Future Solutions Project: Solution Development

This assignment will describe your solution and the technologies required for your solution to exist in the future. In this assignment, you will describe your solution in detail and discuss how the features of your solution will fulfill the customer's needs. To show that your solution will be feasible in the future, this assignment will also describe the current technologies that exist which will enable the development of your future solution (enabling technologies), and what additional technological development must occur in the future to enable your solution to exist. Additional details about the expected content and format of this assignment is included below. **All team members should contribute to all project assignments.**

Assignment Format:
This assignment should be typed (single spaced) using complete sentences, at least 2-3 pages in length, with appropriate section headings to help organize the content. This document may include relevant figures, diagrams, etc, if they are a useful complement to the written text. Since this is a technical document, it should be written in 3rd person, and should avoid the use of informal language or 'slang' terms. Make sure to use reliable sources for research and cite all sources used using an appropriate citation format. **Please include all team member names and email addresses on the first page of the document.**

Assignment Content:
The Solution Development document should include a section addressing each of the following topics:

- Brief summary of Customer Needs and Opportunity: This section should provide a ***brief*** overview of the customer, needs, and opportunity you have identified during your needs analysis. The purpose of including a brief summary of this information is to provide an introduction and context for the solution you will be describing.

- Provide a Detailed Description of your Solution: Describe what your solution is and how it works, including both **form** and **function.** Include sketches and/or diagrams of your solution to help explain your solution idea and show the key features of your solution. Clearly describe how the features of your solution will address or fulfill the customer needs (Note: One way to show this is to include a list of customer needs and a list of solution features, and show how they are connected).

- Describe the specific Enabling Technologies for your solution: Identify and describe the specific 'current' technologies that will enable the development of your solution. These 'current' technologies may be work that is currently being done in research labs (this is most likely), or it may be technologies that are already commercially available. These 'enabling' technologies, most likely, do not currently have all of the capabilities your 'future' solution will need, but they should be technologies that, when developed further and perhaps combined with other technologies in the future, will help make your solution a reality. You need to identify *specific* technologies (i.e. 'motor' or 'battery' is not enough); find specific technologies people are currently working on that could possibly be developed further in the future to be implemented in your solution. Make sure to **Cite references** for sources used.
  Example: If your solution requires a new type of battery with greater storage capacity and charging speed in a smaller size than what is available today, some of your enabling technologies might be a new battery technology currently under development that shows promise for providing increased storage capacity, and a new material that perhaps allows for faster charging/conduction of electricity.

- <u>Identify the key Technology Milestones required to develop your solution:</u> Describe what additional technological advancements need to occur in the future in order for your solution to be developed and implemented. To identify these 'milestones', you should compare the capabilities of the current 'enabling' technologies you have identified to the capabilities/requirements you have identified for your future solution in order to identify the 'gap'.   Then, explain what the 'gap' is and how it will be filled. Use flow charts, diagrams, etc, to help visualize the technology development milestones that need to occur to proceed from the current state of technologies (enabling technologies) to the technologies needed for your solution to be developed in the future (technical specifications/requirements). Although a diagram will be a helpful visual, you will likely also need to provide additional text to describe the development milestones.
  Examples: Battery capacity needs to increase from x to y; speed needs to increase from x to y; need to improve flexibility of material; etc..)
  Example format for a flow diagram of development milestones: Start with enabling technologies on left (or top) and future solution requirements/functions on the right (or bottom). Then, in the middle, show the advancements in each that need to happen (and also show any technologies that might be combined together, new future technologies that need to be created, etc..)