Task 1

I have been asked by the owner of Rolsa Technologies to develop a digital system that will:

* Provide customers with information about:
* Green energy projects currently on the market
* How to reduce their carbon footprint
* Allow customers to:
* Schedule consultations and installations
* Calculate their carbon footprint
* It should also have features that are:
* Account registrations to allow customers to manage their consultations and data
* Accessibility features to support a wide range of users
* A tool for calculating and tracking energy usage

The Purpose of the app

In context of our App, the purpose of the digital system is to serve as a comprehensive platform that helps individuals and businesses make environmentally conscious decisions by providing education, personalized tools, services, and ongoing tracking of their efforts to reduce their environmental impact. It acts as a one-stop solution for accessing green energy solutions and improving sustainability. The digital solution informs users about green energy projects available in the market, giving them knowledge about renewable energy options such as solar panels, wind energy, and other sustainable solutions. This allows users to make informed decisions about adopting greener energy sources.

Target Audience

The app would appeal to an audience aligned with sustainability, energy conservation, and those who want to be diminishing their carbon footprints. The target audience would include eco-conscious people, young adults, homeowners, businesses, and anyone making environmentally friendly decisions. Providing education, actionable tools, and services, the app offers a complete solution built around the needs of the audience.

Aims and objectives (Rolsa technologies)

The company’s aims focus on promoting sustainability, reducing carbon footprints, and providing cost-effective energy solutions to residential and commercial customers. Their objectives include increasing market penetration, improving adoption of energy-efficient technologies, and offering excellent after-sales support. Opportunities for improvement include expanding customer education, integrating technologies better, making systems more affordable, and improving the sustainability of their operations and products.

A further goal of the app might be to improve the ease of use, user interface, and integration with other smart devices which could enhance the customer experience.

Another further goal could be to improve and invest in user centred designs for smart home users and ensure the systems are easy to set up and control, even for those who are not so technically advanced.

The past years have seen the emergence of several such websites and apps, through which businesses can trace their environmental sustainability efforts. Now, digital tools are largely utilized by companies to measure and mitigate carbon footprint levels, monitor energy consumption, and assess other environmental issues such as waste management and water use. This technology now plays a central role in ensuring the transparency and accountability of corporate sustainability.

1. Energy Management Platforms:

Energy Management Platforms are important digital tools for the greening of the energy sector. Such platforms help organizations to monitor their energy use in real-time, optimize energy usage, and thus save on waste. One of the best examples is Energy Star Portfolio Manager, which is widely used in the commercial sector.

Among other capabilities, Energy Star Portfolio Manager allows users to view their energy and water usage, track emissions, and analyze these with respect to benchmarks. Combined with easy-to-read reports and insights, this helps firms make determinations about where improvement can be made. It serves as an input with energy consumption, square footage of a building, and the number of employees to compute an energy efficiency score for the building, which aids companies in tracking progress toward the achievement of the sustainability goals.

This system common limitation is its reliance on manual data entry or limited integration to other digital tools or building systems. If there has been an outdated energy meter, or some departments are not synchronized, the accuracy of the system may be jeopardized, resulting in gaps in reporting. But still, this system is one of the top in the field of monitoring energy use because it helps companies correlate directly between energy use and environment damage.

2 Carbon Footprint Calculators:

Numerous organizations have carbon footprint calculators implemented in estimation and reduction programs that will reduce their overall emissions. Carbon Trust, which is among the most popular organizations, also offers an online platform that calculates and records emissions in businesses. The Carbon Footprint Calculator provides insight into a business's carbon dioxide emission through energy use, emission from transportation, and consumption of raw materials.

It also allows those businesses to monitor their carbon footprint over time and pinpoint areas in which improvement is applicable. It might even include measuring the effect of renewable installations, such as solar or wind power, on the carbon footprint or tracking success in waste management programs.

However, like all energy management platforms, the carbon calculators are only as good as their input data. Inaccuracies in reporting, assumptions of out-of-date technology, or misestimation in the amount of energy possessed can skew the results considerably. But it is a vehicle for businesses today to put their money where their mouths are in terms of becoming more sustainable and helps them report tangible superior changes over time and direct their decarbonization efforts.

3. Sustainability tracking for Manufacturing:

Manufacturing industries need real-time digital systems that can help monitor resource usage for productivity, as well as reduction in environmental impact. Through these solutions, Siemens helps manufacturers track and optimize energy, water, and raw material performances.

For example, using the MindSphere platform, Siemens connects industrial equipment, machines, and sensors to the cloud, allowing manufacturers to access real-time information on their resources and emissions. The predictive analytics help companies determine when maintenance of the equipment will be needed as well as when the spikes on energy consumption occur, then give them a road map of operation for sustainability.

Completely integrated with all functionalities, these capabilities face the challenge of integration between legacy equipment and modern digital systems. Then only some manufacturing plants have not updated or renovated their equipment or infrastructure to facilitate them with advantages such as fully advanced digitized tracking systems. Therefore, the complete potential realization from these platforms may take longer as the manufacturing process advances on technology.

4. A fourth example of the digital systems in green energy is smart building technology that provides management and energy efficiency for commercial real estate. Johnson Controls, a global leader in smart buildings, developed the Metasys® Building Automation System, which integrates a combination of building systems (HVAC, lighting, and energy management) to optimize the energy usage of buildings.

This system has embedded sensors that collect data from the infrared building infrastructure server to monitor energy consumption, indoor air quality, and heating/cooling patterns in real-time. In addition, based on the data collected, it automatically adjusts settings to ensure the maximum comfort of living and working environments with minimum energy wastage.

An important downside of smart systems for buildings is the capital required for implementation, especially in the case of older buildings that may require significant retrofits to accommodate advanced technologies. Another issue is that the complexity of the systems leads to a steep learning curve for the staff that need to manage them.

5. Software for the Management of Renewable Energy:

Companies invest in renewable energy and need some specific platforms to trace and enhance their performance against their investment in renewables. An example of a platform from Schneider Electric is EcoStruxure™, a platform through which organizations can monitor solar, wind, and battery storage systems. The system provides real-time data about productions generated, grids interacted with, and performance metrics, with which companies can track the extent to which their renewable investments are working.

As much good as it has, renewable energy management tools must face the problem of unpredictability associated with such sources as solar and wind. There may be changes in atmospheric conditions, equipment breakdowns, and varying consumption, all of which affect production of energy and, therefore, would make any commitment to consistent results quite difficult. Although these platforms aid in producing strong answers to the renewable performance aspects, it's still one of the challenging issues that businesses must face as far as their dependence on renewable energy is concerned.

Conclusion:

In this epoch of climate change and energy crisis, many companies have found the adoption of digital solutions for tracking and reducing their environmental impact an optimum solution. For example, Energy Star Portfolio Manager; Carbon Trust’s Carbon Footprint Calculator; Siemens MindSphere; and EcoStruxure by Schneider Electric are instrumental in measuring and reducing energy use, emissions reductions, and adoption of other sustainable practices within companies. Despite the technical prowess that such platforms bring in measurement and analysis, most high-level users suffer problems regarding compromising data accuracy, legacy systems integration, as well as the unpredictability that is an intrinsic characteristic of renewable energy sources.

These digital solutions remain integrated into the sustainability strategy of any organization and will yield the data and insights that promote greener and better business practices.