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Software Development Specialist

Project Title:	Tooling for Climate Change Planning and Response in SIDS
Assignment:	Upgrading of three planning and decision-making tools for enhanced disaster risk management, food and water security
Assignment Duration:	March 15, 2021 – June 30, 2021
Location:	Jamaica

1.0 Background

Climate change continues to be one of the single largest threats to development within Small Island Developing States (SIDS). The impacts on climate-sensitive sectors, e.g., agriculture and water, have been devastating, and as such, there has been increasing focus and emphasis on reducing regional vulnerability to climate change. In keeping with this, and as part of its broader commitment to champion regional climate resilience, The University of the West Indies (The UWI) has embarked on several resilience-building initiatives. A key example of this has been the development of software tools to carefully assess, address and build awareness of the impacts of climate change. This work has been largely led by the Department of Physics at the Mona Campus in collaboration with regional and international partners.

Three Tools (Appendix 1) developed by The UWI Mona Campus over the past seven years have been assessed to have significant potential to support evidence-based decision-making within the disaster risk management (DRM) sector generally, and more specifically in the agriculture and water sectors, towards improved climate resilience. The tools are:

- Simple Model for Advection of Storms and Hurricanes (SMASH);
- Agricultural Climate Change Evaluation for Production, Transformation and Resilience Building (ACCEPT) Agri portal; and
- Real Time Monitoring System (RealTMS) for Water Quality.

Although these tools in their current state provide much potential to support climate change adaptation, they need to be upgraded so that they can better guide the various sectors on their approach to appropriately respond to climate risks, whether through mitigation and/or adaptation (including the use of insurance as a risk transfer mechanism).

Under the current Memorandum of Understanding between the CCRIF SPC and The UWI, CCRIF SPC has allocated resources to The UWI to implement the project, '*Tooling for Climate Change Planning and Response in SIDS*'. A key component of the project is the upgrade of the three tools (SMASH, ACCEPT and RealTMS) and capacity building for key stakeholders in their use and application. Furthermore, the project will seek to explore synergies, where appropriate, between the three tools and CCRIF SPC's Web Monitoring Application (WeMap)¹. In light of the foregoing, The UWI is seeking consultancy services to upgrade the tools and build the capacity of key stakeholders in the use and application of the tools. The selected consultant will work closely with the Climate Studies Group Mona (CSGM) in carrying out the assignment.

¹ WeMap comprises four components: (i) Excess Rainfall Monitoring Tool for rain events (including but not limited to cyclonic events); (ii) Tropical Cyclone Monitoring Tool for wind and storm surge events induced by tropical cyclones; (iii) Earthquake Monitoring Tool for seismic events and (iv) Real-Time Forecasting System for tropical cyclones.

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2.0 Objectives

The primary objective of this assignment is to review, assess and effect improvements to the three tools (SMASH, ACCCEPT and RealTMS), while exploring synergies with CCRIF SPC's WeMAP. The consultant will also be required to support capacity building of stakeholders in the use and application of the tools.

3.0 Outcomes

The expected outcomes of this Consultancy are:

- The SMASH, ACCEPT and RealTMS tools are upgraded and expanded, with relevant user manuals made available for stakeholder use.
- 60-75 persons trained in the use of the tools.

4.0 Scope of Works

The consultant will be required to:

- i) Review the SMASH, ACCEPT and RealTMS and submit a synopsis of the review findings, specific recommendations for improvement of the tools (functionality, accessibility, usability) along with an implementation/work plan. This work should also be guided by the Consultant's review of WeMAP.
- ii) Access online datasets to support the addition of at least 3 more storms to SMASH and post process and input this data into SMASH.
- iii) Implement recommended changes, in keeping with approved implementation plan, to interface of the tools.
- iv) Draft/Update User Manuals and submit for review.
- v) Support capacity building of key stakeholders in the use and application of the tools by (i) contributing to development of training materials, as required; (ii) attending stakeholder workshops to capture relevant feedback on the tools; and (iii) delivering presentations/tutorials to stakeholders as specified by the CSGM.
- vi) Make further revisions to tools and manuals in keeping with stakeholder feedback.
- vii) Hand over tools, supporting databases and manuals for final approvals

5.0 Assignment Duration

The assignment will commence on March 15, 2021 and end June 30, 2021.

6.0 Deliverables

The Consultant is expected to submit the deliverables in the table below by the deadlines specified.

Deliverable	Deadline
1. Implementation plan that outlines a synopsis of review findings, recommended changes to tools, rationale and proposed timelines	March 29, 2021
2. First Draft of Updated tools and user manuals for UWI and CCRIF SPC Review	April 29, 2021
3. Second Draft of Updated tools and user manuals for UWI and CCRIF SPC Review	May 21, 2021

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Deliverable	Deadline
4. Materials for the training of stakeholders in the use of the tools	June 1, 2021
5. Delivery of three training sessions (no more than 2 hours each) to stakeholders in use of the tools	June 16-18, 2021
6. Final versions of tools and manuals that incorporate stakeholder feedback	June 28, 2021

7.0 Qualifications and Experience

The Consultant is required to possess:

- B.Sc. Degree or higher in Computer Science, Information Technology, or related disciplines.
- At least 2 years of experience developing and/or enhancing software applications.
- At least 2 years of experience building commercial ready websites using HTML, PHP, Python, CSS, JavaScript and other such tools/languages.
- Extensive knowledge of database design and management.
- Ability to work in and effectively use the Linux/Unix shell or environment.
- Knowledge of Content Management Systems (CMS) and Decision Support System for Agrotechnology Transfer (DSSAT) would be a distinct advantage, but is not a requirement.
- Ability to work with climate data formats (NetCDF, ASCII and GRIB).
- Superior user interface design skills.
- Excellent creative thinking and problem-solving skills.
- Well-developed interpersonal, team-oriented and communication skills.

8.0 Payment Mode

The payment schedule for the assignment has been provided below.

Deliverable	Percentage
1. Implementation plan that outlines recommended changes to tools, rationale and proposed timelines	10%
2. First Draft of Updated tools and user manuals for UWI and CCRIF SPC Review	50%
3. Second Draft of Updated tools and user manuals for UWI and CCRIF SPC Review	
4. Materials for training of stakeholders in use of the tools	20%
5. Delivery of three training sessions (no more than 2 hours each) to stakeholders in use of the tools	
6. Final versions of tools and manuals that incorporate stakeholder feedback	20%

Payment will be made following client review and acceptance of the specified deliverables. The UWI, Mona Campus, reserves the right to pay within 10-15 business days following the receipt of the original signed final invoice. The UWI does not cover third-party bank fees or charges.

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9.0 Submission Instructions

Interested consultants must submit their application, which should include:

- An up-to-date version of the consultant's CV in English Language with a maximum of three pages. The CV should outline consultant experience with similar assignments. Where possible, website links or otherwise to tools or applications developed should be provided.
- A signed financial offer/budget proposal (no more than two pages) covering all the costs of the assignment, including the number of expert days required for the assignment with the respective daily rates. The financial offer should be in USD only.
- A scanned copy of a valid ID e.g., Passport or Driver's Licenses (both sides).

All submissions must be made electronically in PDF format to tannecia.stephenson02@uwimona.edu.jm by Thursday, March 11, 2021 at 11:59 PM. Emails should bear the subject: "Application - Upgrading of the SMASH, ACCEPT and RealTMS Tools".

For further information, please contact **Dr. Tannecia Stephenson** at tannecia.stephenson02@uwimona.edu.jm

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APPENDIX 1: BRIEF DESCRIPTION OF THE 3 TOOLS

Tool	Overview	Partners
<p>Simple Model for Advection of Storms and Hurricanes (SMASH)</p> <p>Accessible at: http://173.230.158.211/SMASH/</p>	<ul style="list-style-type: none"> Provides rainfall and wind speed data over Caribbean islands under varying tracks, speeds and/or categories for a select group of historical hurricanes. Tropical cyclones included: Ivan (2004), Katrina (2005) and Dean (2007). 	Climate Development and Knowledge Network
<p>Agricultural Climate Change Evaluation for Production, Transformation and Resilience Building (ACCEPT) Agri portal</p> <p>Accessible at: http://64.52.23.240/drupal/</p>	<ul style="list-style-type: none"> Online platform allows for customized assessment of yield potential. The portal is based on the Decision Support System for Agro-technology transfer (DSSAT) which runs in the background. Through an interactive geo-referenced map, user-defined crop management information, site weather and soil, site specific yield information can be accessed in graphical and tabular formats 	Inter-American Development Bank
<p>Real Time Monitoring System (RealTMS) -Water Quality*</p>	<ul style="list-style-type: none"> Allows for pseudo-real time monitoring of water quality variables such as Biological Oxygen Demand (BOD), Chemical Oxygen Demand (COD), potential hydrogen (pH), temperature and conductivity. 	To be determined

*Note: RealTMS is still in early prototype phase. The work to be undertaken will focus on improving website for accessing data to be collected. The training workshop will speak to water quality issues for the region and introduce concept of enabling pseudo-real time monitoring. Other tools are at version 1 stage.