**Implementation Plan**

For the Soybean Forecasting system, we will follow an Agile development approach due to the ability to create new features separately then add them to the overall system. We plan on using an R Shiny web app for the front-end and a MySQL database for the data storage. The costs associated with this system include the hosting server cost for the Shiny app, the cost for a MySQL database, and the cost for the total development time involved in creating the web app and database.

With this system design, the skills needed will be proficiency with the SQL and R coding languages, knowledge of modeling techniques, UI/UX design skills, and screenscraping or at least data querying ability.

The Agile development approach we will take is methodically outlined below. The major tasks are individual pieces or components to the system that will be developed individually in order to speed up deployment time and enable a product to be available as soon as possible. Once the product is deployed to a server, more pieces and functionality can be implemented incrementally to allow more tools to be available.

**Major Tasks**

1. Create static graphs with multiple types of forecasts for Soybean price.
2. Create an R Shiny app that allows the manipulation of variables and forecasts.
3. Research existing news and weather forecasts software that can be customized to the user requirements.
4. Create MySQL Database that is capable of storing all of the necessary pricing, weather, and predictor data.
5. Research a hosting server that can meet the system requirements.
6. Connect our database to the R Shiny App and set up automated queries at the desired time intervals.
7. Design the User Interface to display all the information as diagrammed in the High-Level System Design.
8. Test and Validate the system as outlined in the Test/Verification Plan.

**Tentative Schedule and Task Roles**

Week 1:

Creating static forecast graphs and models to accurately predict the price.

Collaborative

* Predict the closing price for November 4th - 8th, 2019.
* Tweak models to make more accurate predictions.

Jacob Gaylord

* Create dygraphs and HoltWinters models.
* Create R Shiny App for predictive models.

Jared Campbell

* Clean data and create Mean, Naive, and Seasonal Naive models.
* Research data sources and/or screenscraping methods.

Week 2:

Creating a dynamic R Shiny app to display different models and predictor variables.

Collaborative

* Finalize models and price predictions based on feedback.
* Create different ways of visualizing predictions and predicting variables.

Jacob Gaylord

* Create a dynamic R shiny app that allows for variable manipulation.
* Research existing news and weather forecasting software that can be used in the system

Jared Campbell

* Locate all necessary data sources to be used in visualizations.
* Begin creating a MySQL Database and connecting it to the app.

Week 3:

Finding a hosting server and creating a user interface.

Collaborative

* Find a hosting server that fits the system requirements.
* Create an interface that fits the User requirements.

Jacob Gaylord

* Connect R Shiny app to live database.
* Implement News and Weather forecast widgets on the website.

Jared Campbell

* Set up automated queries based on a time interval.
* Create/design UI elements and site structure.

Week 4:

Testing and finalizing the system.

Collaborative

* Feature test with user input.
* Test system functions.

Jacob Gaylord

* Data validation of actuals and predicted price values.
* Verification of all other information.

Jared Campbell

* Non-functional testing of database queries.
* Data Validation of predictor visualizations.