent 2.2. This terms of reference (ToR) concerns above mentioned feasibility studies.

The KODE is implemented by the Ministry of Economic Development (MED) that provides strategic direction and technical oversight to the entire Project. MED oversees the Information and Communications Technology (ICT) sector development and executes this mandate through the Department of Post, Telecommunication and Information Technology (the Department), which for the purposes of the Project will act as the lead implementing agency and will carry the primary responsibility for all Components of the Project.

The need for the activities under the Sub-component 2.2 stems from the fact that universities and colleges in Kosovo are poorly interconnected and are practically unable to engage in knowledge exchange or research collaboration with European partners. At present, Kosovo's HEIs often overpay for broadband services that do not meet (in terms of quality) their needs. Out of all countries in the region, only Kosovo has not yet set up a NREN interconnecting its HEIs. This limits participation in the GÉANT, which links NRENs in the EU and beyond (overall 110 such networks) to high-speed broadband at low cost and provides access to a range of research and innovation services.

It is envisaged that KODE-funded NREN for Kosovo will have its own organizational structure, national status, physical network nationally, connecting the country's HEIs among themselves and with the GÉANT network. It shall provide a range of services designed for its users (HEIs and, over time, potentially primary and secondary schools, and other entities) in full support of the national research and education process, among them the most important one is the provision of high-speed broadband connectivity. Although Kosovo's NREN requires considerable initial investment, it will be a cost-efficient alternative to conventional ways to boost connectivity and communication within the academic community. Once established and operational for universities, Kosovo's NREN will offer membership possibilities with a view of increasing its beneficiaries' base and connecting them to a high-speed broadband network at a lesser cost.

A set of feasibility studies shall determine the most optimal way to ensure a high-speed broadband network in nine cities of Kosovo (Pristina, Gjilan, Ferizaj, Prizren, Gjakova, Peja, Mitrovica, Podujeva, Lipjan), thus providing interconnectivity to all of Kosovo's HEIs, at one or more points of presence for each entity. This network will have to be distinguished from other networks by performance, services, and other advantages offered to the community. It is planned that the preferred network topology will be comprised of at least one interconnected optical ring network. Pristina, as the capital city with the highest population and with the highest number of HEIs, will have to be provided with a metropolitan ring network with a minimum of 10 Gbps backbone capacity. The rest of the cities will be connected using another ring(s), whenever possible. It is foreseen that this proposed topology would increase the network reliability and availability, as there will not be any single points of failure; it is also well aligned with the geographical distribution of the cities. Other uncovered cities will have closer access points for connecting to the network. Feasibility studies would need to consider the ability to upgrade the data rate in the future without having to reinvest into a new platform. It is essential that the network implementation should be adaptable to respond to arising bandwidth requirements

II. OBJECTIVES OF THE ASSIGNMENT

To conduct a set of feasibility studies to support the development, set up and operation of the Kosovo NREN from the technical perspective.

Specific objectives of the assignment are the following:

Objective 1: To design the Kosovo's NREN network;

Objective 2: To assess infrastructure requirements in participating HEIs campuses;

Objective 3: To prepare Kosovo's NREN technical specifications and the tender package;

Objective 4: To support KODE PIU throughout the tender process, set up / deployment and launch of Kosovo's NREN;

Objective 5: To deliver trainings on maintenance and operation of the NREN to participating HEIs and MED staff.

III. DETAILED SCOPE OF WORK

The below outlines the scope of work per above objectives.

Objective 1: To design the Kosovo NREN network.

As part of this objective at least the following should be conducted:

- Analyze viable options and provide substantiated recommendations on the most efficient (from long and short term technical and economic standpoints) way to set up / develop the Kosovo's NREN infrastructure, including leasing, Indefeasible Rights of Use (IRU), infrastructure deployment, etc. Option of Leased capacity (buy) vs. own infrastructure (build) shall be analyzed in detail;
- Analyze local, and international (GEANT) connectivity options and carry out detailed preliminary system design for the Kosovo's NREN network including but not limited to:
 - Network topology ensuring effective communication between HEIs with adequate supporting bandwidth, high availability and secure network;
 - Design the Network Operation Center (NOC);
 - Kosovo NREN equipment: fiber, level 2 and level 3 network equipment (points of presence, interconnection, protocols), servers, and other relevant network resources;
 - Guidance on configuration of different types of active equipment;
 - Design of an effective scalable IP addressing scheme (if necessary). Analysis of dual home campus networks, and advice on the best approach for using commodity internet and other services by end users under such circumstances;
 - Consulting on international (GEANT) connecting capacity and the range of services to be offered;
 - Analysis and design of technology solutions (hardware and software) that will support Kosovo's NREN applications and services
- Provide technical inputs and other necessary data in order to help HEIs comply with effective connectivity requirements and implement adequate hardware, software and applications.

Objective 2: To assess infrastructure requirements in participating HEIs campuses.

As part of this objective at least the following should be conducted:

- Develop an approach towards campus-level investments and provide recommendations, including:
 - Assessment of the current level of development of campus networks at Kosovo's HEIs;
 - Assessment of relevant network technologies and standards that should be supported at Kosovo's HEIs;
 - Recommendations on the way of boosting investments to ramp up public universities' computerization and campus-level communication infrastructure.

Objective 3: To prepare Kosovo's NREN technical specifications and the tender package.

As part of this objective at least the following should be conducted:

- Formulate technical requirements and provide other requested technical inputs to KODE-PIU/MED in the preparation of standard bidding documents, in line with World Bank guidelines, for the procurement of setting up of the Kosovo NREN network,

Objective 4: To support KODE PIU throughout the tender process, set up / deployment and launch of Kosovo's NREN.

As part of this objective at least the following should be conducted:

- Provide professional advice whenever needed during the tendering process for setting up Kosovo NREN network;
- Assist in the installation and commissioning of the Kosovo NREN network including the Network Operation Center (NOC).

Objective 5: To deliver trainings on maintenance and operation of the NREN to participating HEIs and MED staff.

As part of this objective at least the following should be conducted:

- In consultations with KODE PIU, develop and deliver trainings for the Kosovo NREN, MED, KODE PIU staff and other relevant stakeholders:
 - Deliver on-site training and remote assistance, as needed, for the duration of two years from the initial setup of the Kosovo NREN Network;
 - Design and document the trainings, plus network operational policies and procedures, in line with the recommended services to be offered by Kosovo NREN and its appropriate service levels (at least Edugain, Eduroam, Cloud, and VC/collaboration tool to be included). IC-2
- In consultations with KODE PIU, develop and deliver trainings for network engineering staff at university/college campuses on how to improve their campus network designs, thus increasing the skills of these staff on how to effectively deal with applications, connectivity issues, and adequately configure their different types of active equipment on campus premises. The trainings should be covering:
 - Research and Education network infrastructure
 - Campus core infrastructure design best practices, including but not limited to:
 - Campus design principles;
 - Physical infrastructure (cabling and cabling installation);
 - Fiber optics;
 - Switching (spanning tree, VLANs, L2 best practices);
 - Routing (static routing);
 - IPv4, IPv6 and deploying dual stack infrastructure;
 - Choosing campus routers and switches;
 - Choosing servers;

- Campus security implementation and international best practices, including but not limited to:
 - Acceptable use policies;
 - Monitoring;
 - Firewall placement.

The deliverables under this contract shall be prepared in English language and are listed in the Table in the section “Timeline, Deliverables and Payment Schedule” of this document.

IV. REPORTING OBLIGATIONS

The consultant will report to and work under the direction of the Project Implementation Unit within the Department.

The consultant will work in close collaboration with the consultant selected to implement the KODE Project’s contract “Individual Consultant for setting up Kosovo NREN”.

Completion of the contract (deliverable 4) is linked with the KODE Project’s goods contract under “Establishing of NREN”.

V. MED’S CONTRIBUTION

As needed, the MED will provide office space, internet connection, for consultant.

VI. QUALIFICATIONS

The contractor shall be individual consultant.

The performance of the above-mentioned activities requires a professional that has good academic and professional multi-disciplinary knowledge and experience of all or a subset of the following fields:

- At least Bachelor’s Degree in electrical / Computer Science /Electronics/ ICT/ Telecommunications;
- At least eight (8) years of professional experience in related field;
- Concrete experience in designing network infrastructures;
- Good experience about electronic communications infrastructure in Kosovo;
- Good experience about international connectivity from Kosovo to Western Balkan region and vice versa and more widely;
- Sound experience of systems engineering, radio and optical network and NOC operations
- Experience working on international projects, manifested by practical experience of administrative, monitoring and reporting procedures in place would be an advantage;
- Concrete experience in data collection and validation methods;
- Excellent project management skills, including quality assurance; ability to deliver high-quality outputs in a high-pressure multicultural environment; and
- Excellent command of English with the ability to deliver high-quality report writing, presentation, and communication skills, with experience in communicating and engaging with high-level decision makers in the public and private sectors.

VII. START OF WORK AND DURATION OF THE CONTRACT

The level of effort is estimated to be 200 working days. During the duration of the contract the consultant is shall deliver at least 1 workshop / training to discuss the preparation, present the deliverables, etc.

The contract is expected to be started in June 2019. The duration of the assignment is estimated to last for next two years from the contract signature, subject to completion of the KODE Project's goods contract in sub-component "Establishing NREN".

Contract will be linked with the KODE Project's contract of International Individual Consultant for Setting up Kosovo's National Research Education Network (NREN).

Completion of the contract (deliverable 4 and 5) is linked with the KODE Project's goods contract "Establishing of NREN."

VIII. TIMELINE, DELIVARABLES AND PAYMENT SCHEDULE

Objective	Deliverable		Deadline (months after contract signing)	Payment (% of total payment)
1	1	Feasibility Study on the Kosovo's NREN network design, including connection to GEANT	3	10
2	2	Campus-level assessment report	3	30
3	3	ToRs for setting up Kosovo's NREN network.	4	20
4	4	The support provided to KODE PIU throughout the tender process, set up / deployment and launch of Kosovo NREN; summary of the support provided shall be documented in the report;	Deadline for completion of the task is linked with the goods contract in sub-component "Establishing NREN"	40
5	5	Training manuals for Kosovo's NREN and University IT staff; Hands on training and support in setting up Kosovo's NREN network, activating equipment and NOC	Deadline for completion of the task is linked with the goods contract in sub-component "Establishing NREN"	

Ministry of Economic Development now invites eligible individuals ('consultants') to indicate their interest in providing the Services. Interested Consultants should submit their CV accompanied with proof demonstrating that they have the required qualifications and relevant experience to perform the Services.

The Consultant will be selected using Individual Consultancy procedures in accordance with the World Bank's Procurement Regulation for Investment Project Financing Borrowers for Goods, Works, Non-Consulting and Consulting Services, July 2016, as amended.

The selection criteria are:

- (i) General qualifications to REOI (30%),
- (ii) Relevant experience with similar assignments (50%) and
- (iii) English Language (20%).

Further information can be obtained at the email address below during office hours – 09.00 to 16.00 hours.

Expressions of interest (CV and related document's) must be delivered in a written form to the address below (in person) or by e-mail, no later than May 31, 2019 at 16:00 h.

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