

Terms of Reference

Web-based Application for Implementation of Mass-Level Partitioning results

Background: The Government of Punjab intends to conduct a mass-level partitioning exercise across the entire province. This involves manual partitioning on paper maps by the revenue staff and subsequent digital updates to GIS shapefiles/datasets. To ensure efficiency and uniformity, a qualified firm is required to develop a web-based application and manage the GIS data integration for this exercise.

Scope of Work:

1. Development of a Web-Based GIS Application:

- Create an application to store, manage, and visualize GIS data of Khasra mapping.
- Ensure compatibility with existing GIS (baseline) datasets and seamless updation of manual partitioning outcomes provided by the revenue staff, ensuring data accuracy and consistency during the digital transformation process.
- The updation process to be developed through a workflow where level one user makes updates and level two user approves / responds back on observations.
- Provide minimum basic functionality, dynamically within the system:
 - Filters by area or user/role
 - Draw tool, capability of adding new record, amending existing records, merging, splitting operations etc.
 - Updating attributes
 - Measuring tool
 - User/role-based progress review
 - Tracking of updated record by user/role/record
 - Layer on/off, Zoom in/out, scale bar, coordinates information, opacity option
 - Note/remarks
 - Imagery based map



- The base datasets are structured within general GIS thematic layers, including points, lines, and polygons. Ensure that all thematic layers are accurately updated during split, merge or other applied related operations.
- The application must ensure accuracy in both total and individual parcel areas during split, merge, or other operations.
- Enable user role-based task assignments for specific areas (e.g., Mouzas).
- The developed application must incorporate a backtracking feature to maintain a history of record updates through a separate table/layer.
- The application should also be capable of uploading scanned files of the manual partitioning cases. These scanned files should be available side-by-side with GIS data when filtering a particular Mouza, providing an integrated view of both datasets.
- Ensure the application supports at least 250 simultaneous users without performance degradation.
- Monitoring dashboard on landing pages for different territories and users.
- Mention Tools & Technologies, architecture diagram and technical proposal.
- Integration with CLRMIS- This application will fetch Taqseem data from LRMIS for certain territories and will land in inbox and make available for actions. Once an action has been taken, that must be flagged against the specific mutation and parcel on both sides so that data may be fetched on the bases of these flags and performance may be monitored.

2. Training and Support:

- The firm will be responsible for deploying the application on the PULSE servers.
- The firm will be responsible for training the staff and other relevant stakeholders on the efficient use of the developed application. This includes conducting hands-on training sessions and providing comprehensive training materials.
- The firm will also be responsible for maintaining the application for at least two years post-deployment. This includes addressing maintenance issues, resolving bugs, and managing other operational requirements to ensure the application remains functional and efficient.
- The firm will hand over the valid and latest source code of the application to PULSE upon deployment. Additionally, the firm will ensure that any changes applied to the application are submitted with the latest source code updates. Further firm cannot use this source code to deliver similar products to any

other organization. This process will be managed through proper repositories and versioning systems.

Deliverables:

1. Web-Based Application:

- Fully functional, tested, and deployed application meeting the outlined requirements.
- User manuals and technical documentation.
- Deployment document mentioning all the steps and dependencies to deploy this application.

2. Training and Support:

- Comprehensive training materials and records of training sessions.
- Helpdesk support logs.

Timelines:

The firm is expected to complete the project within **5 months** from the date of award, adhering to the following milestones:

1. Inception report and work plan: **1 week**
2. Application development: **12 weeks**
3. Testing: **1 weeks**
4. GIS data integration: **2 weeks**
5. Deployment and training: **2 weeks**

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Payment Terms:

- 1. Project plan (5%):** Submission of project plan and inception report
- 2. Development and deployment (40%):** Development of application and its deployment on PULSE server
- 3. Integration of data (10%):** Integration of baseline GIS datasets
- 4. Staff Training (5%):** Integration of baseline GIS datasets
- 5. Final Payment (40%):** Upon completion of a two-month post-deployment evaluation and submission of the final source code, including repository and versioning records.
- 6. Maintenance Contract Payments:**
 - Maintenance contract amount is to be mentioned separately
 - Payments for the two-year maintenance contract will be made on a quarterly basis upon submission of maintenance reports detailing the updates, changes, and bug resolutions carried out during the period.
 - Additionally, the firm will be required to submit the latest source code reflecting any changes or bug fixes during each quarter, ensuring proper repository management and versioning.

Qualifications and Experience of the Firm:

1. Demonstrated minimum five (05) experience in GIS data management and web application development.
2. Proven track record of handling large-scale GIS projects involving multiple stakeholders.
3. Adequate human and technical resources to deploy and support the project across all districts simultaneously.
4. Familiarity with land records and revenue systems in Pakistan, particularly Punjab, is preferred.

