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1. Introduction This is the SRS (Software Specification) document for our project Smart Construction Manager. The document briefly explains the working and of the project. The document contains the Use Cases against specified modules. The Functional and Non-Functional s are also elicited in the document. The UML diagrams and Class diagrams explain the flow of the application. Moreover, user interfaces describe the working of application for the end user.

1.1 Purpose Smart Construction Manager is a One Window Solution for the construction process of housing in the state. 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.

1.2 Scope and Modules 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.

1.2.1 Modules First module, Land Transfers and Ownerships will provide user the interface to manage the properties owned. The second module deals with approval requests to respective development authorities. In third module buy and sell, user can buy land and other construction equipment posted by other users for sale. Fourth module deals with construction supervision required during construction. Fifth module deals with user's communication with government bodies for utility services. And sixth module will be for administrators of government bodies to manage user requests.

2. Overall The government organizations such as the development authorities of different cities have introduced the concepts of One-window operations to streamline the working process, our project is providing faster and easier access to this operation.

2.1 Product Perspective Smart Construction Manager is designed to ease the entire process of construction. The product is an alternate to growing market of construction site. Mostly websites like Zameen.com and Graana.com offer the buy and sell functionality. Smart Construction Manager will help user to communicate with government bodies too.

Figure 1: Context Diagram of Targeted Project

2.2 Operating Environment OE-1: The System shall operate correctly with the following web browser Firefox versions 80 through own wards; Google Chrome (all versions); and Apple Safari versions 10.0 and above. OE-2: The

Minimum Smart Phone OS is 6.0 for Android and IOS 9 for iPhones. OE-3: The Application will be available for Residence of Islamabad, Pakistan. In future, we will be upscaling to be used country wide. 2.3 [Design and Implementation Constraints](#) CO-1: [The system shall use the current corporate standard](#) MongoDB [database](#) engine CO-2: [The system shall use](#) ExpressJS as Web Backend and ReactJS as Web Frontend Framework CO-3: The system shall use React Native for Smart Phone Development (Android and IOS). 3. Identifying Technique The s for the project will be gathered using Interviews and online Google Forms. 3.1 [Use Case Diagram](#) Figure 2: [Use Case Diagram](#) Showing Actions of User from Home Screen Figure 3: User Interface with Basic App Features Figure 4: [Use Case Diagram](#) Explaining Activities of User 5 Figure 5: [Use Case Diagram](#) Showing Application Procedure with Official Authorities Figure 6: Use Case Diagram Explaining Activities of Admin 3.2 Use Case Following are the use cases for system Smart Construction Manager 3.2.1 Module 1: Land Transfers and Ownership Following [are the use cases for module 1](#) Table 1: [Sign up for web use case. : UC-1.1 : Sign up for web](#) : Primary Actor: User Secondary Actor: Smart Construction Manager : The user will be able to sign up and use the application : Click the "sign up" button : Enter Use Case Goal here: High PRE-1. User has accessed the Web page PRE-2. Valid username & password PRE-3. Valid Email Address & cell number : N/A 1. User clicks on the "sign up" link 2. [User](#) will [enter](#) first & [last Name](#) 3. [User](#) will [enter](#) valid [email address](#) 4. [User](#) will [enter](#) valid cell [number](#) 5. [User](#) will set [password](#) 6. [User](#) will confirm [password](#) 7. Agree to terms and condition 8. See terms and condition. 9. User will click on "sign up" button N/A 1a. If user doesn't enter valid email address 1. Prompt message will be shown "Please enter valid email address" 5a. If user doesn't enter valid cell number 2. Prompt message will be shown "Please enter valid cell number" 6a. If user enters different password than in step 6 of normal flow 1. Prompt message will be shown "Please enter same password" 7a. If user doesn't fill the required fields 1. Prompt message will appear "Please enter all fields" POST-1. Application will display message "Account Successfully Registered" POST-2. User will be signed in to the account. N/A User has an active internet connection. User has accessed the webpage. Table 2: Sign up for mobile use case. : UC-1.2 : Sign up for mobile : Primary Actor: User Secondary Actor: Smart Construction Manager : The user will be able to sign up and use the application : Tap the "sign up" button : Enter Use Case Goal here: High PRE-1. User has installed the application PRE-2. Valid username & password PRE-3. Valid Email Address & cell number : N/A 1. User clicks on the "sign up" button 2. [User](#) will [enter](#) first & [last Name](#) 3. [User](#) will [enter](#) valid [email address](#) 4. [User](#) will [enter](#) valid cell [number](#) 5. [User](#) will set [password](#) 6. [User](#) will confirm [password](#) 7. Agree to terms and condition 8. See terms and condition. 9. User will click on "sign up" button N/A 1a. If user doesn't enter valid email address 1. Prompt message will be shown "Please enter valid email address" 5a. If user doesn't enter valid cell number 1. Prompt message will be shown "Please enter valid cell number" 7a. If user enters different password than in step 6 of normal flow 1. Prompt message will be shown "Please enter same password" 8a. If user doesn't fill the required fields 1. Prompt message will appear "Please enter all fields" POST-1. Application will display message "Account Successfully Registered" POST-2. User will be signed in to the account. N/A User has an active internet connection. User has installed the application Table 3: Login use case. : UC-1.3 : Login : Primary Actor: User Secondary Actor: Smart Construction Manager : The user will be able to login and use the application : Click the "Login" button : Enter Use Case Goal here: High PRE-1. User has accessed the Login page : UC-1.1, UC-1.2 1. User clicks on the "Login" button 2. [User](#) will [enter](#) valid [email address](#) 3. [User](#) will [enter password](#) 4. [User](#) will [click](#) on "Login" [button](#) N/A 4a If user enters any wrong field 1. Prompt message will appear "Please enter

username and password again" POST-1. User will be able to login the account N/A User has an active internet connection. User has installed the application. User has an account Table 4: Forgot password use case. : UC-1.4 : Forgot Password : Primary Actor: User Secondary Actor: Smart Construction Manager : The user will be able to retrieve account in case of forgetting the password. : Click the "Forgot Password" button : Enter Use Case Goal here: medium PRE-1. User has accessed the forget password webpage : [Use case 1.1, use case 1.2 use case 1.](#) User [clicks on the](#) "forget password" [button 2.](#) [User](#) will enter valid [email address 3.](#) [User](#) will be sent a code on email 4. User will type the code 5. User will change the password N/A 2a If user enters invalid email 1. Prompt message will appear "Please enter valid email address" POST-1. User will be able to reset the password N/A User has an active internet connection. User has installed the application. User has an account. Table 5: Apply for transfer use case. : UC-1.5 : Apply for transfer : Primary Actor: User Secondary Actor: Smart Construction Manager, Development Authority : The user will be able to apply for transfer of ownership of land : Click on the "Apply for Transfer" button : Enter Use Case Goal here: medium PRE-1. User has logged in the account. : [Use case 1.1, use case 1.2 use case 1.3](#) 1. User will click the apply for transfer button 2. A new form will appear for the transfer letter [3. User will enter](#) his full [Name 4.](#) [User will enter](#) CNIC [5.](#) A ticket [will](#) be generated for the user to submit required document through the one window operation. N/A 4a If user enters invalid CNIC 1. Prompt message will appear "Please enter valid CNIC number" POST-1. User will be able to apply for Transfer. BR-1 Application time will be 9-5pm User has an active internet connection. User has installed the application. User has an account. User has a CNIC. Table 6: Receive NDC use case. : UC-1.6 : Receive NDC (No Demand Certificate) : Primary Actor: User Secondary Actor: Smart Construction Manager, Development Authority : The user will be able to receive the NDC after reviewal by the development authority : Click on the "Receive NDC" button : Enter Use Case Goal here: medium PRE-1. User has logged in the account. PRE-2. User has submitted the transfer letter : Use case 1.1, 1.2, 1.3, 1.5 1. User will click on active transfer button to see NDC response status N/A N/A POST-1. User will be able to view NDC. N/A User has an active internet connection. User has installed the application. User has an account. Table 7: Submit NDC use case. : UC-1.7 : Submit NDC (No Demand Certificate) : Primary Actor: User Secondary Actor: Smart Construction Manager, Development Authority : The user will be able to submit the NDC after reviewal by the development authority : Click on the "Submit NDC" button : Enter Use Case Goal here: medium PRE-1. User has logged in the account. PRE-2. User has submitted the transfer letter PRE-2. User has received NDC : Use case 1.1, 1.2, 1.3, 1.5, 1.6 1. User [will click on the Submit](#) NDC [button 2.](#) [User will](#) enter tax statement for the previous fiscal year 3. User will click on submit button. N/A 3a. If user enters wrong CNIC 1. Prompt message will be displayed "please enter CNIC again" 6a. If any field is not filled 1. Prompt message will be displayed "please enter all fields" POST-1. User will be able to submit NDC. N/A User has an active internet connection. User has installed the application. User has an account. User has received NDC. Table 8: Meeting Officials use case. : UC-1.8 : Meeting officials : Primary Actor: User Secondary Actor: Smart Construction Manager, Development Authority : After submission of NDC, the officials will set up a meeting with the applicant (user) : Click on the "Schedule Meeting" button : Enter Use Case Goal here: medium PRE-1. User has logged in the account. PRE-2. User has submitted the transfer letter PRE-3. User has submitted NDC : Use case 1.1, 1.2, 1.3, 1.5, 1.6, 1.7 1. User will click on the "set meeting" button [2. User will enter](#) full [Name 3.](#) [User will enter](#) CNIC [4.](#) [User will](#) select the date to schedule meeting 5. User will select time to schedule meeting N/A 3a. If user enters wrong CNIC 1. Prompt message will

be displayed "please enter CNIC again" 4a. If user enters a non-working day 1. Prompt message will be displayed "please select a working day" 5a. If user enters after work hours 1. Prompt message will be displayed "please select working hours" POST-1. User will be able to schedule meeting with development authority BR-1 meeting can take place only in working day and hours User has an active internet connection. User has installed the application. User has an account. User has submitted the NDC. Table 9: View Active Transfers use case. : UC-1.9 : View Active Transfers : Primary Actor: User Secondary Actor: Smart Construction Manager, Development Authority : After submission of NDC, user can view the status of transfers. : Click on the "View Active Transfers" button : Enter Use Case Goal here: medium PRE-1. User has logged in the account. PRE-2. User has submitted the transfer letter : Use case 1.1, 1.2, 1.3, 1.5, 1.6, 1.7 1. User will click on view active transfers button 2. User will click on the desired transfer N/A N/A POST-1. User will be able to view the desired transfer N/A User has an active internet connection. User has installed the application. User has an account. User has submitted the NDC. Table 10: Cancel Active Transfers use case. : UC-1.10 : Cancel Active Transfers : Primary Actor: User Secondary Actor: Smart Construction Manager, Development Authority : User will be able to cancel any active transfer : Click on the "Cancel Active Transfers" button : Medium PRE-1. User has logged in the account. PRE-2. User has submitted the transfer letter : Use case 1.1, 1.2, 1.3, 1.5, 1.6, 1.7,1.9 1. User will click on cancel active transfers button 2. User will click on the desired active transfer 3. User will click ok. N/A N/A POST-1. User will be able to cancel the desired active transfer N/A User has an active internet connection. User has installed the application. User has an account. User has submitted the NDC. Table 11: Update Active Transfers use case. : UC-1.11 : See Active Transfer Status : Primary Actor: User Secondary Actor: Smart Construction Manager, Development Authority : User will be able to see the status of any active transfer : Click on the Transfer Requests from Active Transfers List. : Medium PRE-1. User has logged in the account. PRE-2. User has submitted the transfer letter : Use case 1.1, 1.2, 1.3, 1.5, 1.6, 1.7,1.9 1. User will click on update active transfers button 2. User will click on the desired active transfer 3. User will change the details. 4. User will click ok. N/A N/A POST-1. User will be able to update the active transfer. N/A User has an active internet connection. User has installed the application. User has an account. User has submitted the NDC. 3.2.2 Module 2: Land Approval: Following are the tabular use cases for module 2: Table 12: Apply for land Possession use case. : UC-2.1 : Apply for Possession : Primary Actor: User Secondary Actor: Smart Construction Manager, Development Authority : User will be able to apply for land possession : Click on the "Apply for land possession" button : Medium PRE-1. User has logged in the account. PRE-2. User has submitted the transfer letter PRE-2. User has submitted the NDC : Use case 1.1, 1.2, 1.3, 1.5, 1.6, 1.7,1.9 1. User will click on the apply for land possession button 2. User will be directed to the land possession form 3. User will click on submit. N/A 4a. if user doesn't fill any details 1. Message will be prompted 'please enter the details again' POST-1. Ticket will be generated for land possession application. BR-1 user can apply only in working hours i.e. 9-5pm User has an active internet connection. User has installed the application. User has an account. User has submitted the NDC. Table 13: Response of land Possession use case. : UC-2.2 : View Possession Status : Primary Actor: User Secondary Actor: Smart Construction Manager, Development Authority : User will be able to view possession status : Click on the possession from active possession list : Medium PRE-1. User has logged in the account. PRE-2. User has submitted the transfer letter PRE-3. User has submitted the NDC PRE-4 User has applied for land possession : Use case 1.1, 1.2, 1.3, 1.5, 1.6, 1.7,1.9, 2.1 1. User will click on possession from possession lists. N/A N/A

POST-1. User will be able to check the approval status N/A User has an active internet connection. User has installed the application. User has an account. User has submitted the NDC. User has applied for land possession Table 13: Use case to cancel possession application : UC-2.3 : Cancel Possession Status : Primary Actor: User Secondary Actor: Smart Construction Manager, Development Authority : User will be able to view possession status : Click on cross button on the possession from active possession list : Medium PRE-1. User has logged in the account. PRE-2. User has submitted the transfer letter PRE-3. User has submitted the NDC PRE-4 User has applied for land possession : Use case 1.1, 1.2, 1.3, 1.5, 1.6, 1.7,1.9, 2.1 1. User will click on cross button on the possession from possession lists. N/A N/A POST-1. User will be able to check the approval status N/A User has an active internet connection. User has installed the application. User has an account. User has submitted the NDC. User has applied for land possession Table 14: Apply for map approval use case. : UC-2.4 : Apply for map approval : Primary Actor: User Secondary Actor: Smart Construction Manager, Development Authority : User will be able to apply for map approval : Click on the "Apply for map approval" button : Medium PRE-1. User has logged in the account. PRE-2. User has submitted the transfer letter PRE-3. User has submitted the NDC PRE-4 User has received land possession : Use case 1.1, 1.2, 1.3, 1.5, 1.6, 1.7,1.9, 2.1, 2.2, 2.3 1. User will click on the "Apply for map approval" button 2. User will attach proposed map. 3. User will click on submit N/A N/A POST-1. Ticket will be generated for map approval application. BR-1 user can apply only in working hours i.e. 9-5pm User has an active internet connection. User has installed the application. User has an account. User has submitted the NDC. User has received for land possession Table 15: view active transfers use case. : UC-2.5 : View active Applications : Primary Actor: User Secondary Actor: Smart Construction Manager, Development Authority : User will be able to view active transfers : Click on the "view active Applications" button : Medium PRE-1. User has logged in the account. PRE-2. User has submitted the transfer letter PRE-3. User has submitted the NDC PRE-4 User has received land possession : Use case 1.1, 1.2, 1.3, 1.5, 1.6, 1.7,1.9, 2.1, 2.2, 2.3 1. User will click on the "view active Applications" button 2. User will select the desired transfer 3. User will press ok button N/A 2a if user doesn't select the active transfer Prompt message will appear" please select the desired transfer" POST-1. User will be able to view active transfers. N/A User has an active internet connection. User has installed the application. User has an account. User has submitted the NDC. User has received for land possession User has applied for transfer Table 16: Cancel active transfer use case. : UC-2.6 : Cancel Approval Request : Primary Actor: User Secondary Actor: Smart Construction Manager, Development Authority : User will be able to cancel active transfer : Click on the "cancel Approval Request" button : Medium PRE-1. User has logged in the account. PRE-2. User has submitted the transfer letter PRE-3. User has submitted the NDC PRE-4 User has received land possession PRE-5 User has an ongoing active transfer : Use case 1.1, 1.2, 1.3, 1.5, 1.6, 1.7,1.9, 2.1, 2.2 1. User will click on the "Cancel Approval Request" button 2. User will select the desired transfer 3. User will press ok button N/A 2a if user doesn't select the active transfer 1. Prompt message will appear" please select the desired transfer" POST-1. User will be able to cancel an active transfer N/A User has an active internet connection. User has installed the application. User has an account. User has submitted the NDC. User has received for land possession User has applied for transfer Table 17: View active transfer use case. : UC-2.7 : View active request Status : Primary Actor: User Secondary Actor: Smart Construction Manager, Development Authority : User will be able to view active request status : Click on the "Update active transfer" button : Medium PRE-1. User has logged in the account. PRE-2. User has submitted the transfer letter PRE-3. User has

submitted the NDC PRE-4 User has received land possession PRE-5 User has an ongoing active transfer : Use case 1.1, 1.2, 1.3, 1.5, 1.6, 1.7,1.9, 2.1, 2.2

1. User will click on the "View active transfer" button 2. User will select the desired transfer 3. User will see the status 4. User will press ok button N/A 2a if user doesn't select the active transfer 1. Prompt message will appear "please select the desired transfer" POST-1. User will be able to update an active transfer N/A User has an active internet connection. User has installed the application. User has an account. User has submitted the NDC. User has received for land possession User has applied for transfer 3.2.3 Module 3: Buy and Sell: Following are the use cases for the third module: Table 18: Post ad use case. : UC-3.1 : Post ad : Primary Actor: User Secondary Actor: Smart Construction Manager : User will be able to post ad : Click on the "Post ad" button : Medium PRE-1. User has logged in the account. : Use case 1.1, 1.2, 1.3 1. User will click on the post ad button 2. User will select the ad category 3. User will enter ad 4. User will enter service price 5. User will enter service location 6. User will press 'post' button N/A 9a. if user doesn't fill all the fields 1. Prompt message will appear "please enter all fields" POST-1. User will be able to post an ad N/A User has an active internet connection. User has installed the application. User has an account. : UC-3.2 : Search ad : Primary Actor: User Secondary Actor: Smart Construction Manager : User will be able to Search an ad : Click on the "Search ad" button : Medium PRE-1. User has logged in the account. : Use case 1.1, 1.2, 1.3 1. User will click on the search ad button. 2. User will type the commodity to search. 3. User will select the desired the search result. 4. User can filter through search result. N/A N/A POST-1. User will be able to search an ad N/A User has an active internet connection. User has installed the application. User has an account. : UC-3.3 : View ad : Primary Actor: User Secondary Actor: Smart Construction Manager : User will be able to View a posted ad : Click on the "View ad" button : Medium PRE-1. User has logged in the account. : Use case 1.1, 1.2, 1.3 1. User will click on the view ad button 2. User will select the desired posted ad 3. User will click ok button N/A 2a if user doesn't select the desired ad 1. Prompt message will appear "please select the desired ad" POST-1. User will be able to view a desired ad. N/A User has an active internet connection. User has installed the application. User has an account. : UC-3.4 : Delete ad : Primary Actor: User Secondary Actor: Smart Construction Manager : User will be able to Delete an ad : Click on the "Delete ad" button : Medium PRE-1. User has logged in the account. : Use case 1.1, 1.2, 1.3 1. User will select my adds button 2. User will click on the delete ad button 3. User will select the desired posted ad 4. User will click ok button N/A 2a if user doesn't select the desired ad 1. Prompt message will appear "please select the desired ad" POST-1. User will be able to delete an ad N/A User has an active internet connection. User has installed the application. User has an account. : UC-3.5 : Edit ad : Primary Actor: User Secondary Actor: Smart Construction Manager : User will be able to Edit an ad : Click on the "Edit ad" button : Medium PRE-1. User has logged in the account. : Use case 1.1, 1.2, 1.3 1. User will select my adds button 2. User will click on the edit ad button 3. User will select the desired posted ad 4. User will click ok button N/A 2a if user doesn't select the desired ad 2. Prompt message will appear "please select the desired ad" POST-1. User will be able to delete an ad N/A User has an active internet connection. User has installed the application. User has an account. : UC-3.6 : Reviews : Primary Actor: User Secondary Actor: Smart Construction Manager : User will be able to write a review : Click on the Review button : Medium PRE-1. User has logged in the account. : Use case 1.1, 1.2, 1.3 1. User will visit an account 2. User will click on the "review" button 3. User will type a review 4. User will press post button. N/A 4a. if user doesn't type anything 1. Prompt message will appear "please write something" POST-1. User will be able to chat with other accounts N/A User

has an active internet connection. User has installed the application. User has an account.

4.2.4 Module 4: Construction Supervision: Following are the use cases for the fourth module:

Table 24: Intimation letter use case. : UC-4.1 : Intimation letter : Primary Actor: User, Supervisory officer Secondary Actor: Smart Construction Manager, Development Authority : User & the supervisory officers will receive intimation letter : Click on the "Intimation letter" button : Medium PRE-1. User has logged in the account. PRE-2. User has submitted the transfer letter PRE-3. User has submitted the NDC PRE-4 User has received land possession PRE-5 User has active transfer : Use case 1.1, 1.2, 1.3, 1.5, 1.6, 1.7,1.9, 2.1, 2.2, 2.3, 2.4 1. After map approval, development authorities send intimation letter to supervisory department 2. Supervisory department visit the construction site. 3. Supervisory ensure the process is going according to plan. 4. User get updates on the upcoming visit of supervisory department. N/A 3a if user doesn't select any intimation letter 1. Prompt message will appear "please select the intimation letter to view" POST-1. User will be able to view intimation letter issued by development authority N/A

User has an active internet connection. User has installed the application. User has an account. User has an active transfer. Table 25: Site Inspection use case. : UC-4.2 : Site inspection : Primary Actor: User, Supervisory officer Secondary Actor: Smart Construction Manager, Development Authority : The user will get an update on an upcoming site inspection of the property. : Click on the "site inspection" button : Medium PRE-1. User has logged in the account. PRE-2. User has submitted the transfer letter PRE-3. User has submitted the NDC PRE-4 User has received land possession PRE-5 User has active transfer PRE-6 User has received an intimation letter : Use case 1.1, 1.2, 1.3, 1.5, 1.6, 1.7,1.9, 2.1, 2.2, 2.3, 2.4, 4.1 1. User will click on the "Site inspection" button 2. User will see remarks on the inspection visit. N/A 3a if user doesn't select any site inspection link 3. Prompt message will appear "please select the upcoming site inspection" POST-1. User will be able to view upcoming site inspection by officer. N/A

User has an active internet connection. User has installed the application. User has an account. User has an active transfer. User has received intimation letter Table 26: Discrepancy report use case. : UC-4.3 : Discrepancy report : Primary Actor: User, Supervisory officer Secondary Actor: Smart Construction Manager, Development Authority : The user will get an update on an upcoming site inspection of the property. : Click on the "discrepancy report" button : Medium PRE-1. User has logged in the account. PRE-2. User has submitted the transfer letter PRE-3. User has submitted the NDC PRE-4 User has received land possession PRE-5 User has active transfer PRE-6 User has received an intimation letter : Use case 1.1, 1.2, 1.3, 1.5, 1.6, 1.7,1.9, 2.1, 2.2, 2.3, 2.4, 4.1, 4.2 1. User will click on the "Discrepancy report" button 2. User will select the available reports 3. User will click ok N/A 3a if user doesn't select any discrepancy report 4. Prompt message will appear "please select the discrepancy report" POST-1. User will be able to view the discrepancy report. N/A

User has an active internet connection. User has installed the application. User has an account. User has an active transfer. User has received intimation letter

4.2.5 Module 5: Utility Services Following are the use cases for module 5

Table 27: Apply for utility service use case. : UC-5.1 : Apply for utility service : Primary Actor: User Secondary Actor: Smart Construction Manager, Govt Bodies (WAPDA & SUI gas) : The user will be able to apply for the utility service : Click on the "Apply for Utility" button : Medium PRE-1. User has logged in the account. PRE-2. Area is under the jurisdiction of development authority : Use case 1.1, 1.2, 1.3 1. User will click on the "Apply for utility" button 2. User will select the utility service 3. User will enter full name 4. User will enter CNIC 5. User will enter area location 6. User will click on submit button N/A 6a if user doesn't enter any of the above details 7. Prompt message will appear "please fill each section" POST-1. A

ticket will be generated for user application of utility. BR-1 Application will only be entertained in working hours i.e. 9-5pm User has an active internet connection. User has installed the application. User has an account. User is having requested utility for area under development authority jurisdiction.

Table 28: Delete Utility Application use case. : UC-5.2 : Delete Utility Application : Primary Actor: User Secondary Actor: Smart Construction Manager, Govt Bodies (WAPDA & SUI gas) : The user will be able to delete utility application. : Click on the "Delete Utility Application" button : Medium PRE-1. User has logged in the account. PRE-2. Area is under the jurisdiction of development authority PRE-3. User has applied for utility service : Use case 1.1, 1.2, 1.3,5.1 1. User will click on the "Delete utility application" button 2. User will select the utility service to delete 3. User will press ok button. N/A 2a if user doesn't select any utility application 4. Prompt message will appear "please select the desired utility to delete" POST-1. User will be able to delete utility application. BR-1 Application will only be entertained in working hours i.e. 9-5pm User has an active internet connection. User has installed the application. User has an account. User is having requested utility for area under development authority jurisdiction.

Table 29: View Application Status use case. : UC-5.3 : View Application Status : Primary Actor: User Secondary Actor: Smart Construction Manager, Govt Bodies (WAPDA & SUI gas) : The user will be able to view utility application status. : Click on the "VIEW Application status" button : Medium PRE-1. User has logged in the account. PRE-2. Area is under the jurisdiction of development authority PRE-3. User has applied for utility service : Use case 1.1, 1.2, 1.3,5.1 1. User will click on the "VIEW application status" button 2. User will select the desired application to view 3. User will click ok button N/A 2a if user doesn't select any utility application 4. Prompt message will appear "please select the desired utility to view" POST-1. User will be able to view utility application status. N/A User has an active internet connection. User has installed the application. User has an account. User is having requested utility for area under development authority jurisdiction.

Table 30: Send s use case. : UC-5.4 : Send s : Primary Actor: User Secondary Actor: Smart Construction Manager, Govt Bodies (WAPDA & SUI gas) : The user will be able to send s after service approval. : Click on the "send s" button : Medium PRE-1. User has logged in the account. PRE-2. Area is under the jurisdiction of development authority PRE-3. User has applied for utility service PRE-3. Application status is approved : Use case 1.1, 1.2, 1.3,5.1, 5.3 1. User will click on the "Send s" button 2. User will be directed to s form 3. User will enter full name 4. User will enter CNIC 5. User will enter location 6. User will enter bill of nearest home 7. User will submit demand notice 8. User will press submit button N/A 9a if user doesn't enter any field 9. Prompt message will appear "please fill all the fields" POST-1. User will be able to send s for utility service. N/A User has an active internet connection. User has installed the application. User has an account. User is having requested utility for area under development authority jurisdiction. Users application has been approved. 4.2.6 Module 6: Requests Management Following are the use cases for request management module: Table 31: Admin Login use case. : UC-6.1 : Admin Login : Primary Actor: User Secondary Actor: Smart Construction Manager : The admin will be able to login the account : Opening Admin Panel : Medium PRE-1. Default username and password provided on software deployment : N/A 1. User will enter valid email id 2. User will enter valid password 3. User will click login button N/A 3a If user enters any wrong field 1. Prompt message will appear "Please enter username and password again" POST-1. User will be able to create employee account. N/A User has an active internet connection. User has installed the application.

Table 32: Create Employee's Accounts use case. : UC-6.2 : Create Employee's Accounts : Primary Actor: User Secondary Actor: Smart Construction Manager : The user

will be able to create accounts for employees : Click on the "Create Employee Accounts" button : Medium PRE-1. User has logged into admin panel. : [N/A](#)

[1. User will click on the](#) "Create Employee Accounts" button [2. User will enter](#) first & [last Name](#) [3. User will enter](#) valid [email address](#) [4. User will enter](#) valid cell [number](#) [5. User will set](#) [password](#) [6. User will set](#) employee role 7. User will click on "Create Account" button N/A 3a. If user doesn't enter valid email address 1. Prompt message will be shown "Please enter valid email address" 5a. If user doesn't enter valid cell number 1. Prompt message will be shown "Please enter valid cell number" 6a. If user enters different password than in step 6 of normal flow 1. Prompt message will be shown "Please enter same password" 7a. If user doesn't fill the required fields 1. Prompt message will appear "Please enter all fields" POST-1. User will be able to create employee account. N/A User has an active internet connection. User has installed the application. Table 33: Delete Employee Account. : UC-6.3 : Delete Employee Account : Primary Actor: Admin Secondary Actor: Employee : The user will be able to Delete Employee Account : Click the Cross Button on employee accounts list : High PRE-1. Employee Account is created : Use case 6.1, 6.2, 1.4, 2.1, 2.4, 5.1 1. User will click on the "Manage Employee" button 2. User will click cross button ahead of employee 3. Confirmation Dialog Box Appears 4. User Presses ok to Proceed 5. User Press Cancel to Cancel. [N/A N/A N/A](#) [N/A](#) User removing the employee is an Admin. Table 34: Forgot admin password use case. : UC-6.4 : Forgot admin Password : Primary Actor: User Secondary Actor: Smart Construction Manager : The user will be able to retrieve account in case of forgetting the password. : Click the "Forget Password" button : Enter Use Case Goal here: medium PRE-1. User has accessed the forget password webpage : Use case 1.1, usecase 1.2 use case 6. User clicks on the "forget password" [button](#) 7. [User will be sent a code on email](#) 8. [User will](#) type [the code](#) 9. User will change the password N/A 2a If user enters invalid email 2. Prompt message will appear "Please enter valid email address" POST-1. User will be able to reset the password N/A User has an active internet connection. User has installed the application. User has an account. Table 35: Receive client request use case. : UC-6.5 : Receive client request : Primary Actor: Admin, Smart Construction Manager Secondary Actor: Client : The user will be able to receive clients request : Click the "Receive Requests" : High PRE-1. Client has made a request : Use case 6.1, 6.2, 1.4, 2.1, 2.4, 5.1 6. User will click on the "Receive requests" button 7. User will select the request type 8. User will select the request from 9. User will click on generate ticket 10. User will click on send ticket. N/A 5a If user enters sends ticket without generating 3. Prompt message will appear "Please generate ticket first" POST-1. User will be able to generate ticket for client N/A User has an active internet connection. User has installed the application. User has an admin account. Table 36: Update Request Status use case. : UC-6.6 : Update Request Status : Primary Actor: Admin, Smart Construction Manager Secondary Actor: Client : The user will be able to send clients update regarding their requests : Click the "Update Requests" button : High PRE-1. Client has made a request : Use case 6.1, 6.2, 1.4, 2.1, 2.4, 5.1 1. User will click on the send update button 2. User will write the update 3. User will click send update button. N/A 3a If user enters send update without writing update 4. Prompt message will appear "Please write the update first" POST-1. User will be able to write update for the client. N/A User has an active internet connection. User has installed the application. User has an admin account. Table 37: Update Employee Info. : UC-6.7 : Update Employee Info : Primary Actor: Admin, Employee : The employee can update their account info. This their email, password and name. : Click the "Update Account" button : High PRE-1. Employee has an Account : Use case 6.1, 6.2, 1.4, 2.1, 2.4, 5.1 1. User will click on the 'Edit Profile' button 2. User will change the options. 3. User will click ok to Update 4. User may press Cancel

to cancel. N/A 4a If user enters invalid email 5. Prompt message will appear "Enter Valid Email" 4a If user enters invalid password 1. Prompt message will appear "Enter Valid Password" POST-1. Employee will be able to sign in with new credentials N/A User has an active internet connection. User has installed the application. User has an admin account. Table 38: Search Request use case. : UC-6.8 : Search Request : Primary Actor: Admin, Smart Construction Manager Secondary Actor: Client : The user will be able to search clients request : Click the "Search Request" button : Medium PRE-1. Client has made a request : Use case 6.1, 6.2, 1.4, 2.1, 2.4, 5.1 1. User will click on the 'search request' button 2. User will click type the ticket number in search bar 3. User will select the search result N/A 2a if user types invalid ticket number 1. Prompt message will be displayed "Please enter valid ticket number" POST-1. User will be able to search client requests. N/A User has an active internet connection. User has installed the application. User has an admin account. Client has made a request 4. Functional s 4.1 Functional X Table 1: of FR-1 FR-1.1.1 Enter Email The user shall enter email in provided text field. Student This is necessary to create account N/A N/A High Table 2: of FR-2 FR-1.1.2 Enter First Name The user shall enter First Name in provided text field. Student This is necessary to create account N/A N/A High Table 3: of FR-3 FR-1.1.3 Enter Last Name The user shall enter Last Name in provided text field. Student This is necessary to create account N/A N/A High Table 4: of FR-4 FR-1.1.4 Enter Phone Number The user shall enter Phone Number in provided Number Field. Student This is necessary to create account N/A N/A High Table 5: of FR-5 FR-1.1.5 Enter Password The user shall enter Password in provided password field. Student This is necessary to create account N/A N/A High Table 6: of FR-6 FR-1.1.6 Enter Password Again The user shall enter password again to confirm in provided password field. Student This is necessary to ensure user did not mistake in creating password N/A N/A High Table 7: of FR-7 FR-1.1.7 Confirm Terms & Conditions The user shall check the terms and condition box. Student This is necessary to ensure that user will follow the conditions provided while using the app. N/A N/A High Table 8: of FR-8 FR-1.1.8 See Terms and Conditions The user may read the provided terms and conditions by clicking the hyperlink. Student This is necessary to let user know what rules he/she must follow. N/A N/A Low Table 9: of FR-9 FR-1.1.9 Press Signup Button The user shall press the Sign-Up button to submit the form filled. Student This is necessary to create account N/A N/A High Table 10: of FR-10 FR-1.2.1 Enter Email The user shall enter email in provided text field. Student This is necessary to create account N/A N/A High Table 11: of FR-11 FR-1.2.1 Enter First Name The user shall enter First Name in provided text field. Student This is necessary to create account N/A N/A High Table 12: of FR-12 FR-1.2.2 Enter Last Name The user shall enter Last Name in provided text field. Student This is necessary to create account N/A N/A High FR-1.2.3 Enter Phone Number The user shall enter Phone Number in provided Number Field. Student This is necessary to create account N/A N/A High Table 14: of FR-14 FR-1.2.4 Enter Password The user shall enter Password in provided password field. Student This is necessary to create account N/A N/A High Table 15: of FR-15 FR-1.2.5 Enter Password Again The user shall enter password again to confirm in provided password field. Student This is necessary to ensure user did not mistake in creating password N/A N/A High FR-1.2.6 Confirm Terms & Conditions The user shall check the terms and condition box. Student This is necessary to ensure that user will follow the conditions provided while using the app. N/A N/A High Table 17: of FR-17 FR-1.2.7 See Terms and Conditions The user may read the provided terms and conditions by clicking the hyperlink. Student This is necessary to let user know what rules he/she must follow. N/A N/A Low Table 18: of FR-18 FR-1.2.8 Press Signup Button The user shall press the Sign-Up button to submit the form filled. Student This is necessary to create account N/A N/A High

Table 19: of FR-19 FR-1.3.1 Enter Email The user shall enter email, username or phone number in provided text field. Student This is necessary to log in to your account. N/A N/A High Table 20: of FR-20 FR-1.3.2 Enter Password The user shall enter password to login to their account. Student This is necessary to log in to your account. N/A N/A High Table 21: of FR-21 FR-1.3.3 Click Login Button The user shall click the login button to submit the form containing login details. Student This is necessary to log in to your account. N/A N/A High Table 22: of FR-22 FR-1.4.1 Enter Email The user shall enter the email, username or password they used to create account. Student This is necessary to recover password. N/A N/A High Table 23: of FR-23 FR-1.4.2 Press Send The user shall press the send button to receive recovery code to reset password. Student This is necessary to reset password. N/A N/A High Table 24: of FR-24 FR-1.4.3 Enter OTP The user shall enter the OTP received on email and phone number. Student This is necessary to log in to your account. N/A N/A High FR-1.4.4 Enter New Password The user shall enter new password to login to their account. Student This is necessary to log in to your account. N/A N/A High Table 26: of FR-26 FR-1.4.5 Confirm Password The user shall re-enter password to confirm the previous entered password. Student This is necessary to set new password. N/A N/A High Table 27: of FR-27 FR-1.4.6 Press Submit The user shall press submit button to update password. Student This is necessary to log in to your account. N/A N/A High FR-1.5.1 Apply for transfer The user shall click apply for transfer button. Student This is necessary to apply for transfer requests. N/A N/A Medium Table 29: of FR-29 FR-1.5.2 Confirm Submission The user shall confirm submission of transfer request. After seeing the transfer form automatically filled with profile information. Student This is necessary to log in to your account. N/A N/A High Table 30: of FR-30 FR-1.6.1 Receive NDC The user will receive NDC from development authority on approval of transfer request. Student This is necessary to receive NDC which is later required to apply for transfer. N/A N/A High Table 31: of FR-31 FR-1.7.1 Submit NDC The user shall submit the NDC to development authority to start the transfer of property. Student This is necessary to send NDC to development authority which will finalize the date of meeting for transfer. N/A N/A High Table 32: of FR-32 FR-1.8.1 Meeting Officials The user will receive confirmation after submission of NDC. Student This is necessary to receive confirmation for meeting date. N/A N/A High Table 33: of FR-33 FR-1.9.1 View Active Transfers The user will click on Active transfers. Student This is necessary to see the transfer requests sent. N/A N/A High FR-1.11.1 See Active Transfer Status The user will press the transfer request from the list in active transfers. Student This is necessary to see the status of ongoing active transfer. N/A N/A High Table 35: of FR-35 FR-2.1.1 Apply for Possession The user will click on "Apply for Possession button". Student This is necessary to proceed to submission form. N/A N/A High Table 36: of FR-36 FR-2.1.2 Confirm Submission The user will click on submit button on the form received Student This is necessary to submit the form user will receive. The form will be auto filled based on the profile information. N/A N/A High FR-2.2.1 View Possession Status Click on the possession from active possession list. Student This is necessary to see active possession status. N/A N/A High Table 38: of FR-38 FR-2.3.1 Cancel Possession Request Click on the cross button on possession from active possession list. Student This is necessary to cancel the active possession request. N/A N/A High Table 39: of FR-39 FR-2.4.1 Apply for Map Approval The user will click on "Apply for Map Approval button". Student This is necessary to proceed to submission form. N/A N/A High FR-2.4.2 Fill Form The user will fill the form received Student This is necessary to submit the form. The form will be auto filled based on the profile information but require map proposed for construction site N/A N/A High Table 41: of FR-41 FR-2.4.3 Confirm Submission The user will click on submit button on the form received

Student This is necessary to submit the form user will receive. The form will be auto filled based on the profile information. N/A N/A High FR-2.5.1 View Approval Requests Click on the view approval requests to see active request list. Student This is necessary to see active approval status. N/A N/A High Table 43: of FR-43 FR-2.6.1 Cancel Approval Request Click on the cross button on Approval Request from active Approval Requests list. Student This is necessary to cancel the active Approval Request. N/A N/A High Table 44: of FR-44 FR-2.7.1 View Approval Request Status Click on the request from active request list. Student This is necessary to see active possession status. N/A N/A High FR-2.7.1 View Approval Request Status Click on the request from active request list. Student This is necessary to see active possession status. N/A N/A High Table 46: of FR-46 FR-3.1.1 Post Add Click on the post add button. Student This is necessary to post an add. N/A N/A High Table 47: of FR-47 FR-3.1.2 Select Add Category Click on the category dropdown. Student This is necessary to post an add. N/A N/A High FR-3.1.3 Enter Add Enter details about add in Textbox. Student This is necessary to post an add. N/A N/A High Table 49: of FR-49 FR-3.1.4 Enter Price Enter price in text field. Student This is necessary to post an add. N/A N/A High Table 50: of FR-50 FR-3.1.5 Enter Location Enter location where you add is located in location field. Student This is necessary to post an add. N/A N/A High FR-3.1.6 Click Post Button Press Post Button to post the final add. Student This is necessary to post an add. N/A N/A High Table 52: of FR-52 FR-3.2.1 Click on Search Bar Press Search Bar to start search. Student This is necessary to search an add. N/A N/A High Table 53: of FR-53 FR-3.2.2 Enter Text on Search Bar Type text in text input area on top of search bar. Student This is necessary to search an add. N/A N/A High FR-3.2.3 Select Text from Recent List Select any recent item from search history. Student This is to ease searching by providing recent searches. N/A N/A High Table 55: of FR-55 FR-3.2.4 Clear Recent Searches Clear any recent searches by clicking cross button. Student This is there to clear the recent search history. User can remove single searched item or all items. N/A N/A High Table 56: of FR-56 FR-3.2.5 Filter Results User can add filters to the searched results. Student This is there to provide ease to the user in searching. User can exclude items from search results by specifying category. N/A N/A High FR-3.3.1 View Add User can view add details by clicking add short box. Student This is there to provide user the detailed information of ad. N/A N/A High Table 58: of FR-58 FR-3.3.2 Close Add User can close add details by clicking cross button or back button. Student This is there to provide user ease in navigation. N/A N/A High Table 59: of FR-59 FR-3.4.1 My Adds User can view ads posted by going to my adds menu. Student This is there to provide user functionality to manage ads. N/A N/A High FR-3.4.2 Delete Add User can delete ads posted by clicking delete button on ads in add list. Student This is there to provide user functionality to manage ads. N/A N/A High Table 61: of FR-61 FR-3.5.1 My Adds User can view ads posted by going to my adds menu. Student This is there to provide user functionality to manage ads. N/A N/A High FR-3.5.2 Edit Add User can Edit ads posted by clicking edit button on ads in add list. Student This is there to provide user functionality to manage ads. N/A N/A High Table 63: of FR-63 FR-3.6.1 Review Add User can Review ads posted by clicking stars on the bottom of an add. Student This is there to provide user functionality to review their experience with ad seller. N/A N/A High Table 64: of FR-64 FR-4.1.1 Intimation Letter User can see updates on upcoming visit of supervisory department. Student This is there to provide user functionality to keep track on the visits of supervisory department. N/A N/A High FR-4.2.1 Site inspection User can see updates onsite inspections. Student This provides user functionality to see the remarks given by development authorities after their visit on site. N/A N/A High Table 65: of FR-65 FR-4.3.1 Discrepancy Report User can see Discrepancy report collection date in site inspections

page. Student This provides user functionality to see the final Discrepancy report and the date to collect it from development authority office. N/A N/A High Table 66: of FR-66 FR-5.1.1 Apply for Utility Services The user will click on "Apply for Utility Services". Student This is necessary to proceed to submission form. N/A N/A High FR-5.1.2 Fill Form The user will fill the form received Student This is necessary to submit the form. The form will be auto filled based on the profile information but require map proposed for construction site N/A N/A High Table 68: of FR-68 FR-5.1.3 Confirm Submission The user will click on submit button on the form received Student This is necessary to submit the form user will receive. The form will be auto filled based on the profile information. N/A N/A High FR-5.2.1 View Approval Requests Click on the view approval requests to see active request list. Student This is necessary to see active approval status. N/A N/A High Table 70: of FR-70 FR-5.2.2 Delet Utility Application Click on the cross button on Approval Request from active Approval Requests list. Student This is necessary to cancel the active Approval Request. N/A N/A High Table 71: of FR-71 FR-5.3.1 View Application Status Click on the request from active request list. Student This is necessary to see active possession status. N/A N/A High FR-5.4.1 Send s Click on the Send s. Student This is necessary to get utility services. N/A N/A High Table 73: of FR-73 FR-5.4.2 Enter/Edit Full Name Click on the Send s. Student This is necessary to get utility services. N/A N/A High Table 74: of FR-74 FR-5.4.3 Enter/Edit CNIC Click on the Send s. Student This is necessary to get utility services. N/A N/A High FR-5.4.4 Enter/Edit Location Click on the Send s. Student This is necessary to get utility services. N/A N/A High Table 76: of FR-76 FR-5.4.5 Attach Image of Bill Click on the Send s. Student This is necessary to get utility services. N/A N/A High Table 77: of FR-77 FR-5.4.6 Attach Image of Demand Notice Click on the Send s. Student This is necessary to get utility services. N/A N/A High FR-5.4.7 Press Submit Button Click on the Send s. Student This is necessary to get utility services. N/A N/A High Table 79: of FR-79 FR-6.1.1 Enter Login Id Enter login ID on the text field. Student This is necessary to access admin panel. N/A N/A High Table 80: of FR-80 FR-6.1.2 Enter Login Password Enter login password on the text field. Student This is necessary to access admin panel. N/A N/A High FR-6.2.1 Create Account for Employee Click 'Create Account for Employee' Student This is necessary to allow employee to use the program. N/A N/A High Table 82: of FR-82 FR-6.2.2 Employee Name Enter employee name in the text field provided. Student This is necessary to allow employee to use the program. N/A N/A High Table 83: of FR-83 FR-6.2.3 Employee Password Enter employee password in the text field provided. Student This is necessary to allow employee to use the program. N/A N/A High FR-6.2.3 Employee Email Enter employee email in the text field provided. Student This is necessary to allow employee to use the program. N/A N/A High Table 84: of FR-84 FR-6.2.4 Employee Number Enter employee cell number in the text field provided. Student This is necessary to allow employee to use the program. N/A N/A High Table 85: of FR-85 FR-6.2.5 Employee Password Enter password for employee account in the text field provided. Student This is necessary to allow employee to use the program. N/A N/A High FR-6.2.6 Employee Role Enter employee role from the dropdown provided. Student This is necessary to allow employee to use the program according to their access. Employee can get access to different features regarding their role at the department N/A N/A High Table 87: of FR-87 FR-6.2.7 Create Account Press create account to create account for employee. Student This is necessary to allow employee to use the program. N/A N/A High Table 88: of FR-88 FR-6.3.1 Delete Employee Press delete employee button. Student This is necessary to delete employee account. N/A N/A High FR-6.3.2 Delete Employee Press the employee from the list of employees. Student This is necessary to delete employee account. N/A N/A

High Table 90: of FR-90 FR-6.3.3 Delete Employee Confirmation Press ok button to confirm deletion. Student This is necessary to delete employee account. N/A N/A High Table 91: of FR-91 FR-6.4.1 Forget Admin Password Press forgot password hyperlink from login screen. Student This is necessary to reset admin password. N/A N/A High FR-6.4.2 Enter Code Enter the code received on registered admin email. Student This is necessary to reset admin password. N/A N/A High Table 93: of FR-93 FR-6.4.3 Enter Password Enter new password in the next field after providing the code. Student This is necessary to reset admin password. N/A N/A High Table 94: of FR-94 FR-6.4.4 Press Confirm Press Confirm to set the new password. Student This is necessary to reset admin password. N/A N/A High FR-6.5.1 Receive Requests A background service to receive client requests and update them on client requests page. Student This is necessary to update the requests of clients. N/A N/A High Table 96: of FR-96 FR-6.6.1 Send Update Click send update button. Student This is necessary to let client know of their request. N/A N/A High Table 97: of FR-97 FR-6.6.2 Send Update Select the request status from dropdown menu. Student This is necessary to let client know of their request. N/A N/A High FR-6.7.1 Update Account Click update account button. Student This is necessary to update info of employee. N/A N/A High Table 99: of FR-99 FR-6.7.2 Enter Email Enter new email in email text field. Student This is necessary to update info of employee. N/A N/A High Table 100: of FR-100 FR-6.7.3 Enter Name Enter new Name in Name text field. Student This is necessary to update info of employee. N/A N/A High FR-6.7.4 Enter Phone Enter new Phone in phone text field. Student This is necessary to update info of employee. N/A N/A High Table 102: of FR-102 FR-6.7.5 Click Update Click update button to update written information Student This is necessary to update info of employee. N/A N/A High Table 103: of FR-103 FR-6.7.6 [Enter Old Password Enter old password in password text field.](#) Student This is necessary to update password of employee. N/A N/A High FR-6.7.7 [Enter New Password Enter new password in new password text field.](#) Student This is necessary to update password of employee. N/A N/A High Table 104: of FR-104 FR-6.8.1 Search Enter text on search text field too search among the requests. Student This is necessary to search within the requests received. N/A N/A High 5. Non-Functional s 5.1 Reliability The Smart Construction Manager will be a reliable software in terms of execution. The MTBF will be one year. the failures might occur due to server timeouts, request management or system update. 5.2 Usability USE-1: the SCM will allow user with a walkthrough to use the application. USE-2: After signing up user will be able to view, select certain location with a user-friendly UI. USE-3: User will be given a popup every time they select a confirmation option regarding any option to ensure error avoidance. USE-4: Account recovery options will be provided for user in case of forgetting password, through mail and cell no. USE-5: The user will be able to interact with sellers/buyers, Govt bodies & construction companies to garner the required information and perform the consequent actions efficiently. USE-6: User can access and view the status of pending requests, moreover user can view all the former projects and their related information. User can access their account through multiple platforms. 5.3 Performance PER-1: User's profile will be loaded within 4-5 sec on a speed of 10mbps and higher. PER-2: The request for the forwarding letter might take up to 30-60sec depending upon the response from the concerned server. PER-3: System can simultaneously facilitate 1000 users without any delay, however response time might vary for a larger figure. PER-4: The request to check activation status for any option might take up to 30-60sec. 5.4 Security SEC-1: The webpage must be HTTPS with additional security layer. SEC-2: Captcha will have to be completed in case of inactivity. SEC-3: Website SEO will be done to prevent hacking attacks. 6. External Interface s Most of our project requires to be built from scratch. We will be

using our own APIs to handle data transfer. But for location we will use Geolocation API (Google's API for location). 6.1 User Interfaces Figure 7: Mobile Home Figure 8: Mobile Search Figure 9: Mobile Chat Figure 10: Web Home Interface 6.2 Software Interfaces The application uses MongoDB Database Management System to store public posts. The application uses React JS for front end designing in web. The application uses Express JS for back end development. The application uses React Native for Mobile Development. [The application stores project data in JSON format to enable easy integration with 3rd party applications.](#) 6.3 Hardware [Interfaces](#) The application requires Android Mobile device with at least Android 6.0, an IOS device with minimum IOS 9 or any desktop computer capable of running a Web Browser. 6.4 Communication Interfaces The application requires active internet connection which can be achieved in several ways. The application user must have working email or phone number in order to fully take advantage of the application. 7. Project Gantt Chart Figure 11: Gantt Chart for Targeted Project 8. Conclusion Smart Construction Manager garners the needs and s in each and every detail in the SRS document. Each Mentioned in the form of use cases is carefully analyzed from both Patron & Clients Perspective. The careful analysis of s provides Users with a sophisticated system ensuring ease in the process of construction and other commodities and forming invariably an efficient system. So, the document shows how we are planning to take our project in coming year. We will be implementing each part of our project according to the Gantt chart mentioned above and are fully motivated to complete the project. Table 19: Search ad [use case. Table 20: View ad use case. Table 21: Delete ad use case. Table 22: Edit ad use case. Table 23: Reviews use case. Table 13: of FR-13 Table 16: of FR-16 Table 25: of FR-25 Table 28: of FR-28 Table 34: of FR-34 Table 37: of FR-37 Table 40: of FR-40 Table 42: of FR-42 Table 45: of FR-45 Table 48: of FR-48 Table 51: of FR-51 Table 54: of FR-54 Table 57: of FR-57 Table 60: of FR-60 Table 62: of FR-62 Table 64: of FR-64 Table 67: of FR-67 Table 69: of FR-69 Table 72: of FR-72 Table 75: of FR-75 Table 78: of FR-78 Table 81: of FR-81 Table 83: of FR-83 Table 86: of FR-86 Table 89: of FR-89 Table 92: of FR-92 Table 95: of FR-95 Table 98: of FR-98 Table 101: of FR-101 Table 104: of FR-104 1 2 3 4 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87](#)