

Terms of Reference

Geospatial and ICT Infrastructure Specialist – Epidemiological Surveillance

Background

The Ministry of Health and Wellness seeks to strengthen the capacity for analysis of surveillance data at the national level. This is in recognition of the increased availability of data and need for rational use of data to inform interventions. This includes the use of data generated via routine disease/event based and sentinel surveillance systems, as well as the identification and harnessing of non-traditional data sources. It is apparent in light of recent outbreaks that a critical component of the national surveillance system is the ability to maintain capacity and remain resilient in the face of new public health threats. The system must therefore be able to maintain routine data management functions for diseases such as HIV, while responding to increased demand for useful information synthesized in the face of public health threats.

Recognizing that digital health systems should be person-centric, enable data-driven healthcare and built for research, the MOHW has undertaken initiatives to identify and incorporate a stack of international and open standards for healthcare data. Data quality can only be achieved by adopting standards. Accordingly, the OpenEHR open data specifications are being used for defining the content and structure of the modules of the electronic health record using clinical modelling. Archetypes (“little data” clinical concepts) with their attributes and templates (on- screen forms) consisting of multiple archetypes are the foundation of the clinical modelling approach.

Through a separate engagement, all data will be committed to an OpenEHR compliant Clinical Database Repository which will be a component of a Digital Health Open Platform, the Shared Health Record Open Platform (SHROP). The Class 1 notification form, the case investigation forms and the laboratory form are being deconstructed and redesigned using this approach. The data will be stored in the MOHW’s ArcGIS Enterprise Server which is being established through a separate engagement. An array of dashboards/visualizations, reports and related analytics will be designed for consumption at national, regional and parish levels using ArcGIS application. The use of geospatial technologies is enabled by the Enterprise Agreement being renewed between the Government of Jamaica and global Geographic Information Systems vendor, Environmental Systems Research Institute, Inc, (ESRI). The priority focus within epidemiological surveillance is Class 1 Notifiable conditions surveillance including HIV/AIDS and laboratory data integration whilst harnessing the available geospatial technologies in support of coordinated care and the shared health record.

In view of the above there is a need for digital solutions for health. Recent initiatives involve efforts towards adopting open and international standards to achieve interoperability with an open platform approach. The MOHW recognizes the value of and need to accommodate scientific research from patient data sources in an ethical and secure manner and to use modern tools including geospatial technologies to aid in solving problems and strengthening national surveillance.

The MOHW is seeking to identify a suitable Geospatial and ICT Infrastructure consultant to provide implementation, configuration, management, migration and support for the MOHW’s ArcGIS Enterprise server and portal.

Objective

To implementation, configuration, management, migration, maintenance and support services for the MOHW's ArcGIS Enterprise server and portal infrastructure including the geodatabase as well as an array of maps and other related resources with a functional GIS IT platform from which an array of GIS solutions deployed throughout the health sector achieved.

Scope of Work

1. Configure, implement, manage, maintain and support the GIS infrastructure and resources to enable a functional MOHW ArcGIS Enterprise Server and portal that supports MOHW Priority programmes including the Class 1 Notifiable Events (such as HIV), Environmental Health and Disaster Risk Management.
2. Manage the migration of the MOHW's ArcGIS resources to the ArcGIS Enterprise Server.
3. Configure, implement, maintain and support APIs for data integration for interoperability with the national Electronic Health Record system and the SHROP in collaboration with Digital Health Engineers.
4. Integrate the Jamaica Parcel data set as a resource into the infrastructure of the MOHW's Enterprise ArcGIS platform through collaboration with GOJ experts, HealthGIS consultant and GIS Analyst of the MOHW.
5. Provide reports, graphics and presentations on all technical activities within scope of the consultation.
6. Develop documentation of all technical activities and procedures as relevant.
7. Prepare a report on the GIS infrastructure management skills needs of the MOHW and provide training to relevant manpower to address these gaps.
8. Collaborate with other experts the MOHW has engaged including Shared Health Record Open Platform consulting firm, HealthGIS consultant, Clinical Informatics Officers and Health Informatics Engineers.
9. Collaborate with the National Spatial Data Management Branch of the Government of Jamaica on geospatial technologies as needed.
10. Collaborate with ICT experts responsible for managing the Ministry's ICT infrastructure including the data centre hub at eGov Jamaica Limited.

Education

- A Bachelor of Science degree or post-secondary training or equivalent experience of a minimum of seven (7) years in computer science, information technology, information science, GIS, or a related field.
- Post Secondary training in geospatial technologies and in particular ArcGIS applications.
- Project Management training or certification.

Experience

- Minimum of 4 years experience in enterprise level geospatial infrastructure management.
- Proficiency in ArcGIS applications.
- Experience working with other, non-spatial, database systems.
- Minimum of five (5) years' experience in project management.
- Experience using Python or another common GIS scripting language.

Technical Competencies

- Competency in the configuration, use and management of ESRI suite of software – ArcGIS Desktop, ArcGIS Online, ArcGIS mobile and web based applications, ArcSDE, ArcGIS Server and related RDBMS (Oracle, SQL Server, Informix).
- Knowledge and competency in open source GIS software options (Quantum GIS, Map Window, DIVA GIS etc).
- Knowledge of GIS web publishing options.
- ArcGIS Enterprise server and portal infrastructure support and management including geodatabase.
- Software development (including Python, JavaScript)
- SQL database design and management
- Experience with managing Application Programming Interfaces (APIs)
- SQL server installation, migration and management.
- Linux Operating Systems installation and management

Core Competencies

- Confidentiality.
- High integrity.
- Excellent time management skills.
- Ability to communicate and work in teams.
- Ability to work without close supervision.
- Good spoken and written English.

Deliverables

1. Product 1 – Inception Report and detailed work plan.
2. Product 2 – ArcGIS Enterprise infrastructure established, including resources and maintenance plan. If not established at the GOJ's Data centre, the installation is migrated to be hosted at that location. Monthly high level summary reports on the status of the geospatial infrastructure including downtime, upgrades, challenges and geospatial resources produced. **Progress report #1 on the deliverable.**
3. Product 3 – ArcGIS Enterprise infrastructure established, including resources and maintenance plan. If not established at the GOJ's Data centre, the installation is migrated to be hosted at that location. Monthly high level summary reports on the status of the geospatial infrastructure including downtime, upgrades, challenges and geospatial resources produced. **Progress report #2 on the deliverable.**

4. Product 4 – ArcGIS Enterprise infrastructure established, including resources and maintenance plan. If not established at the GOJ’s Data centre, the installation is migrated to be hosted at that location. Monthly high level summary reports on the status of the geospatial infrastructure including downtime, upgrades, challenges and geospatial resources produced. **Progress report #3 on the deliverable.**
5. Product 5 – GIS infrastructure training Plan developed and executed for MOHW personnel. **Detailed report on the completed activity.**
6. Product 6 – Final Project report including recommendations for sustainability and growth of ArcGIS Enterprise platform for the MOHW and all technical documentation produced. **Final report on the Product PLUS final reports on Products 2, 3 and 4.**

Payment Milestones

Milestone	Percentage of contract amount	Timeline
Product 1	10% of contract sum	Three weeks after contract is signed
Product 2	20% of contract sum	Four months after contract is signed
Product 3	20% of contract sum	Six months after contract is signed
Product 4	20% of contract sum	Eight months after contract is signed
Product 5	15% of contract sum	Ten months after contract is signed
Product 6	15% of contract sum	Twelve months after contract is signed

Reporting

The consultant will collaborate and consult with other experts and consultants at the MOHW and contracted in executing the deliverables. The consultant will report to the National Epidemiologist or any other officer as designated.

Duration

The duration of the contract will be twelve (12) months commencing June 2023.

Proposals will be evaluated on the basis of :

Evaluation Criteria*	Max. Score	Actual Score
A Bachelor of Science degree or post-secondary training or equivalent experience of at least 7 years in computer science, information technology, information science, geospatial technologies, or a related field.	20	
Post Secondary training in geospatial technologies and in particular ArcGIS applications.	10	
Minimum of 4 years experience in enterprise level geospatial infrastructure management.	30	
Software development skills (Python, JavaScript)	20	
Minimum of five (5) years' experience in ICT related project management.	20	
Total Score	100	

Candidate must attain a minimum mark of 70 to be considered

***Key: 1 year of experience = 10 points; persons with 3 years or more experience should get the maximum score.**