

**TERMS OF REFERENCE**  
**PUNJAB URBAN LAND SYSTEMS ENHANCEMENT (PULSE)**  
**PROJECT**  
**ISLAMIC REPUBLIC OF PAKISTAN**  
**PUNJAB PROVINCE**

**HIRING OF AN INDIVIDUAL CONSULTANT AS**  
**.NET FULL STACK DEVELOPER**

**OCTOBER 2024**

**PROJECT MANAGEMENT UNIT (PMU)**  
**PUNJAB URBAN LAND SYSTEMS**  
**ENHANCEMENT (PULSE) PROJECT**

**Board of Revenue (BOR)**  
**Government of the Punjab**

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## **1. BACKGROUND INFORMATION**

The Board of Revenue (BOR), Punjab with the technical & financial support of the World Bank is implementing the Punjab Urban Land System Enhancement (PULSE) project for the establishment of a unified central database of all types of urban properties (societies/authorities/development agencies), rights and charges. The proposed system will not merely be a GIS & Parcel based one but has all possible functionalities to serve as a robust platform for the creation of ‘Spatial Data Infrastructure’ (SDI), an inevitable need of the future. The project will provide a complete and transparent record of title in land and immovable property. Digitization of remaining parts of rural land, digitization of Katchi Abadis (KAs) record, and automation of sub-registrar record rooms are also part of the project.

### **1.1. Beneficiary Country and Province**

Islamic Republic of Pakistan and Punjab Province.

### **1.2. Contracting Authority**

Under the Punjab Urban Land Systems Enhancement (PULSE) Project and in agreement with the World Bank, the Project Management Unit (PMU), and the Board of Revenue (BOR), the Government of Punjab is the contracting authority.

## **2. OBJECTIVE**

One of the core objectives of the PMU is to provide analytical services and value-added information and solutions to the Board of Revenue (BOR) in Punjab and other users such as the World Bank, donor organizations, etc. in a manner that broadens and strengthens the digitization of land records on Board of Revenue (BOR) and maximizes the effectiveness of the Punjab Urban Land Systems Enhancement (PULSE) Project. The .Net Full Stack Developer will provide support to the PMU team for one of the major IT interventions to establish a modern Land Information System.

## **3. SCOPE OF WORK**

- **Development and Maintenance:** Design, develop, test, and maintain scalable and high-performance web applications and APIs using .NET Core/.NET MVC Framework.
- **Front-End Development:** Build responsive and interactive user interfaces using HTML/HTML5, CSS/CSS3, JavaScript, and popular frameworks/libraries like Angular, React, or Vue.js.
- **Back-End Development:** Implement server-side logic using C#, .NET Core, ASP.NET MVC, Web API, Entity Framework, LINQ, Entity Framework, and .NET technologies to create robust, scalable APIs and business logic.
- **Database Design and Management:** Design, develop, and maintain relational databases (Microsoft SQL Server) and write complex T-SQL queries, stored procedures, and database optimization.
- **Cloud Integration:** Deploy and manage web applications on cloud platforms such as Microsoft Azure or AWS or other cloud platforms, and ensure proper scalability, security, and performance tuning.

- API Integration: Develop and integrate third-party APIs and web services (RESTful, SOAP) to enhance application functionality.
- Security: Implement industry best practices to ensure data security and application integrity, including OWASP guidelines and secure coding practices.
- Unit Testing & Debugging: Develop and maintain unit tests for code reliability and perform debugging to ensure smooth operation.
- Version Control: Work with version control systems such as Git/GitHub/Bitbucket, or similar for collaborative code development, including branching, merging, and pull requests.

#### **4. DELIVERABLES**

The consultant is expected to deliver the following:

- Fully functional web applications and APIs as per the project requirements.
- Documentation of code, architecture, and user manuals.
- Completed and tested code, ready for deployment in production.
- Bug fixes and application performance optimization.
- Ongoing support and maintenance as needed, including patch updates and upgrades.

#### **5. QUALIFICATION & EXPERIENCE**

- Minimum 16 years of education in Computer Science / Information Technology or equivalent education from a HEC recognized University / Institute
- At least four (04) years of experience as a Microsoft .Net Full Stack Developer
- Demonstrated experience in building complex web applications.
- Strong problem-solving skills and the ability to work independently and in teams.
- Experience working in Agile development environments.

##### **5.1 Technical Skills:**

- Proficiency in .NET Core/.NET Framework for building scalable web applications.
- Expertise in front-end technologies: HTML5, CSS3, JavaScript, and frameworks like React, Angular, or Vue.js.
- Strong understanding of C# for back-end development and server-side business logic.
- Experience with SQL Server, writing queries, stored procedures, and database performance tuning.
- Familiarity with RESTful API development and third-party API integration.
- Hands-on experience with cloud platforms like Microsoft Azure or AWS.
- Understanding DevOps practices, including continuous integration (CI) and deployment (CD).
- Knowledge of Agile methodology for project management and development cycles.

##### **5.2 Performance Evaluation:**

The consultant's performance will be evaluated based on the following criteria:

- Quality and functionality of the deliverables by the requirements.
- Adherence to project tasks, timelines, and budget.
- Communication and collaboration with cross-functional teams.

## **6. TYPE OF CONTRACT**

Time-Based Contract.

## **7. DURATION OF CONTRACT**

The duration of the contract is for a period of one (01) year (extendable).

## **8. SELECTION PROCEDURE**

The selection will be made under Section VII, paragraph 7.36 on Open Competitive Selection of Individual Consultants of the World Bank Procurement Regulations for IPF Borrowers”, dated November 2020. The attention of interested Consultants is drawn to Section III, paragraphs, 3.14, 3.16, and 3.17 of the World Bank’s “Procurement Regulations for IPF Borrowers” dated November 2020 (“Procurement Regulations”), setting forth the World Bank’s policy on conflict of interest.

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