Statement of Work

Tech Launcher, IO Energy

2021 Semester 2

1. Objectives

1.1 Background

Energy industry in Australia is undergoing a fundamental transformation from fossil fuel to renewable power. While solar and wind generated energy has lowered the cost significantly in South Australia, there are challenges of using them as they are unstable sources.

Our client IO Energy is a South Australia (SA) based energy company with a vision of providing cheaper, cleaner and smarter energy to local consumers. With the help of widely promoted renewable energy in SA, they have come up with plans that give customers an 80% discount for electricity consumption between 10am to 3pm. Nevertheless, they have developed a smart meter and are using data analysis tools combined with machine learning to help customers better understand how their electricity is being used and where it can be saved.

1.2 Goal

The goal of this project is to generate a more comprehensive and accurate analysis of customers' electricity usage pattern by utilizing machine learning algorithms and data analysis tools, and present the result to customers by constructing an interactive and user-friendly interface in the form of a Web Application. For the benefit of customers, by adding these features, IO Energy can match customers' patterns with most appropriate plans and advise them on saving, so that they can access cheaper and greener energy. For the benefit of IO Energy, by adding these features, they will be able to expand their service scope and improve user experience, and eventually acquire more new customers.

2. Scope

2.1 Current state

- Early phase user-needs analysis has been performed.
- Market research has been performed.
- A database for existing customers' data management and storage has already been built using Docker and PostgreSQL.
- Basic function to match consumption-patterns with plans using "Calculator" has been built.

- A dashboard to show analysis results of customers' electricity usage has been enabled using AWS for internal use, which is a separate product from the Web Application that will be developed for this project.
- Client is trying to apply machine learning algorithms to provide better analysis.

2.2 Scope of work

We plan to offer work as listed below.

- Business analysis

  Continuing user-needs analysis and research to obtain evidence that can support the development of the Web Application.

- Web Application – UX, Front-end and back-end development

  a. Design and implement an interactive and user-friendly dashboard as a Web Application to show customers their bill analysis results.
  b. Ideally, the ultimate analysis functions will include consumption analysis, periodical summary, trend analysing, environmental friendliness and other possible features to be negotiated as the project progresses.
  c. Ideally, based on the analysis result, customers will be provided with suggestions and their consumption patterns will be matched with plans.
  d. The presentation of data will be in the combination of visualization and plain digits.

- Algorithm improvement

  Try to integrate machine learning algorithms in data analysis to deliver more accurate results and predictions.

- Database management

  Cooperate with the client to maintain the database and avoid any misuse of data.

- Communication

  Adequate communications with clients to update our progress, including emails, weekly meetings and chats via Slack.

  Perform accordingly as the ANU TechLauncher Industry Project Student Agreement states.

2.3 Project process

2.3.1 Phase 1

Early stage project research and initialization documentation preparation.

2.3.2 Phase 2

- Complete the User Story and define features according to the research and understanding of the business process and pain points.
- Interface UI and UX design.
- Database research.
- Backend calculation logic development.
- Research of machine learning algorithms and identify how it could be used in the project. Currently we have identified that machine learning could probably be used in plan matching and consumption predictions.

2.3.3 Phase 3

- Interface development stage one
  a. Accomplish basic functions including usage time analysis and periodic summary.
  b. Develop trend analysis, and usage pattern analysis features.
  c. Develop suggestion and matching plan features.
- Database building and API design.
- Collaboration, testing and adjustment.

2.3.4 Phase 4

- Interface development stage two:
  a. adjust and optimize stage one functions based on testing and client feedback.
  b. Develop trend analysis, and usage pattern analysis features.
  c. Develop suggestion and matching plan features.
- Machine learning research and design work.
- Collaboration, testing and adjustment.
- Perform user research and analyse feedback.

2.3.5 Phase 5

- Interface development stage three:
  a. adjust and optimize stage one and two features based on testing, client feedback and end-user feedback.
  b. Accomplish trend analysis, and usage pattern analysis features.
  c. Accomplish suggestion and matching plan features.
- Machine learning model implementation and optimization.
- Collaboration, testing and adjustment.

2.4 Tasks

Project management	Team

Project development for functions mentioned above	Team
Database management	Client and Team
End-user needs analysis (interview, survey, feedback system)	Client and Team
Testing	Client and Team

3. Resources required

3.1 Research

    3.1.1 Access to research materials that the client side has done before.

    3.1.2 When appropriate and needed, the client could coordinate meetings, interviews or surveys between us and the end-user of this application.

3.2 Development

    3.2.1 Be able to use the database.

    3.2.2 Be able to use the AWS platform.

    3.2.3 Access to any previously developed codes which are related to this project.

    3.2.4 Perform testing with us and give feedback as needed.

3.3 Communication

    3.3.1 Client's contribution in the weekly meeting.

    3.3.2 Timely and supportive response.

    3.3.3 Attendance as required by ANU TechLauncher for occasions like project audit tutorials.

4. Time commitments

At least 10 hours per person per week including code writing, meetings, tutorials, etc throughout 2 semesters.

5. Handover

Handover	Ideal delivery time
Phase 1 delivery	By 13th of August
Phase 2 delivery	By 2th of September
Phase 3 delivery	By 14th of October
Showcase	26th of October
Phase 4 delivery	Semester 1, 2022
Phase 5 delivery	Semester 1, 2022

6. Acceptance

Student	Signature	Date

Client	Signature	Date