

Scope of work for hiring of Technology consultant for MSTRIPES

Background:

MSTRIPES is used by more than 4000 frontline forest staff in India, and is mandated for continual application in Tiger Reserves. The program was initiated through a collaboration between WII, NTCA and state forest departments. Since its inception in 2010, the program witnessed change from desktop based application to mobile based apps, with presently working on three open-access mobile apps, desktop software and a central server. With the extensive application and intensive usage by the forest staff, MSTRIPES has become the largest known and the only information network on wildlife protection parameters and ecological monitoring for the protected areas in India.

Programming challenges:

While the current programming platform and database architecture is supporting this large data, it will soon exhaust the limits of the platforms used. Due to the variety of information saved in form of photographic evidences that are geotagged and time stamped, the data quantity is accruing every day. On an average, a park generates a patrol data of 10 GB per month and 10 GB of ecological data per season, thereby generating a total of ~10 TB data for 50 tiger reserves. This is paired with additional Nation Tiger Estimation Project (NTEP) Phase 1 data of ~50 TB, and yearly phase III data of ~400 TB. The open source platform used in the current version of software can take huge time to process the multitudes of photographic files generated across the years and reduce its efficiency. Hence, big data mining and machine learning is needed to progress towards easy and timely reporting of the information. This requires the platform to change from the current .NET to faster environment (e.g. PostgreSQL, MongoDB, etc.). The entire process becomes challenging when faced with a compulsion of open-source tools and low-end hardware available in many forest divisions. Hence, utilizing cloud space for fast processing and reporting the occurrence of wildlife crimes, patrol paths, animal occurrence is crucial of its continual application.

Proposed advancement in programming:

MSTRIPES currently has more than 100 TB data generated from different Tiger Reserves that is available in the current .NET framework. While migrating from the current programming environment to advance environment, it is essential 1) To make a new, fast, smart and user

friendly program 2) Migrate the old MSTRIPES and NTEP data into the new program 3) Maintain the new program, data flux, answer the queries related to program and update it with changing android versions and google policies (Table 1).

Table 1: Differences in the existing and proposed programming environments and database

Components	Existing	Proposed
App data	GPX, PNG, Spatiallite	GPX, PNG, Spatiallite
Desktop spatial data	Shapefiles	PostGIS
Desktop non-spatial data	SQL Server	PostgreSQL
Spatial analysis	SAGA	PostgreSQL/ PostGIS
Data input	WindowsForum	Java SWT
Visualization	Map WinGIS	Java SWT

For achieving these objectives, the project requires technology consultant who can develop the new faster database architecture, user friendly GUIs, mobile apps with changing android versions and Google policies. The project needs technology consultant who will facilitate the migration of old data to the new program and check the efficacy and speed on processing big data in the new programming environment. Lastly, it will be necessary that on production of the new program and migrating old data, the new programs, applications, database, GUI, data flux and user queries will have to be maintained and addressed. This also requires a Technology consultant who is well versed with the old as well as new programming ecosystem and diversity of android environments and hardware.