Problem Statement and Goals
ProgName

Team #, Team Name
Student 1 name and macid
Student 2 name and macid
Student 3 name and macid
Student 4 name and macid

Table 1: Revision History

Date	Developer(s)	Change
Date1	Name(s)	Description of changes
Date2	Name(s)	Description of changes
...	...	...

1 Problem Statement

[You should check your problem statement with the problem statement checklist. —SS] [You can change the section headings, as long as you include the required information. —SS]

Competitive engineering extracurricular activities at the University level revolves around the design, build, test, learn (DBTL) cycle. In teams that have not yet reached maturity in completing high quality and timely DBTL cycles, the design/building phases are over-prioritized, leaving the testing/learning phases under-resourced.

Most teams struggling to achieve timely DBTL cycles compete in deeply technical applications of engineering. Problematicly, deeply technical applications demand significant amounts of time into the design/build phase of a competition year to create a working prototype.

1.1 Problem

Our capstone group recognizes the challenge teams face with the under-allocation of resources for testing, and seek to produce a solution that reduces the time to obtain and store quality testing data and extract value from the raw data they collect.

1.2 Inputs and Outputs

[Characterize the problem in terms of "high level" inputs and outputs. Use abstraction so that you can avoid details. —SS]

The solution will collect raw data as input and output Key Performance Indicators (KPI) statistics generated from test data.

Raw data input to the system will normally be aggregated upon completion of the test. The system will then communicate the contents of the aggregated data to a computing device. Users will have the opportunity to provide input on the raw data collected before saving it to a database. This input should allow the user to modify the raw data to delete inconsistent data points before sending output. The user will then submit the data to a database with additional information to specify key details of the test. An application will then allow users to view generated KPI statistics on the test data stored in the database.

Inputs:
A. Raw data collected by testing equipment.
B. Communication method mode select between wired versus wireless transfer of raw test data.
C. User modifications of raw test data file to maintain consistency in data through data point modifications.
D. User notes on modified test data file to specify details of test data collected.
E. Data processing mode select between generating KPI metrics in real time, live data collection, versus generating KPI metrics in post with data from a complete test.

Outputs:
A. Graphical view of test case data over time.
B. Tabular view of Key Performance Indicators.
C. Historical trends of related test Key Performance Indicator results.
D. Testing trends across sub-teams.

1.3 Stakeholders

Formula Electric teams exemplify a highly technical, extra-curricular engineering team at the University level. On a yearly basis, these teams compete in competitions organized by a governing body, Formula SAE, who judge the quality and effectiveness of engineering ideas, designs, fabrications, and tests applied on a team's vehicle.

Specifically, ideal candidates who can benefit from our capstone will be Formula Electric teams with 0-4 years of competition experience. Teams without four years of experience are ideal because they typically cannot finish comprehensive tests to validate sub-team designs and overall vehicle design in a competition year.

As a result, our primary stakeholder will be McMaster's Formula Electric team because the team has 3 years of competition experience and faces difficulty validating all aspects of the vehicle through comprehensive testing.

1.4 Environment

[Hardware and software —SS]

2 Goals

3 Stretch Goals