****

**COMSATS University Islamabad (CUI)**

Project Proposal  
(SCOPE DOCUMENT)

for

**Smart Construction Manager**  
Version 1.0

***By***

**Talha Ejaz CIIT/SP18-BCS-161/ISB**

**Waleed Butt CIIT/SP18-BCS-170/ISB**

***Supervisor*Dr. Ashfaq Hussain Farooqi**

*Bachelor of Science in Computer Science (2017-2021)*

**SCOPE DOCUMENT REVSION HISTORY**

|  |  |  |
| --- | --- | --- |
| **No.** | **Comment** | **Action** |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |

**Supervisor Signature:**

**Date:**

**Table of Contents**

**1 Introduction ii**

**2 Problem Statement ii**

**3 Problem Solution for the Proposed System ii**

**4 Advantages/Benefits of Proposed System iii**

**5 Project Scope iv**

**6 Modules iv**

**6.1 Module 1: Location Optimization iv**

**6.2 Module 2: Buy and Sell iv**

**6.3 Module 3: Design Approval v**

**6.4 Module 4: Construction Supervision v**

**6.5 Module 5: Utility Services v**

**6.6 Module 6: Requests Management vi**

**7 System Limitations/Constraints vi**

**8 Software Process Methodology vi**

**8.1 Planning vi**

**8.2 Requirement Analysis vi**

**8.3 Design vi**

**8.4 Coding vi**

**8.5 Testing vii**

**8.6 Documentation vii**

**9 Tools and Technologies vii**

**10 Project Stakeholders and Roles viii**

**11 Team Members Individual Tasks/Work Division viii**

**12 Data Gathering Approach viii**

**13 Concepts viii**

**14 Gantt Chart ix**

**15 Mockups ix**

**16 Conclusion x**

**17 References x**

**18 Plagiarism Report x**

# 

**Project Category:**

* **B-**Web Application/Web Application based Information System
* **E-** Smartphone Application

**Abstract**

To develop a One Window Solution for the construction process of housing in the state and keeping in view the incumbent government’s housing and construction policies & packages to minimize the time & effort for the construction process and ensure transparency. This solution also addresses unexpected turn of events in the fiscal policies caused by the global pandemic (COVID-19). It also ensures the safety of people regarding the SOPs. Smart Construction Manager is an all-rounder application addressing basic house construction needs.

# Introduction

A two-person team aspiring to develop a web and mobile based system to ease the process of construction. The basic idea is to provide the owner of the property with the ease of access to interact with construction companies and government bodies (CDA, WAPDA and Sui Gas etc.).

# Problem Statement

The process of construction is very lengthy. First, we must submit the approval of land to development authorities. Which right now is done by going to their offices and applying by hand. You must wait for approval, which takes weeks. You can start the construction procedure afterwards, but it is hard to find the labor for construction. Then you wait for months to get the government services like Electricity connections and Sui Gas connections.

# Problem Solution for the Proposed System

First actor will end users. Here user will sign up and then act as a buyer or seller. The buyer will search for sellers and hire them for different purposes. Seller can be anyone and provide any service related to construction like Contractor, Welder, Carpenter, Electrician etc. (Similar to OLX)

The second actor will be development authorities. End user will send the blueprint to the respective Development Authority of their area (like CDA in Islamabad). This blueprint will be received by development authorities in their portal which will be accessible by their workers only. The authorities will validate the blueprint and respond to end user confirming the approval for construction.

Third actor will be government bodies. When the site is approved for construction. The end user now can request for Electricity connections, Gas connections from WAPDA and Sui Gas, respectively. This will follow the same procedure as above. The end user will send the application to the government institutions. The government institutions will have their own portal to manage requests. They will respond to end user whether the end user can get the connection or not.

**Related System Analysis/Literature Review**

**Table 1: Related System Analysis with Targeted Project Solution.**

|  |  |  |
| --- | --- | --- |
| **Application Name** | **Weakness** | **Proposed Project Solution** |
| * OLX | * Does not deal with administrative features. Dedicated for items buy and sell. (OLX, n.d.) | * Exclusive for services related to construction. |
| * Fiverr | * Dedicated for freelancers and remote work. * Search by location not possible | * Look for workers within your area * Hire professionals. |
| * LDA (Lahore Development Authority) Insaaf Portal | * Limited for Lahore City | * Scalable to multiple development authorities |

# Advantages/Benefits of Proposed System

* Ease in Applying for Land Approval
* Finding Construction Companies
* Contractors and Labors
* Ease in construction process
* Easily Apply for Daily Life Services (Electricity, Sui Gas etc.)
* Easier inter-process communication.
* Updates on Fingertips regarding Application Process.
* Hire Professionals for home décor.
* Ensure transparency
* Time Efficient

# Project Scope

System will provide a one window application and act as agent of communication between construction companies, user, and government bodies. The user will provide the required information to the system the system will authenticate the user. User will submit request to respective organization (depending upon the location of project) & The construction company. The authorities and the industries will accept the request. Design and Layout will be sent by user. After review authorities and industries will generate the response.

# Modules

## Module 1: Location Optimization

* Access User’s Location: The feature will provide user with an interface to select their location.
* Optimized View: The feature will provide the user with an optimized view of his vicinity
* Show Services: The user will be provided with an interface to view Services and Jobs (locally available) within the area.

## Module 2: Buy and Sell

* Login/signup: Users will set up their accounts, providing necessary information. Once the sign up is complete the user can login.
* Post a Job / Service: A user who is acting as a seller will be able to add gigs and services to his account depending upon his areas of expertise, he will set up a gig. The Buyer will be able to view the gig and interact with the seller accordingly.
* Search Job / Services: A user acting as a buyer will be able to search for a job or service and will be provided with an interface to view the services available.
* Hire / Apply: The buyer will be able to hire a seller depending upon the requirement. Incase of a service user must apply and fill in basic credentials required for the concerned application.
* Cancel Deal: The buyer will be given the option to cancel a deal with the seller, depending upon the initial contract and signed affidavits the buyer is obliged to pay the basic capital for the service.
* Chat box: A chat box feature will be implemented in the Smart Construction Manager to ensure smooth communication between the patron and the client.
* Review (Ratings): After service delivery the user (buyer) will be able to review the service based upon the work delivered. User will rate the patron based upon a convention, from 5 star to being the highest and 1 to lowest. The ratings will add to the Patron’s account and level him up in the search results.

## Module 3: Design Approval

* Apply for Design Approval: The user can apply for the approval of basic Map/ Design of the property from the respective Development Authority.
* Send Requirements: The user must send following requirements for the approval:
* Exact Plot Location: The physical address of the construction site.
* Blueprint: the blueprint document containing the whole architecture of the site.
* Get Updates: The user will be constantly updated about the status of their application via email and text about the design approval by the Development Authority.
* Approval from Development Authorities: After the approval of document from different departments (Planning, Finance, Operations etc.) the user will be informed about the final status of his request i.e. “Accepted” or “Rejected”.

## Module 4: Construction Supervision

* Receive intimation from Development Authorities: The supervisory officer belonging to any cadre will be delivered the intimations Letter issued to him.
* Site inspection at different stages: The user will get an update on an upcoming site inspection of the property.
* Keep record of inspection: The app will keep the record of all the site visits by the officer, including date and time of inspection (TOI).
* Discrepancy Report: Incase the officer makes an observation at the site; a discrepancy report update will be delivered to the user.

## Module 5: Utility Services

* Send Request for Services Connection: The user will be given the option to generate a request for the utility service. He will be issued a ticket against application.
* Send Requirements: The basic requirements needed for the application of services include:
* Location: The address of the site.
* Land Approval Certificate: The Land approval certificate by the concerned housing society/ Sector.
* Bill of Nearest Home: The copy of a bill from the neighboring houses, to ensure the availability of service in area.
* Urgent/Normal: To generate an application on priority basis or normal.
* Demand Notice (Sui Gas Only): Demand Notice for the supply of Gas for the property.
* Get Updates: The user will be constantly updated about the status of their application via email and text about the status of the pending service.
* Approval: The approval status of the request will be delivered to user via text and email.

## Module 6: Requests Management

* Receive Requests from User: This Feature will receive the requests generated from the user.
* Send Requestee Update: This Feature will send the requests generated by the user to the concerned recipient.
* Approve/Disapprove and Terminate Request: This Feature will allow user (Authorities & Services) to approve/ disapprove a request. In addition, a termination of request feature during the approval process will be included in this feature.
* Search requests: Users (Patron & Client) will be able to search the generated requests.
* Delete Requests: Users (Patron & Client) will be able to delete the generated requests.
* Update Request: Users (Patron & Client) will be able to update the generated requests.

# System Limitations/Constraints

* Attested documents cannot be submitted which are essential for the process.
* Requires internet connection for buy and sell.
* Locally available only.

# Software Process Methodology

We will be following Modified Waterfall process methodology. Modified Waterfall enables the phases to overlap when needed.

## Planning

Basic goals and objectives to be achieved through the project are defined in this phase.

## Requirement Analysis

We gather the requirement through questionaries and forms. Then we consult our supervisor regarding the requirement. If he approves it, we then move to designing.

## Design

We design the frontend using graphical tools like Adobe Photoshop. Then according to our frontend, we will design flow of backend using Microsoft Visio.

## Coding

We will implement our design using various Programming languages like JavaScript and Java. And multiple techniques like Object Oriented Programming.

## Testing

Testing will be taken out in different stages. We will test the major functionalities of each module. Then we will improve our minor functional requirements as we go. We will provide test cases against each use case to ensure smooth working of Smart Construction Manager.

## Documentation

We will pen down everything related to our project using Microsoft Word. And create a beautiful presentation along with it.

# Tools and Technologies

Table 2: Tools and Technologies for the Targeted Project.

|  |  |  |  |
| --- | --- | --- | --- |
| **Tools**  **And**  **Technologies** | **Tools** | **Version** | **Rationale** |
| MS Visual Studio | 2019 | IDE |
| Adobe Photoshop | CSC 6 | Design Work |
| MS Word | 2019 | Documentation |
| MS Power Point | 2019 | Presentation |
| IntelliJ Idea | 2020 | IDE |
| PyCharm | 2020 | IDE |
| Android Studio | 2020 | IDE |
| Eclipse | 2020 | IDE |
| Pencil | 2.0.5 | Mockups Creation |
| **Technology** | **Version** | **Rationale** |
| Java | 11.0 | Programming language |
| SQL | 2013 | Query Language |
| Html | 5 | Web Development |
| CSS | 3 | Styling (Cascade Stylesheet) |
| JavaScript | 2019 | Programming Language |
| Bootstrap | 4 | Framework |
| jQuery | 3.1.5 | JS Library |
| Node.js | 12.0 | JS Library |
| React | 17 | JS Library |
| React Native | 0.62 | Hybrid Development |
| Firebase | Updated | DBMS |

# Project Stakeholders and Roles

Talha Ejaz will be dealing with the management systems at the development authorities and government sectors. While Waleed Butt will be dealing with modules 1 to 3 which involve app development. Dr. Ashfaq Farooqi will be our guide in the process.

Table 3: Project Stakeholders for the Targeted Project.

|  |  |
| --- | --- |
| **Project Sponsor** | ***COMSATS University Islamabad*** |
| **Stakeholder** | * Talha Ejaz * Waleed But * Project Supervisor Name: Dr. Ashfaq Hussain Farooqi * Final Year Project Committee: Evaluation of project |

# Team Members Individual Tasks/Work Division

Table 4: Team Member Work Division the Targeted Project.

|  |  |  |
| --- | --- | --- |
| **Student Name** | **Student Registration Number** | **Responsibility/ Modules** |
| * ***Talha Ejaz*** | * ***SP18-BCS-161*** | * ***(Module4-Module6)*** |
| * ***Waleed Butt*** | * ***SP18-BCS-170*** | * ***(Module1-Module3)*** |

# Data Gathering Approach

We will use techniques like interviews and questionaries through Google forms to grasp the general requirements for the construction process. First approach the domain expert to thoroughly understand the functionality of this proposed system. Preparing basic prototypes and using documentation techniques like use cases and class diagrams for the further discussions in the interviews. Then we will do group discussions for brainstorming.

# Concepts

In this project we will be learning

* One Window Application
* Mobile Application Development (React Native)
* Web Development (HTML, CSS, and JavaScript)
* Google Firebase

# Gantt Chart

A picture containing diagram

Description automatically generated

Figure 1: Gant Chart of the Targeted Project.

# Mockups

Shape

Description automatically generatedDiagram

Description automatically generated

Table

Description automatically generated

# Conclusion

Smart Construction Manager will aid the public with ease in process of construction. Endogenous and exogenous factors affecting the efficiency and transparency between government institutions and service providers will be ensured. The extensive research and practical implementation of Smart Construction Manager will provide us with the experience of Mobile and Web Application development, a general idea about one window application and its implications.

# References

*OLX*. (n.d.). Retrieved from https://www.olx.com.pk/

# Plagiarism Report

Attach the Plagiarism report of the targeted project scope document from library staff of Turnitin tool (<http://turnitin.com>).