Energy Tracking Web Application for New Forest Escapes

Project Initiation Document

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Project Sponsor: Rachel Parsons – Founder / Facilitator at New Forest Escapes

Industrial Consulting Project (COM617)

Solent University

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Link to Web Application:

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# Background

From the Project Sponsor:

*“New Forest Escapes are a holiday-home rental agency that endeavours to help reduce negative travel effects (carbon emissions, environmental damage) whilst increasing positive ones; promoting sustainable economic development and building people’s love for nature (see,*[*https://newforestescapes.com/greener-greater-escapes/our-to-do-list/*](https://newforestescapes.com/greener-greater-escapes/our-to-do-list/)*). Video: (*[*https://solent.cloud.panopto.eu/Panopto/Pages/Viewer.aspx?id=ab3288a9-150f-4ce0-a558-af8e006c8d44*](https://solent.cloud.panopto.eu/Panopto/Pages/Viewer.aspx?id=ab3288a9-150f-4ce0-a558-af8e006c8d44)*)”*

*“Currently, there is no way for holiday rental agencies to charge guests for their energy usage; as a result:*

* *Homeowners face variable, and currently increasing, energy costs.*
* *There is no incentive for guests to be mindful of energy usage.”*

*“To solve the above problem, Rachel, from New Forest Escapes, requires a proof-of-concept energy tracking web application. The application will allow guests to log and transparently view their energy usage.”*

# 

# Project Definition

## Objectives, Deliverables & Acceptance Criteria

| **Objectives** | **Deliverables** | **Acceptance Criteria** |
| --- | --- | --- |
| **Minimum Viable Product - Energy Tracking Web Application** | Sub-objectives | Sign off from Project Sponsor |
| As per sub-objectives |
| **Homeowners (HO) can perform administrative actions and retrieve information about energy consumption for their Home(s) on the system** | HO can set an energy tariff for a Home | HO can easily input a kWh energy tariff that is linked to a Home |
| HO can view energy usage for each Stay | HO can easily view energy usage for a Stay, calculated using the meter readings related to it |
| HO can add instructions for locating and reading a meter at a Home | HC can easily add instructions which are viewable via a Home’s meter readings submission screen |
| HO can generate a link and / or QR code to a meter readings submission screen | HO can easily get a URL or QR code, to either send or print out, which links to the meter readings submission screen for a Home |
| HO can add a buffer amount – monetary amount of included energy usage | HO can easily add a buffer amount which would be deducted from the total energy charge of a Stay |
| HO or a Delegate can add pre and post-Stay meter readings | HO or Delegate can easily submit a meter reading consisting of a photograph, numeric value and the date & time and the reading is attributed to the correct Home and Stay |
| **Agency can use all HO functionality, with added administrative capabilities and oversight** | Agent can perform all HO functions | Agency has admin access to all Homes and details about Stays, particularly the total cost of energy usage for a Stay |
| Nice to Have - API access for retrieving the total cost of energy usage for a Stay |
| Agent can create a new Home profile | Agency can easily create new Home profiles which are attributed to HOs to set up / manage |
| **Visitors can log and transparently view the energy usage** | Visitor can log meter readings for a specific home | Visitors can easily submit meter readings consisting of a photograph, numeric value and the date & time |
| Nice to Have – Optical Character Recognition (OCR) functionality for reading meters |
| Visitor can view costs and meter readings | Visitors can easily view their costs and the details of all meter readings related to their stay |

## Scope

### Inclusions

* Modern user experience (UX) enabling users to quickly and effortlessly perform tasks and access information, including desktop and mobile friendly views
* Comprehensive and future-proof databases to manage user access and store collected data
* Live stats
* API

### Exclusions

* OCR for meter readings (see Appendix)
* Automatic smart meter readings via API (see Appendix)
* Self-serve user registration
* Billing and payments system for the total energy costs of stays

## Constraints

|  |  |  |
| --- | --- | --- |
| **Time** | **Cost** | **Quality** |
| Each Sprint must be completed on time to meet subsequent presentation / submission obligations | There is no budget allocated for this work so only free to use systems can be utilised | Opportunities for feedback from the Project Sponsor are limited, so the solution will mostly be based on assumptions from the brief |
| Final project delivery deadline is immovable | Each team member is allocated 3 hours of project time per week | Delivered solution must be at least to the standard of a Minimum Viable Product, meeting the deliverables outlined |

## Assumptions

* Users may want to log readings each day of their Stay to better monitor their usage

## Interfaces / Dependencies

### Systems

* GitHub – tracked development repository
* Figma – user interface (UI) / wireframes design
* MongoDB Atlas – database storage
* Storybook – UI component development
* Next.js – React.js frontend framework
* Tailwind CSS – frontend styling
* Cloudinary – image management service
* Cypress – integration testing
* TruffleHog – security scanning
* Vercel – website hosting

### Other

* Meters are accessible in the Homes
* Agency / Homeowner / Delegate Users have appropriate social media account to sign in with
* Visitors have access to a smart device and reliable internet connection

## Approach

The project is primarily being managed through GitHub and the built in project board functionality, providing KANBAN and GANTT views. The project is using Agile methodology and is broken into three sprints: Research & Planning, Proof of Concept and Minimum Viable Product. The project team are meeting on a weekly basis and attendance is mandatory for all members, ensuring all tasks stay on track and everyone is contributing equally. All project team members have been asked to work on the project for an average of 3 hours per week to also promote equal contribution.

# Project Milestones and Management

|  |  |  |
| --- | --- | --- |
| **ID** | **Milestone** | **Date** |
| 1 | Project Commencement | 23/01/23 |
| 2 | Sprint 1 End | 09/02/23 |
| 3 | Sprint 1 Presentation | 16/02/23 |
| 4 | Sprint 2 End | 02/03/23 |
| 5 | Proof of Concept (Sprint 2) Presentation | 09/03/23 |
| 6 | Sprint 3 End | 11/05/23 |
| 7 | PID Submission | 04/05/23 |
| 8 | MVP (Sprint 3) Presentation | 11/05/23 |

Please see Appendix for git roadmap

# Project Roles

|  |  |
| --- | --- |
| **Role** | **Who** |
| **Sponsors:** | |
| Support Tutor | Martin Reid Joe Appleton |
| Project Sponsor | Rachel Parsons |
| **Project Team:** | |
| Project Manager  (& Flexible Resource) | Sean Pollard |
| Front End Development  (& Flexible Resource) | Ryan Gaudion  Jo Randall |
| Back End Development  (& Flexible Resource) | Steven Hawking  William Tasker |
| Testing  (& Flexible Resource) | Sophia Attrill |

# Project Controls and Monitoring

Risks and Issues are being tracked as they arise and are all addressed by the project team in the weekly meetings to agree a unanimous approach to mitigation / resolution. Project changes will also be addressed in the group meetings to determine the most appropriate course of action.

## Risks and Issues

### Key Risks

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Risk ID** | **Description** | **Probability** | **Impact** | **Combined Level** | **Response Action** | **Overall Risk** |
| R1 | Deadlines for sprints and the project not being met will result in a failing grade for the group | L | H | M | Regular catchups and fair delegation of work to ensure all team members contribute equally and to their strengths should ensure on time delivery | L |
| R2 | Using 3rd party providers for login methods (e.g. Apple, Facebook, GitHub, Google, Twitter, etc) relies on the user having one of those accounts and relies on affordable, continuous access to the service. A user’s access could be suspended or removed | L | M | M | Careful monitoring of 3rd party policies and reliability will inform priority of developing 1st party user authentication system. If more providers follow recent changes made by Twitter (https://www.forbes.com/sites/jenaebarnes/2023/02/03/twitter-ends-its-free-api-heres-who-will-be-affected/?sh=528bb25a6266), then risk level may need to be increased | L |
| R3 | Mobile network coverage in the New Forest is variable so some Users may not have their own connectivity at a Home using their own device | H | H | H | Most Homes have a WiFi enabled Broadband connection that is available to the Users. For Homes which do not, the HOs should be aware of the high probability that not all meter readings will be reliably captured | L |
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### Key Issues

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| --- | --- | --- | --- | --- |
| **Issue ID** | **Description** | **Priority** | **Severity** | **Recommendation** |
| I1 | Next.js Authentication – Off the shelf user profiles are limited in their attributes and may not be suitable | H | H | Next.js Auth profiles can be manually extended so extra development time will be spent doing this rather than seeking an alternative method for building authentication profiles |
| I2 | Booking IDs – Project Sponsor feedback from Sprint 2 presentation has indicated we should use information not captured in our design for Booking IDs | H | M | Review the desired format for Booking IDs and either implement a change to accommodate it or feedback to the client why it cannot be done |
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## 

### Project Changes

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| --- | --- | --- | --- |
| **Change ID** | **Description** | **Impact** | **Outcome** |
| C1 | Change of Booking collection schema to accommodate requested format for Booking IDs | H | Not being implemented |
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## Milestone Feedback

### Sprint 1

At the end of Sprint 1, the project plan was outlined to the Support Tutor and they were reassured that ample progress had been made and that the proposed solution would meet the requirements of the Project Sponsor.

### Sprint 2

### A presentation [link] was recorded and sent for the Project Sponsor and Support Tutor to review. This covered: research into the problem; walkthroughs of the proof of concept’s user journeys; updates on development progress and raised any issues encountered along with queries for the Project Sponsor. The feedback was as follows:

### “Presentation was excellent:

### Very clear

### Really liked the red box

### They had Come up with all the issues.

### like the stretch goal: really impressed

### Excellent research

### Solution:

### Fantastic

### Very simple and user friendly, very clear

### Liked the QR feature: this very important

### Readings background is excellent

### Overall, this group have really understood the problem, and empathised with the user groups”

Sprint 2 Queries:

|  |  |
| --- | --- |
| **Question** | **Answer** |
| Permissions – Should a Homeowner be able to edit all the details (e.g. name, picture & tariff) of their Home? | Yes home owners should be able to edit the permissions |
| Links & QR Codes – Does our proposed implementation meet your expectations? | Links and QR meet expectations |
| Stretch Goal: API – Retrieving the total cost of a Booking requires an ID. Should we generate our own or would you want these to match those in your own system? | They surname and house name would be good too use as A UID |

# Implementation and Testing

# Conclusion and Recommendations

# Appendix