

## **Capstone Project – Assessment – Group 5**

### **Electricity Powertrust Dashboard**

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### **Data Description:**

#### **Dataset Source:**

- For our project we will be needing data about renewable energy plants across the globe, with different parameters so we can measure it and visualise it properly with all the detailed data & information requested by the stakeholder.
- Currently we have received data from the stakeholders of Powertrust and have started our data exploration into the provided data. Also, we are exploring multiple sites and dashboards related to renewable energies that could achieve the requirements of the stakeholders.

**Purpose of Data:** The electricity Powertrust project is an initiative aimed at improving the transparency, efficiency, and accountability of the electricity sector. The project typically involves the creation of a central repository of data and information related to the electricity sector, which is then made accessible to stakeholders through a web-based dashboard or platform.

### **Data Quality:**

Data quality is a critical aspect of the electricity power trust project, as it affects the reliability and accuracy of the information that is presented to stakeholders. The following factors are typically considered when evaluating the data quality in the electricity power trust project:

- **Completeness:** The data should be complete and comprehensive, covering all aspects of the field.
- **Accuracy:** The data should be accurate and free from errors and should accurately reflect the actual performance of the renewable energies.
- **Consistency:** The data should be consistent across different sources and should not contain any inconsistencies or contradictions.
- **Validity:** The data should be valid, and should accurately represent the underlying facts and figures related to the company.
- **Reliability:** The data should be reliable and should provide consistent results when analyzed and compared over time.

To ensure the data quality in the electricity Powertrust project, various data quality control measures and data validation processes are typically put in place. This includes the use of automated data quality checks, manual data quality checks, and periodic data audits to identify and correct any errors or inaccuracies in the data. In addition, the project typically involves regular stakeholder engagement and feedback to ensure that the data meets the needs and expectations of the stakeholders and to identify any areas for improvement.

### **Data Fitness & Usability:**

Fitness is a critical aspect of the powertrust project, as it refers to the ability of the project to meet the needs and expectations of the stakeholders and deliver the desired outcomes. The fitness of the project can be evaluated based on the following factors:

- **Relevance:** The project should be relevant to the needs and expectations of the stakeholders and should provide meaningful and actionable information that supports informed decision-making.
- **Timeliness:** The project should provide up-to-date and timely information and should be able to respond to changes in data in a timely manner.
- **Scalability:** The project should be scalable, and should be able to handle increasing amounts of data and information as the electricity sector grows and evolves.
- **Flexibility:** The project should be flexible, and should be able to accommodate different types of data and information, as well as changing stakeholder needs and expectations.

Usability is an important aspect of the powertrust project, as it refers to the ease of use and accessibility of the platform for stakeholders. The following factors can be considered when evaluating the usability of the powertrust project:

- **User-friendly interface:** The dashboard should have a user-friendly interface that is easy to navigate and understand, and that supports intuitive data exploration and analysis.
- **Accessibility:** The dashboard should be accessible to all stakeholders, regardless of their technical skills and expertise, and should be easy to use for both technical and non-technical users.
- **Ease of use:** The dashboard should be designed with the user in mind, and should be designed to make it easy for users to find the information they need and to perform the tasks they need to do.
- **Responsiveness:** The dashboard should be responsive, and should be able to handle large amounts of data and complex queries in a timely and efficient manner.
- **Customizability:** The dashboard should be customizable, and should allow users to tailor the platform to meet their specific needs and preferences.

The usability of the project, regular user testing and feedback are typically conducted to identify areas for improvement and to ensure that the platform continues to meet the needs and expectations of the stakeholders.

## **Product/Solution:**

The purpose of the dashboard is to support decision-making, promote transparency, and improve the understanding of the electricity sector.

- **Data visualization:** The dashboard may provide visual representations of data, such as charts, graphs, and maps, to help users understand and interpret data more easily.
- **Data analysis:** The dashboard may provide advanced data analysis tools and techniques, such as machine learning and artificial intelligence, to support the discovery of insights and trends in the data.
- **Customization:** The dashboard may allow users to customize their view of the data, such as by selecting specific data sets or metrics to display, to meet their specific needs and requirements.
- **User experience:** The dashboard may have a user-friendly and intuitive interface to make it easy for users to access and use the data and insights provided.

## **Ethical Principles Covered:**

The ethical principles of identifying, collecting, and using this data were met by ensuring that the data was collected with consent from the stakeholders, was clear in its purpose and usage, was kept consistent and trustworthy, was transparent in its control, and considered the potential consequences of its use.

The team discussed and agreed upon the objectives and strategies for using the data with the stakeholders and ensured that the data was securely stored and only accessed by team members with proper authentication.

## **How the 5C's of ethics are covered in this project:**

- **Consent:** A group of 5 people held a meeting with the relevant stakeholders in the project to talk about the goals and plans. After the meeting, the stakeholders supplied the team with necessary information in Excel format, including data from various regions with dates and the amount of energy produced daily. The team also discussed how they will utilize this data to reach the company's desired outcome.
- **Clarity:** The team was very clear with the stakeholders about the usage of the data and how it will be used to meet the company's objective. The data was stored in individual devices with personal authentication for security purposes as we have signed a NDA (Non-disclosure agreement).
- **Consistency:** The team has maintained a consistent approach towards the project by adhering to the company's policies and ensuring the protection of the data. They have also built a strong and trustworthy relationship with the stakeholders by frequently giving them updates on the project's progress.
- **Control and Transparency:** The team is following all regulations, meaning that the data will only be accessible if the company requests it, and it will be deleted from the team's system once the project has been finished.

- **Consequences:** The information gathered in this project will be utilized to present a visual representation of Powertrust's performance and adherence to the demands of its stakeholders. If the data in any case is misused or shared with anyone other than the respective team members and stakeholders involved, the person responsible for sharing the data will be held accountable.

### **Future Data Needs:**

- **Renewable energy sources:** As the electricity sector continues to transition towards more renewable and sustainable energy sources, the dashboard may need to collect and analyze data on the sources, quantities, and costs of renewable energy generation.
- **Energy efficiency:** As energy efficiency becomes increasingly important in the electricity sector, the dashboard may need to collect and analyze data on energy consumption, energy efficiency initiatives, and their impact on the environment and economy.
- **Customer behavior:** The dashboard may need to collect and analyze data on customer behavior, including electricity consumption patterns, preferences, and feedback on service quality.
- **Market trends:** The dashboard may need to collect and analyze data on market trends, including changes in demand for electricity, pricing trends, and the emergence of new technologies and business models.

### **Potential Challenges:**

The project and its dashboard may face a range of challenges that could impact its success and effectiveness:

- **Data quality and accuracy:** Ensuring that the data collected and analyzed by the dashboard is of high quality and accuracy is essential for ensuring its validity and reliability. Challenges may arise in terms of data collection, storage, and analysis, and may require the development of new methods and technologies to overcome.
- **Data privacy and security:** Protecting the privacy and security of sensitive data, is critical for ensuring the trust and confidence of stakeholders. Challenges may arise in terms of access, and management, and may require the implementation of robust security measures and protocols.
- **Stakeholder engagement:** Engaging with a wide range of stakeholders, can be challenging, especially if there are conflicting interests and expectations. Challenges may arise in terms of communication, consultation, and decision-making, and may require the development of effective stakeholder engagement strategies.
- **Technological limitations:** The dashboard may be impacted by limitations in existing technologies, and may require the development of new and innovative solutions to overcome these limitations. Challenges may arise in terms of data processing, visualization, and analysis, and may require significant investment in research and development.

**References:**

- <https://www.powertrust.com/>
- <https://www.eea.europa.eu/themes/energy/renewable-energy/renewable-energy-in-europe-2022>
- <https://www.cer-rec.gc.ca/en/data-analysis/energy-commodities/electricity/report/canadas-renewable-power/index.html>