

**Thesis Project Portfolio**

**Capital One Agile Maturity Assessment Tool**

(Technical Report)

**Future of Lithium Ion Battery Standardization**

(STS Research Paper)

An Undergraduate Thesis

Presented to the Faculty of the School of Engineering and Applied Science

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In Fulfillment of the Requirements for the Degree

Bachelor of Science, School of Engineering

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## **Sociotechnical Synthesis**

### **Introduction**

While I found deep love and joy for both my technical and STS research topics, I was unable to find an intersect between the two thus will be discussing them separately in this sociotechnical synthesis. For my STS topic I researched the market battle for lithium ion battery standardization, specifically the present-day substandard recycling processes these lithium ion battery packs in Electric Vehicles.

### **Technical Topic: Capital One Agile Maturity Assessment Tool**

For my technical topic, I will discuss my past work experience as a Software Engineer Intern at Capital One Financial in the summer of 2021. During the internship myself and a team built an Agile Maturity Assessment tool to standardize agile working methodologies across different lines of businesses and Capital One as a whole in aims to create more efficiency and accountability across the company.

During my work as an intern on the Agile Maturity Assessment team, I set out to find the best features to add to the product in order to increase the user base, uniformity across teams, and user experience. To accomplish this, I created several demos and incorporated many rounds of feedback into modifying the source code each week. The most important results from the assessment tool were the time saved by managers and division directors by cutting out activities that were losing productivity and emphasizing on areas that increased efficiency.

### **STS Topic: Future of Lithium Ion Battery Standardization**

In my STS research I aimed to find the stakeholders for and against standardization of lithium ion electric vehicle batteries. To accomplish this, I analyzed several sources from scholarly articles to government written publications and corporate focused articles. The largest findings were that there is large difficulty in uniforming all EV batteries as this would require a total redesign of battery packs and automobile designs as a whole.

### **Conclusion**

For the technical topic project, everything I set out to accomplish was completed. All features listed at the start of the internship were finished and lead into return offers for all four interns on the team. Some of the adversity that was necessary to overcome was the lack of experience in the technologies of the pre-existing application, however with the aid of the managers and other interns, everything was caught up to speed relatively quickly.

For the STS topic, the project was extremely fruitful as I found several stakeholders both for and against standardization of EV battery packs. I was able to form my own recommendation on how to standardize the batteries based on the view points from these stakeholders in a confident and educated manner. Some of the next areas to focus on for the next researchers are finding more technical methods of standardization as well as more stakeholders against standardization.