

Terms of Reference (TORs)

Position Title:	Assistant Manager - GIS Developer / Modeling Expert
No of Position(s):	Two (02)
Location:	Islamabad (occasional visits to field)
Reports to:	NatCat Team Lead

Scope of Work:

The Assistant Manager GIS Developer / Modelling Expert will work closely with the NatCat Data Center team to lead the design, development, optimization and deployment of full-stack WebGIS applications, probabilistic risk models and spatial analytics platforms. The role encompasses end-to-end management of geospatial software engineering, automated data pipelines, remote sensing analysis, AI/ML integrations and interactive risk dashboards to support disaster risk financing, climate resilience and strategic infrastructure planning.

Key Responsibilities

- a) Design, develop, profile and optimize front-end and back-end WebGIS applications, interactive dashboards, mobile apps and spatial analytics tools using modern frameworks (React, MapLibre, PostGIS, Node.js, Python/FastAPI).
- b) Formulate, script and execute numerical and probabilistic hazard models, scenario simulations and exposure/vulnerability analytics for natural catastrophes (e.g., floods, GLOFs, landslides, seismic events, smog).
- c) Automate the ETL, ingestion, cloud-optimized storage (COG, vector tiles) and integration of multi-source spatial, remote sensing, UAV/LiDAR, climate and real-time datasets.
- d) Build, secure and maintain REST/OpenAPI web services, custom widgets and role-based data access protocols (JWT/OAuth2) to integrate NatCat platforms with government, insurance and international stakeholder portals.
- e) Manage GeoServer deployments, cloud computing resources, spatial database indexing, query optimization and containerization (Docker) to ensure high-performance processing of large-scale datasets.
- f) Translate complex quantitative risk outputs and spatial assessments into technical reports, policy briefs, "NO-GO zone" framework recommendations and interactive presentations for executive management and institutional partners.
- g) Support applied research initiatives, contribute to technical documentation and deliver training workshops on advanced geospatial techniques and natural hazard modeling.

Qualification and Experience

- a) **Education:** Bachelor's or Master's degree (or PhD) in Geoinformatics, GIS & Remote Sensing, Computer Science, Geology/Geosciences, Software Engineering, or a related discipline.

- b) **Experience:** a) Minimum 04 years of relevant experience in full-stack WebGIS development, spatial data engineering, hazard modeling, numerical simulations, or remote sensing analytics. b) Direct experience in disaster risk modeling, public/development sector platforms, cloud geospatial infrastructures, or multi-hazard risk assessment frameworks will be an advantage.

Required Skills

- a) Proficiency in JavaScript/TypeScript, Python, C#/SQL, React, Node.js/FastAPI, PostGIS, MapLibre/Mapbox GL JS, GeoServer and Esri/QGIS suites.
- b) Proficiency in numerical/probabilistic hazard modeling tools (e.g., HEC-RAS, RAMMS, Flow-R, Google Earth Engine, ArcPy/GeoPandas) and AI/ML data analysis techniques.
- c) Strong capability in PostGIS query tuning, spatial indexing, cloud storage (S3/MinIO), vector tiling and API development.
- d) Excellent technical drafting, analytical writing, data visualization and presentation skills to convey complex spatial data to non-technical stakeholders.
- e) High level of integrity, confidentiality, time management and ability to work collaboratively in an inclusive, high-impact environment.