Purpose

The World Bank Group's capacity to collect, manage, analyze and distribute geospatial data is coordinated by the Geospatial Operational Support Team (GOST). GOST is looking for a qualified candidate to join the team as a Geospatial Programmer. This role requires a person with a combination of skills in geography, GIS, Remote Sensing, and spatial thinking/analysis, all anchored in a strong background in python programming.

Background

Poverty, investment, opportunity, disaster, construction, trade, and development: ultimately everything happens somewhere. Therefore, geography is a factor in decision making, either explicitly, or implicitly. In the 2009 World Development Report, *Reshaping Economic Geography,* and in many papers, policy notes, and research since, the World Bank highlights the role of geography in development.

Urban planners consider geography when analyzing land use and infrastructure plans. Crop insurance companies take it into account when pricing policies and assessing claims. Emergency management agencies must know it and constantly update their knowledge when assessing the aftermath of a disaster and in locating victims. Investors choosing a place to invest compare the opportunities afforded by one place over another, and what it will mean for their competitive advantage. They need to know how the people, processes and policies in one place translate to productivity and costs. Each of these groups considers how local context and trends in spatial patterns inform their decision making. The World Bank Group's (WBG) also uses spatial analysis and insight to diagnose the situation, establish clear baselines and monitor interventions over time. GOST supports teams around the globe, working in all these areas.

Tasks

The consultant is expected, from day one, to be able to assist in the following areas:

- **Code execution and enhancement**: Understand, execute, debug, and expand upon a series of python tools for regular geospatial analysis. While knowledge of other languages is an asset, the principal focus will be on developing and executing a series of existing Python scripts and Jupyter notebooks – see the tools in the following github repository
- **Data Analysis**: Analyze vector and raster data through python. Must be able to implement, debug, and improve upon a series of geospatial tools leveraging several geospatial python libraries; most notably *geopandas* and *rasterio*.
- **Network analysis**: familiarity with OpenStreetMap data and road network modelling using graph theory (networkx, igraph, osmnx) a plus
- **Data Visualization**: Prepare maps for disseminating analytical results using ArcGIS Desktop and/or QGIS. Publication-quality cartographic skills are a plus.
- **Imagery Analysis**: Manage, process, classify and derive statistics from diverse types of satellite imagery including high resolution (Ikonos, Quickbird, Worldview) and medium resolution (SPOT4-6, Landsat).

Deliverables

The consultant will be responsible for:

1. Implementing a series of existing tools developed by the GOST team, such as:
    a. Landcover classification using spatial features
    b. Network analysis based on GOSTNets
    c. Other data munging tasks as directed by the Senior Geographer
2. Providing analytical and cartographic support to various operational projects as needed
3. Customizing results from the above tools for delivering to partners and clients
4. Documenting workflows in GitHub and other collaboration tools.
5. Communicating the details of their work in plain English to other expert and non-expert users.

Selection criteria

1. Expert knowledge of Python, specifically through Anaconda and Jupyter; other geospatial scripting languages a bonus (R, Javascript)
2. Demonstrated curiosity, self-directed learning, and persistence in problem-solving.
3. Public evidence of achievement with the relevant skills is required.
4. Working knowledge of Github
5. Working knowledge of OpenStreetMap
6. Proficiency in desktop GIS (most analytical work will focus on Python, but desktop GIS skills are important for disseminating results and quality control).
7. Experience working independently with minimal supervision
8. Fluency in a second language, such as French, Spanish, Portuguese or Arabic, is a plus.
9. An advanced degree in geography, economics, computer science or other field is a plus, but not required.

This initial assignment will have an evaluation period of up to 50 days, starting April 15th, 2019 and ending June 30, 2019. A subsequent assignment of longer duration is subject to performance during the evaluation period and available funds. Successful applicants will work from the World Bank Group offices in Washington, DC. This position is not eligible for remote-based work or telecommuting.

Applications are due by April 5th, 2019. Applicants are encouraged to submit their resume or CV, and links to code samples (preferably through Github links), mapping samples, and other relevant material to GOST@worldbank.org.