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Technical DESIGN document

**For**

Mobile TOWER MAINTENaNCE

*(Communicate Effortlessly)*

Version 1.0

31.05.2021

Department of Software Development, KnowCross Pvt. Ltd.

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# Overview

## Background and Description

|  |  |
| --- | --- |
|  | Mobile Tower Maintenance system focuses and specializes in the manufacturing of Designing of Mobile Towers, Specification of Mobile Towers, Mobile Tower Foundation, Earthing Protection Equipment, Lighting Protection Equipment, Mobile Tower Maintenance. We are also designing self supportive communication towers. All our products are manufactured by a very experienced and skilled workforce here in the India. We are manufacturers of the complete product range. We only employ the most skilled staffs. Our installation, designing teams can complete their work quickly and efficiently, while maintaining a high level of craftsmanship. We Provides customized support in every phase of project realization and Ensures that high quality work is carried out on schedule and at low cost. |

## Project Summary

|  |  |
| --- | --- |
|  | The project is to build a system that enables us to promptly act to the maintenance request raised by the customers by building an application that will send notifications to technicians as and when a maintenance request is received. The application makes the entire process smooth from request raised till the closure making the entire process faster and overall boosting up the business. The application maintains a complete log and keeps sending live updates from the technician to the Main office. The application is also responsible for Reporting features and is capable of handling high volume data transactions. |

## Project Scope

|  |  |
| --- | --- |
|  | Mobile Tower Maintenance is a platform where Maintenance Requests will be raised by customers and acted upon Technicians. It has the below functionalities:  1) Authenticate Technicians  2) A technician should be able to close, register , reassign a maintenance request.  3) Technician should be able to send / receive/ alerts and notifications.  4) There should be a complete log track of the MR. The live updates should flow from technician to the corporate office.  5) Reporting.  6) Should be able to handle high volume of data and transactions. |

1. **System Architecture**

## High Level Design

|  |  |
| --- | --- |
|  | *The HLD will:*  *• present all the design aspects and define them in detail*  *• describe the user interface being implemented*  *• describe the tools and technology*  *• list and describe the non-functional attributes like:*  *o security*  *o reliability*  *o maintainability*  *o portability*  *o reusability* |

## Application Architecture

## Technology Architecture

## Web Application Architecture

The front end of the program is a web application Login page. Technicians can login using their credentials as provided by the company. Each technician will be authenticated against their valid credentials and then logged into the application.

Presentation Layer

On successful login, Technicians will be taken to Login page where they will receive notifications for each Maintenance Request.

Technicians can also send alerts/ notifications to the customer or to Admin via the same portal.

A logger constantly sends live updates to the Admin

## Data Access Layer

## The database will be accessible to only the Admin where Reporting can be done using SSRS in SQL server.

## Tools Used

|  |  |
| --- | --- |
|  | * Microsoft Visual Studio 2019 * SQL Server 2014 |

## Technology Stack

|  |  |
| --- | --- |
|  | * C#.Net * JQuery/Javascript * .Net MVC 4.0 * Web API * LINQ * Entity Framework |

## Performance

## Performance is going to be very important for this project. For everything to run smoothly for this project, the gateways will have to be able to update data on the database and refresh the Tables before it is supposed to do so again. This is likely to be the most processor intensive aspect of the project. The gateways will also need to supply requested pages to the Technicians at a reasonable speed. The database server will need to keep up with all database requests and transactions.

## Security

## Because security is not the prime focus of this project, only the minimal aspects of security will be implemented. A username and password will be required to log into an interface. For now, credentials will be sent in plain text using POST request. Verification of user to IP or MAC address is also outside the scope of this project.

## Reliability

## A redundant database server will be implemented so that if the main database server stops responding, the gateways will automatically start using the other server. The mechanism used for syncing these two databases has not yet been fully established. Likely candidate solutions include: • Each gateway updating to both servers. • An archive field being implemented and the redundant server constantly searching the tables for new data. • A full periodic backup for the entire database. • A trigger being used on the main database where all data is automatically copied to the secondary database.

## Maintainability

## Very little maintenance should be required for this setup. An initial configuration will be the only system required interaction after system is put together. The only other user maintenance would be any changes to settings after setup, and any specified special cases where user settings or history need to be changed. Physical maintenance on the system’s parts may be required, and would result in temporary loss of data or Internet. Upgrades of hardware and software should have little effect on this project, but may result in downtime.

## 

## Portability

## This system should have the ability that, once it is together, the entire system should be able to be physically moved to any location. Code and program portability should be possible between any Microsoft OS versions. For everything to work properly, all components should be compiled from source.

## Reusability

## The code written and the components used should have the ability to be reused with no problems. Should time allow, and detailed instructions are written on how to create this project, everything will be completely reusable to anyone.

## Low-Level Design

|  |  |
| --- | --- |
|  | The LDD of the system constitutes of the entire process and objects that will be involved in this project. It constitutes of the Class objects and DB objects and the flow of a request. |

## Cycle of the request

As soon as an incident is reported, it is categorized based on priority by Admin and a Technician is assigned to it and alerted by the application.

Diagram

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## Database objects involved

|  |  |
| --- | --- |
|  | The below diagram describes all the Database objects that will be involved in the process, since it is a new project we have used Code First Approach to build the Entity Framework of the Application. |

![Diagram

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## High-Level Timeline/Schedule

|  |  |
| --- | --- |
|  | The project will follow the Agile methodology of Software Development. All the Sprints will be planned for 30 days including DEV and QA efforts. |

# Approval and Authority to Proceed

We approve the project as described above, and authorize the team to proceed.

|  |  |  |
| --- | --- | --- |
| Name | Title | Date |
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