FORD STUDENT PROJECT REPORT – FAMU SBI AND COE

1.1. UPDATED List of Functional Requirements:

The following is a compiled set of business requirements, submitted by each team and compiled based on similarity and collective agreement.

Not Relevant

Additional Suggestions

a) System should be able to actively learn and understand its surroundings
b) System should be able to communicate directly with other vehicles to avoid collision and save lives
c) System should provide information to other vehicles regarding road obstructions, other traffic conditions coming up ahead
d) System should be able to recognize nearby vehicle location, in effort to prevent collisions via blindspots

    Details needed on different types of collision to avoid. Ex. Front End, Rear End, Side (Left and Right) Collision, In lane and intersection collision.

e) System should communicate with on-board car features (such as emergency braking, anti-skid, etc.) to alert user regarding unexpected conditions
f) System will use sensors on vehicle to understand position and location on road and proximity to other vehicles (Tabled)
g) System should be able to use wifi, bluetooth, technology to communicate with user's phone or cellular device in real-time, and allow you to receive communications from the vehicle remotely
h) System should be designed for voice communication with the user (audible commands from user, audio responses from system)
i) System should relay speed and distance information from other vehicles to the operating vehicle and driver
j) System will make use of GPS and other mapping software, as well as installed sensors, to collect and maintain location-awareness
k) System will be established for retrofitting to older vehicles via central console

    Engineering team will specify location of retrofit device installation

    Engineering team will specify device that will best be able to maintain location-awareness

l) System may include NearField Technology strips wrapping around vehicle, allowing for 360-degree transmission of data regarding vehicle positioning and location in reference to other vehicles
m) System could possibly communicate vehicle information to Ford via satellite communications
n) System should be easily installable (as close to plug-and-play as possible)
o) System should also contain a touchscreen interface that can be installed in car dash
p) Possible sensors to include in the system: 1) Radio Detection and Ranging (RADAR), 2) ultrasonic, 3) Light Detection and Ranging (LiDAR), Camera systems
q) Collision indicator should be placed in side and rear view mirrors to direct driver attention. No indicator placed on front console of dashboard to avoid distracting driver. Indicator will be both voice and visual and should accommodate deaf and color blind drivers.

Update on Progress:

Dr. Black has met with the Engineering Team to brief them on the SBI teams' progress and results of deliverables done so far. From this point forward, we will be attempting to hold joint planning meetings with representatives from each SBI team attending the Engineering Team planning meetings. Additionally, all submissions from SBI teams from this point forward will be compiled into ONE deliverable, that will be sent to the Engineering Team for feedback and modifications. All modifications and enhancements will be shared between teams as well.

The SBI team will be moving forward to develop preliminary Use Cases (Deliverable #3) and Feasibility Analysis (Deliverable #4). The goal is not for these use cases to be in lieu of the Engineering Team's set of use cases, but to provide a starting framework upon which the Engineering Team can build and elaborate.

Remaining Project Timeline – Draft

The following is the tentative remaining timeline for deliverables to be submitted during the Fall 2016 by the MAN 5548 students. Dr. Black will be providing updates throughout the process.

Project timeline

Date	Task	Responsibility	Status
August 2016	Senior Engineering: Select members from ME and ECE Senior design, (4-5 students)	**Faculty Leads**	MAN 5548 – **Completed (8/25/16)**
	Junior Engineering: Select junior members from ME, ECE, (4-5	**Faculty Leads**	

	students)		
	SBI: Introduce project to MAN 5548 class	**Faculty Leads**	MAN 5548 – **Completed (9/15/16)**
September 2016	A marketing analysis, marketing/sales requirements in tandem with engineering team	**SBI Student Team**	**MAN 5548** Deliverable #2 – Business Requirements **Completed (9/29/16)**
	Engineering: Students will develop a list of needs and design requirements in tandem with the business team	**Engineering Student Team**	
October 2016	Students will make a presentation to Ford reps on project progress	**SBI and Engineering Student Teams**	**MAN 5548** Deliverable #3 – Preliminary Use Cases Due (10/25/16)
	Generate customer use cases	**SBI and Engineering Student Team**	**MAN 5548** Deliverable #4 – Feasibility and Marketing Analysis, Interviews with Ford Due (11/10/16)
November 2016	Engineering: Students will develop their detailed design for the project (utilize use cases and other materials developed by the business team)	**Engineering Student Team**	
	Conduct profitability assessment	**SBI Student Team**	**MAN 5548** Deliverable #5 – Data Flow Diagrams and E-R Diagrams Due (11/30/16)
December 2016	Project Presentation – Status Reporting	**SBI Student Team**	**MAN 5548 Project Presentations (12/1/16)** **- Transition to**

			Implementation -
January 2017	Engineering: Develop design FMEA	**Engineering Student Team**	
	Students will give a presentation on their detailed design	**SBI and Engineering Student Teams**	
	Engineering: Develop design tests	**Engineering Student Team**	
	Engineering: Begin building prototype	**Engineering Student Team**	
February 2017	Engineering: Run design tests		
March 2017	Engineering: Run system tests to verify the design meets the system requirements	**Engineering Student Team**	
April 2017	Students will give final presentation and project demonstration	**SBI and Engineering Student Teams**	
	Invite Ford representatives to final presentation	**Faculty Leads**	

PROJECT REPORT SUPPLEMENTS

MAN 5548 – Systems Theory and Design
Final Project Deliverable #3 – Design Documents (Use Cases)

- I suggest you use http://www.draw.io to complete your diagrams. You may also use Word's Drawing features as well if you prefer.
- Save this document as either 1) a Word or PDF document, or 2) the type specified by the package you are using (referring to one of the packages above) with the name of your group (i.e., MyGroup_Deliverable3.pdf) and submit by the deadline above

Deliverable #3 – the Use Cases (Due: Tues. Oct. 25 @ 11:59 p.m.)

Deliverable #2 required you to begin to develop what we call the **business requirements** of the system – what types of functionality you think, based on your team's research and discussions, that this system to be performing. The goal is that these business requirements will translate into **user requirements** – what the user will be expected to do while using this system – and those in turn translate into ***functional requirements*** – the actual description of the functionality of the system you are proposing. This next

deliverable requires you to now develop Use Cases for the preliminary business requirements you identified in Deliverable #2 (see Chapter 4 Supplementary Notes for a refresher).

Steps:

1) Review your business requirements you identified from Deliverable #2, as well as Dr. Black's comments. Dr. Black will compile the business requirements into ONE set of business requirements that each group should operate from going forward. This document is located in the FORD PROJECT folder in Blackboard.
2) Using the compiled list of Business Requirements, identify a set of user requirements for your system:
    a. you should identify **a minimum of 7 major or significant tasks** that users of this potential system will do – these are the user requirements). See the supplementary notes for a discussion of how to arrive at user requirements
    b. For those user requirements, develop a set of use cases for those requirements. These can be of the Casual Form, but make sure you include all components as discussed in class. These can also be in diagram form or written text form (see the notes)
3) Review these Use Cases with members of the Engineering Team – see Dr. Black or Blackboard for contact information on the members of the Engineering Team. Get their input and/or feedback on your use cases.
4) Submit these Use Cases by the deadline.

Save all of your images as ONE Word or PDF document, and submit by the deadline.

Note: **The quality of your work matters.** Full credit will only be given to the work that contains the necessary level of detail, and adheres to the recommendations mentioned in the chapter.

Good luck – I'm looking forward to seeing the results.