Annex 1

EAST AFRICAN COMMUNITY

TERMS OF REFERENCE (TORs)

CONSULTANCY SERVICES TO CUSTOMIZE AND INTEGRATE THE REFINED STRUCTURAL AND DYNAMIC DATA INTO EACWARN SYSTEM AND TOOLS

REFERENCE: EAC/EOI/22-23/0070

EAC EARLY WARNING UNIT

EAC SECRETARIAT
Arusha, Tanzania
June, 2023

1.0 BACKGROUND

The Treaty establishing the East African Community (EAC) provides for the legal basis for Partner Sates to engage in peace and security matters. Article 124 spells-out that Peace and Security are pre-requisites to social and economic development within the Community and they are vital for the achievement of the objectives of the Community.

In this regard, the EAC Secretariat through the Conflict Prevention, Management and Resolution (CPMR) Mechanism is mandated to develop and manage programs and initiatives geared towards fostering and maintenance of an atmosphere that is conducive to peace and security through co-operation and consultations on issues pertaining to peace and security in the region.

To operationalize this mandate, in November 2006, the EAC Council of Ministers adopted a Strategy on Regional Peace and Security which provides for an enhancement of cooperation among Partner States through establishment among others of a Conflict Early Warning Mechanism that facilitates the anticipation, preparedness and early responses to prevent, contain and manage situations that are likely to affect peace and security in the region.

The EAC Early Warning Unit under the APSA Project allocated funding for engaging consultancy services for EACWARN System and Tools development in this financial year. The EAC indicators framework has seven conflict drivers dimensions i.e. economic, political, Security, legal, social, environmental, technological, Socio-economic and humanitarian that need to be explored when looking at developing an integrated Early Warning database management system for conflicts drivers analysis in the region. With this large magnitude a modular approach to system development was adopted by the EAC Secretariat to handle this assignment.

The EAC Secretariat carried out the initial EAC Early Warning system development assignment and accomplished it by developing a foundational system that focused only on the economic dimension with its conflict drivers. The EAC Secretariat is now looking at undertaking Phase-two of this system development.
The second phase of this assignment is going to handle all the remaining dimension and establish a full scale integrated Early Warning System for conflict analysis in the region.

2.0 RATIONALE

The effectiveness of Early Warning Systems is highly dependent on the quality and reliability of data gathered overtime. Data is at the heart of Conflict Early Warning Systems. Early Warning Systems and Tools cannot produce meaningful results without accurate, consistent, reliable, completeness and valid data.

In the efforts geared towards achieving this, the EAC Secretariat commissioned a consultant to develop a foundational integrated early warning system as an initial stage for developing a system that integrates structural and dynamic data that facilitate monitoring of root causes of conflicts in the region. This foundational system is based on the "Systems Theory" conceptualization. It has a number of variables or entities or factors looked at in totality as system with dimension and drivers embedded within a social science system theory.

The design of this system stipulates a relationship between conflict (dependent variable-impact) and the factors (structural/drivers—independent variables) as a dynamic phenomenon that may change over time. As such, some of the variables or factors in this system include:

economic, political, governance, social, environmental, technological, security and humanitarian.

In this first phase of system development, it was observed that developing an integrated system encompassing all EACWARN dimensions is complex, resource intensive and requires sufficient time and diverse expertise. As such, a phased and modular approach was adopted for the development of the EACWARN integrated system.

Therefore, the Economic dimension (theme) was adopted to be the focus on this initial phase of system development. The choice of the economic dimension as the first building block of the system was not random. The economy is the "mother of conflict vulnerabilities." Despite the positive contribution of the economy in the region, economic challenges can be a "negative force" which can cause conflict and other vulnerabilities.

Phase-One of the integrated EACWARN system development was accomplished and did focus mainly on system design, data collection, aggregation, production of trend analysis, historical country context, dashboards and other features for the economic dimension.

It is now envisaged that, the second phase of this integrated EACWARN system development need to comprehensively deal with integrating all the remaining EACWARN Dimensions (i.e. security, governance, environmental, social-economic and technological) in order to be able to have an automated and generalizable system that monitor, analyses and forecast threats to human security in the region.

3.0 OBJECTIVES

The overall objective of this consultancy service assignment is two-fold: -

i) Reviewing the current EACWARN Integrated System, develop conceptual system designs and establish Natural Language Processing (NLP) and Artificial Intelligence (AI) models that tapes into the power of an unstructured data—text, voice, audio, images, videos—to enhance data analytic insight discovery for early warning and response policy options formulation.

ii) Compilation of both Structural and Dynamic data for all EACWARN Conflict-driver indicators dimensions and make sure that they are properly clustered, scale-weighted and stored into database structures for easier production of conflict trends analysis and effective data visualization of root causes of conflicts in the region.

4.0 SCOPE OF THE CONSULTANCY WORK

The scope of this consultancy assignment is to study the foundational Integrated EAC Early Warning System which is built-on an Open-Source Content Management System (CMS) framework working with a *postgress database*, *python* for the data models and *xml and JavaScript* for the views in order to further develop it and ensure the following: -

i. Compilation of both Structural and Dynamic data for all EACWARN indicators dimension and make sure that they are properly clustered, scale-weighted and stored into the database management system;
ii. Perform data extraction for unstructured big data relevant to peace and security and use graphical analytic models to visualize and produce sensible analysis and early warning reports;

iii. Include both positive factors (for cooperative events) and negative factors (for conflictual events) in generating trends and other analytical products;
iv. Whenever possible use statistical and regression models to predict and forecast the likelihood of peace and security issues in the region;
v. Integration of a digital dashboard for data visualization and reporting on key peace and security issues for the region and national levels.
vi. Integration of field reporting templates for National Early Warning Centers and consolidating related data at the regional level.
vii. the system includes data export facilities into other formats such as MS-Excel, MS-Word and CSV file format;
viii. data integrity and security standards are employed into the system;
ix. Ensure system compatibility with other AU-CEWS and Sister RECs Early Warning Systems and Tools.

5.0 METHODOLOGY

EACWARN and the Consultant will work remotely to develop the system and then the EAC Secretariat will call for a stakeholders' meeting to demonstrate and solicit inputs for integrating them into the final product. The consultant will integrate the stakeholders' inputs before the system is handed-over for deployment.

6.0 EXPECTED OUTCOMES AND DELIVERABLES

The Integrated EACWARN Analytic System is expected to comprise the following features;

i) Country context – historical knowledge of structural profiles and past peace and security incidences;
ii) situational awareness – measured event trends from current media and field reports;
iii) collaborative and comparative assessment – a data driven and analytical-curated dashboard;
iv) Visual analytics – geographic, graphic, tabular, and text-based reports, summaries, and archives to provide current, contextualized risk assessments with actionable prevention and mitigation options; and
v) Early Warning Prediction and Forecasting of Peace and Security issues.

7.0 QUALIFICATIONS AND PROFESSIONAL EXPERIENCE

This Consultancy assignment requires a Social Scientist Expert working together with an ICT expert to achieve the expected deliverables. Qualification and professional requirement include following: -

CRITERIA	PERSONAL PROFILE AND QUALIFICATION
LEAD CONSULTANT	**Academic Qualifications:** Master's degree in Peace and Conflict Studies, Social Science, International Relations, Political Science, or related discipline with substantial training in statistical models for data analysis **Experience:** More than 10 years' experience in developing and implementing programme in conflict resolution, early warning and

	response, gender and youth issues among others. In addition to a strong research background that includes strong analytical and presentation and communication skills. Experience in working with an international governmental organization. Experience working with early warning systems of the African Union and/or Regional Economic Communities /Regional Mechanisms is an added advantage **Language:** Excellent command of English.
ICT EXPERTISE REQUIREMENT	**Academic Qualification:** Bachelor's in computer science/ software engineering/Data Science or Information Technology with proven experience in database design, Programming language Skills – knowledge of statistical programming languages like R, Python, and database query languages like SQL, Hive, Pig is desirable. **Experience:** At least 5 years' experience working on a variety of software development projects. Proficiency in popular coding languages including Python, Java and C++ and frameworks or systems such as AngularJS and Git. Critical thinking and strong problem-solving, analytical and communication skills Machine Learning – good knowledge of machine learning methods like k-Nearest Neighbors, Naive Bayes, SVM, Decision Forests. Experience with Data Visualization Tools like matplotlib, ggplot, d3.js., Tableau that help to visually encode data

8.0 CONSULTANCY DURATION

The Consultant's services shall be granted **Seventy (70)** Man-days of consultancy services to design and develop the Integrated EACWARN System. This assignment is expected to commence in August 2023 and end by 15th December 2023

9.0 CONTRACT

The Consultant will enter into a written contract for the delivery of the above mandate, which includes the duties and responsibilities of the Consultant and the Client (EAC Secretariat) and remuneration among other things.

HOW TO APPLY

The EAC Secretariat now invites eligible consulting firms to submit their expressions of interest (EOI) in providing the services. Interested consultants must provide information indicating that they are qualified to perform the services (company information, legal documents of the

company, description of similar assignments, experience in similar projects, availability of appropriate skills among staff, etc.). Consultants may associate to enhance their chances of qualification

Interested Consulting firms may obtain further information at the address below during office hours 08:00hrs – 16:00hrs (Arusha Local Time). No liability will be accepted for loss or late delivery and late submissions will be rejected

Expressions of Interest (EOI) must be delivered to the address below by **Tuesday 11th July 2023** at **1100hrs** Arusha local time and labelled EAC/EOI/22-23/0070 *"**Consultancy Services to Customize and Integrate the Refined Structural and Dynamic Data into EACWARN System and Tools"*** should be submitted to the address below or by email:***".***

The Secretary General
East African Community (EAC)
P.O. Box 1096
Arusha, TANZANIA
Tel: +255 27 2162 100
Att: Procurement Unit
e-mail address: eacprocurement@eachq.org

For more information or clarification, please contact us on the address above or through e-mail: eacprocurement@eachq.org E-mail submissions will be accepted.