Renewable Home

Project Management Plan

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Michael Dardis

Lead Software Engineer

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Project Summary

Renewable Home is a project aimed to explore the impacts of renewable energy sources on the overall carbon output and cost compared to traditional sources of energy for residential buildings. Pollution and climate change are growing problems in an ever increasing urban-growth world population, and examining ways to help curb our individual carbon-footprint can help society going in the right direction when it comes to sustainability.

The project’s outcome will hopefully shed light on the potential benefits of converting to renewable sources such as wind and solar. The end-user, in this case the home owner/client John, will be able to see the effects of changing his energy sources with an interactive web application. The application itself will not be limited to a one-time use, but can be applied to different use cases to see how renewable energy can impact a wide variety of infrastructure types depending on their energy consumption of which energy types they choose.

Project Deliverables

* Project Definition
  + This is in report format, and includes defining aspects of the project, a literature review, and risk and budgets allocated to the project
* Final Report
  + A conclusive report to submit at the end of the semester, this will involve highlighting key areas of learning and any recommendations for future projects
* PowerPoint Presentation
  + This is a presentation of the overall design of the project. This will be included in the handover to the client and can be used in future presentations of the application
* Video Demo
  + This is to be used as a visual guide on how the program functions and works. It will walk the audience on how to enter in data and how to manipulate the different controls within the application
* Project Artifacts
  + Project Management Plan
  + Project Code
  + Design Documentation
  + Requirements Documentation

**Project Organization**

Process Model

The Renewable Home applications will be developed using the waterfall methodology. This encompasses using a multi staged planning process which starts with gather the requirements and writing up documentation. Only after the initial documentation is completed is development cleared to proceed. After development, testing and maintenance is down to help finalize the process.

Organizational Structure

|  |  |  |
| --- | --- | --- |
| Software Engineer | Client | Mentor |
| Michael Dardis | John Groves (Home Owner) | Donna Lohr |

Project Responsibilities

The lead engineer is in charge of gathering requirements and developing the project. The client is to give the lead engineer any request or requirements that they have for the planned application. The mentor is to help guide the lead engineer with development and to help monitor project progress.

**Managerial Process**

Management Objectives and Priorities

The main goal for the use of this process is to maintain a clear schedule and objectives to use for the project’s lifecycle. This also helps with monitoring that all requirements from the client are met. The lead engineer will also provide the mentor with weekly status reports on the progress of the project. Periodically, there will be full progress reports, which will be more in-depth and descriptive of the current workflow.

Assumptions and Constraints

It is assumed that the project’s main scope with not change, and that requirements will not change drastically after the planning stage of the project. Also, it is assumed that the lead engineer is in charge of front-end design as well as back-end development in the C# programming language in ASP.Net.

Risk Management

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| # | Risk Description | Category | Business Impact | Root Cause | Severity (1-5) | Priority (H,M,L) |
| 1 | Wrong time estimation | Schedule | Failure to estimate the time for different modules could lead to missed deadline or a lesser product | Failure to plan accordingly and gathering proper requirements | 5 | High |
| 2 | New technologies being used | Technical | Using a new technology has its own learning curve, and reliability is untested | Choosing MySQL and visual studio C# MVC are new technologies to the developer | 3 | Medium |
| 3 | Change in requirements | Technical | This could cause shifting deadlines and rework of functionality, and potentially throwing off schedule | User change requests or technological adaptations to issues that arise | 3 | High |
| 4 | Inconsistent productivity | Performance | Work performed needs to be consistent, or schedule could be thrown off, leading to missed deadlines | Procrastination on certain modules for the project could lead to the impacts mentioned | 3 | Medium |
| 5 | Rushing on design components | Performance | Rushing during planning or design can lead to reworking entire system, causing missed deadlines | Not gathering the correct amount of requirements, not detailing modules and functions enough | 4 | High |
| 6 | Miscommunication on design | Operational | This can lead to lack of desired functionality for final product | Lack of meetings, status of design, and gathering full requirements | 3 | Medium |
| 7 | Lack of training for developer | Operational | Can cause project slow down | Failure to view proper training materials that’s required for development | 2 | Low |
| 8 | Resources are not tracked properly | Schedule | Time, project assets, and budget hours would be effected. Incorrect metrics would be given | Not keeping detailed status updates, or updated project logs, or proper version control | 4 | High |
| 9 | Version control is not properly kept | Technical | Maintenance will be difficult, and not having backups for project artifacts will make it difficult for change adaptation | Lack to implement version control process like Git or other backup log at the beginning of development | 1 | Low |
| 10 | Failure to keep up to date project logs | Operational | Maintenance will be difficult, and not having backups for project artifacts will make it difficult for change adaptation | Failure to set up logging system in place | 2 | Low |
| 11 | Flaw in database design | Technical | Could lead to late or unfinished product. Added time to the development process will lead to more costs | Failure to plan accordingly during design phase | 4 | High |
| 12 | Flaw in object-oriented design | Technical | Could lead to late or unfinished product. Added time to the development process will lead to more costs | Failure to plan accordingly during design phase | 4 | High |
| 13 | QA diagnostics fail to catch system vulnerabilities | Technical | Exposed code or vulnerabilities could lead to denial of service or system failures. Bugs in code can also lead to functionality failure, leading to increased costs for maintenance | Improper or lack of testing methodologies set up during design and implementation phase | 3 | Medium |
| 14 | Failure to provide user training | Operational | If user is not enabled to use the program, then client won’t accept the final product | Lack of training materials or user tutorial on how to use the program | 3 | Medium |

**Technical Process**

Methods, Tools, and Techniques

Client-side tools: HTML/CSS, jQuery, JavaScript, Bootstrap V4 library

Server-side tools: C#, MVC framework

IDE: Visual Studio using ASP.NET

Project Support Functions

Online team site(blackboard) to use with mentor to discuss any changes or aid that is needed during the project’s lifecycle.

Communication with the client will be primary through Gmail.

**Schedule and Budget**

