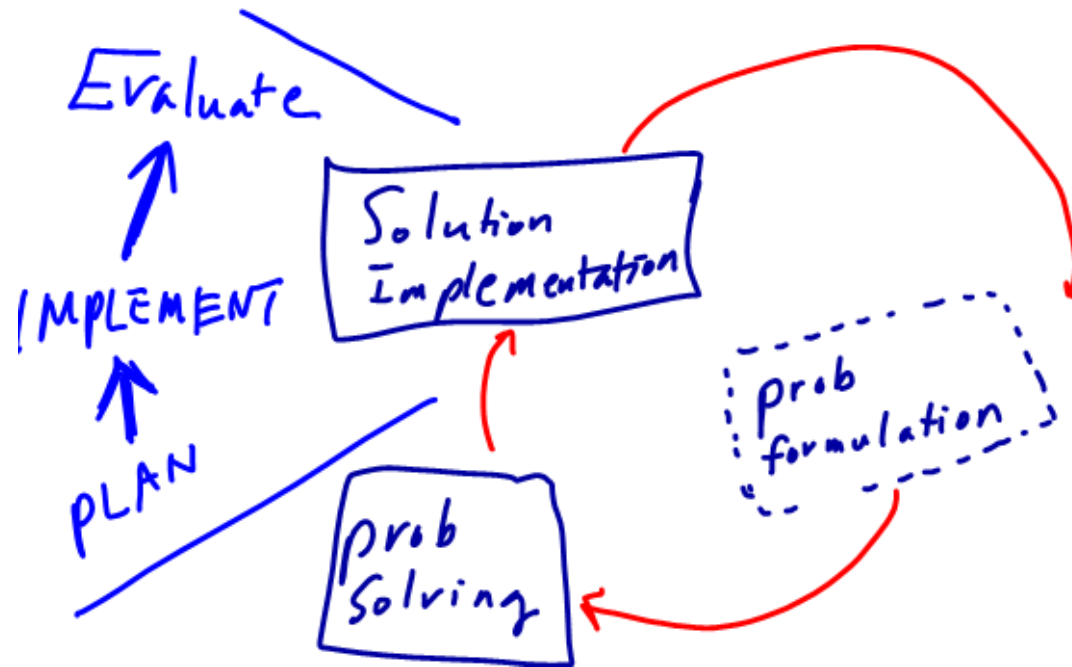


Implementation and Evaluation Planning



Paper Design **Into** Reality

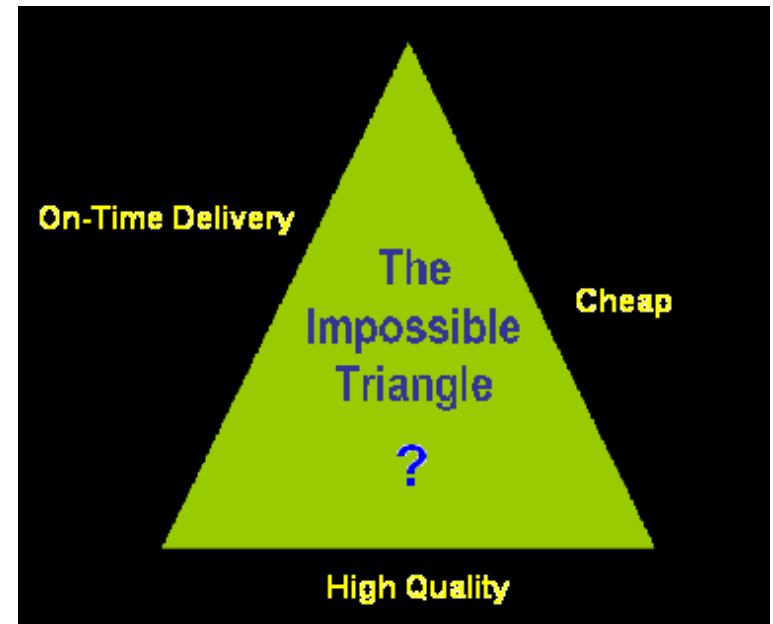
Dr. Charles Kim

www.mwftr.com/SD.html

EECE404 Senior Design II
Electrical and Computer Engineering
Howard University

Objectives

- Clarification on team's Deliverables
- Steps of Solution Implementation
- Consideration for Implementation Planning
- Elements of Good Test Plan
- Strategy for Evaluation
- 3 C's
 - Commitment
 - Communication
 - Coordination
- QCD: Key performance indicator
 - We go by
 - **DQC (Delivery – Quality – Cost)**



PLAN

- **What's Involved**

- The Final Product of the Project
- Milestones and Deliverables for “Semester-End Product for Demonstration”
- Conversion of Paper Design into Reality
- Make sure the implemented design meets the design requirements (“Quality”)
- Efficient Process to do the work (“Delivery”)

- **PLAN**

- “A road map to a goal”
 - Outline the navigation route (from Today to the End of the project)
 - Coordinate efforts to achieve Milestones and the Final Goal
- Manage the key resources
 - Time
 - Personnel

Final Product Milestones and Deliverables

- Final Product and Deliverable of the project
- Class Activity to set the **Final Product and Deliverable**
 - Consider the project span toward the Final Product completion
 - Consider the features, functions, and specifications
 - Consider the inside components and operational mechanism
 - Consider milestones (intermediate products) over the project span
 - Draw/Describe so that
 - It works as a **guidepost** for the long-term project goal.
 - It is comprehensive enough so that anyone (not in the team) can clearly see and guess **what is expected to be achieved** when the project is finished.
 - **Submission (today) of this class activity is required.** (Later, a scanned copy will be emailed to each team leader.)
 - It [the initial description in scanned copy] should be extensively discussed in a weekly team meeting (and with academic and/or industry advisors) and may be **revised and detailed for further clarification, which should be made in to the Final Description.**
 - **Submission (by next Wed) of the “Milestones and Deliverables of the Final Product” is required.**

Semester-End Product Milestones and Deliverables

- Semester-End Deliverable (“Demonstration Product for April Presentation”)
- Class Activity to set the **Semester-End Deliverable**
 - Consider the appearance
 - Consider the features, functions, and specifications
 - Consider the inside components and operational mechanism
 - Consider the software blocks and code
 - Draw/Describe so that
 - It works as a **guidepost** for everyone in the team,
 - It is comprehensive enough so that anyone (not in the team) can clearly see and guess **what is expected to be presented** in April presentation/demonstration
 - **Submission (today) of this class activity is required.** (Later, a scanned copy will be emailed to each team leader.)
 - It [the initial description in scanned copy] should be extensively discussed in a weekly team meeting (and with academic and/or industry advisors) and may be **revised and detailed for further clarification, which should be made in to the finalized description.**
 - **Submission (by next Wed) of the “Milestones and Deliverables of the Semester-End Demo Product” is required.**

Project Milestones & Deliverables: Example

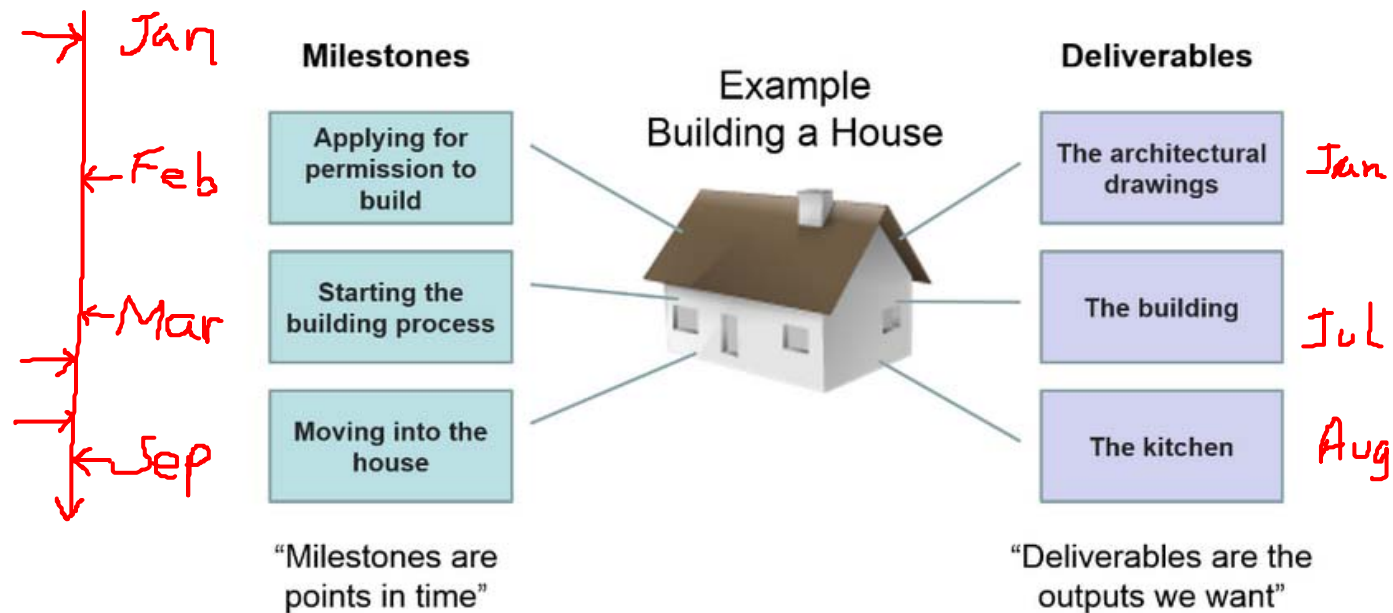
https://www.linkedin.com/pulse/building-project-milestones-deliverables-andrew-mitchell

LinkedIn

What is LinkedIn?

≡ Pulse *achieved.*

Deliverables & Milestones

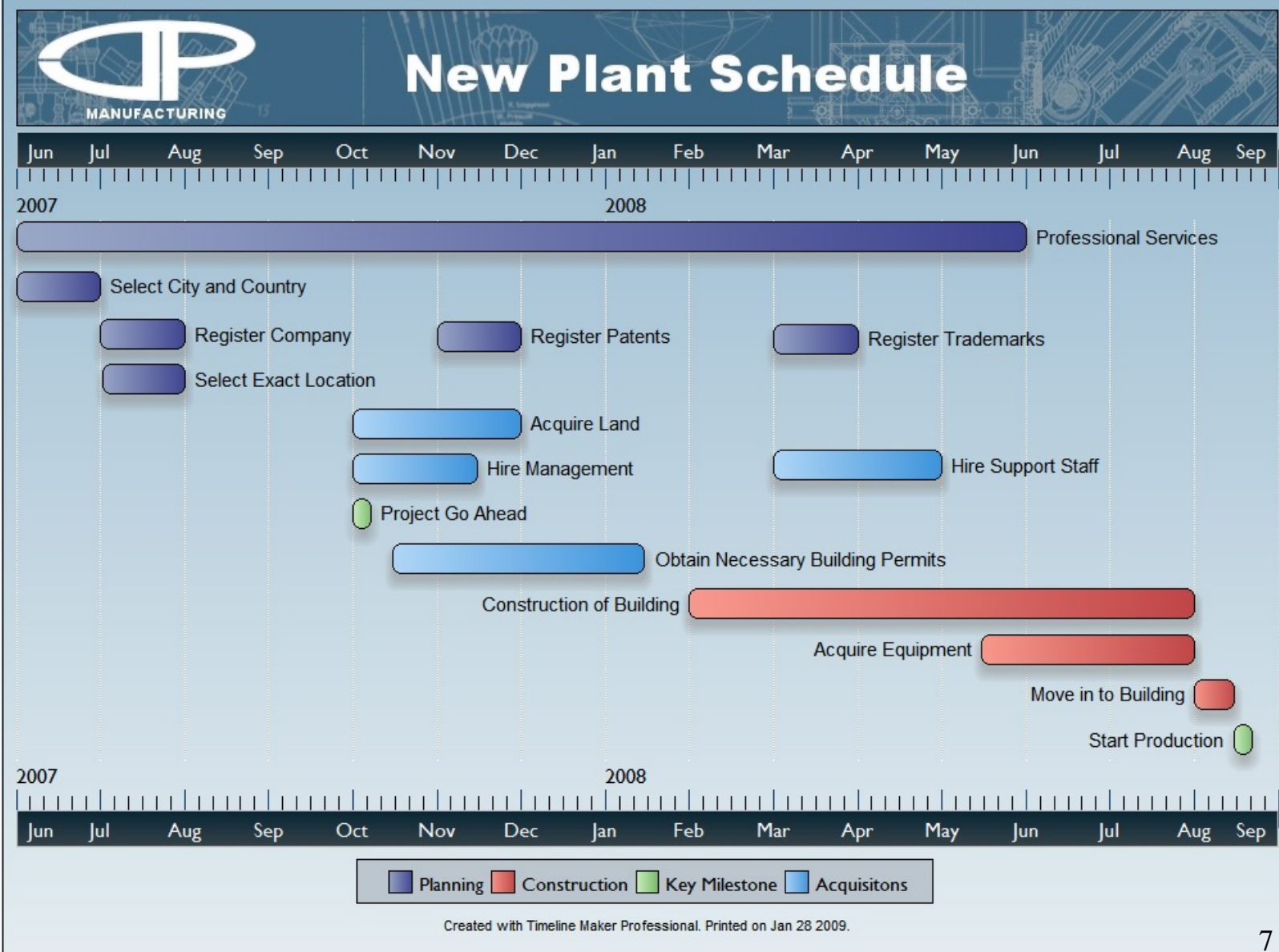


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Eram Limited

Project Milestones and Deliverables Example

<https://www.timelinemaker.com/samples/product-samplecharts-milestones.html>

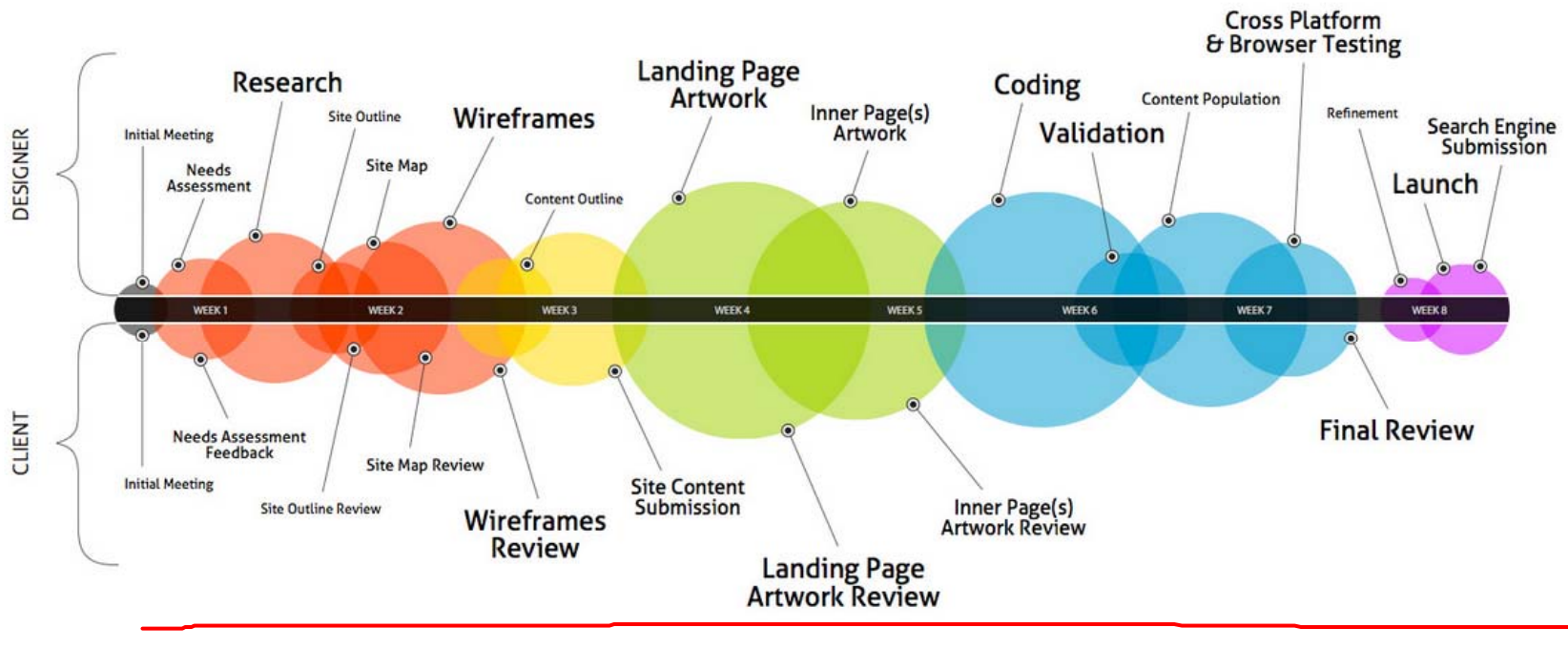


Project Milestones and Deliverables Example



A Web Site Designed

MILESTONES, INVOLVEMENT, IMPORTANCE & TIMELINE



Time →

MILESTONES



INVOLVEMENT



IMPORTANCE

Average
Greater

PHASE

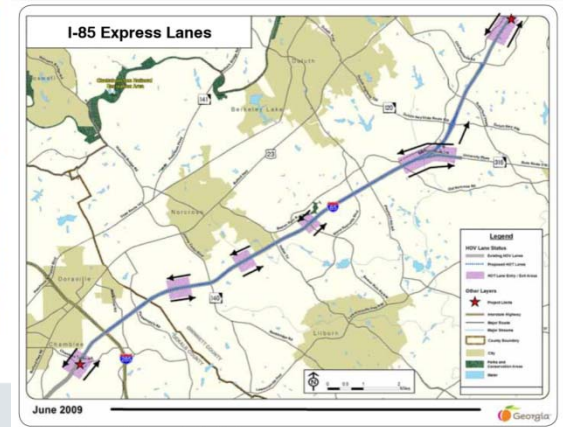


Project Milestones and Deliverables Example

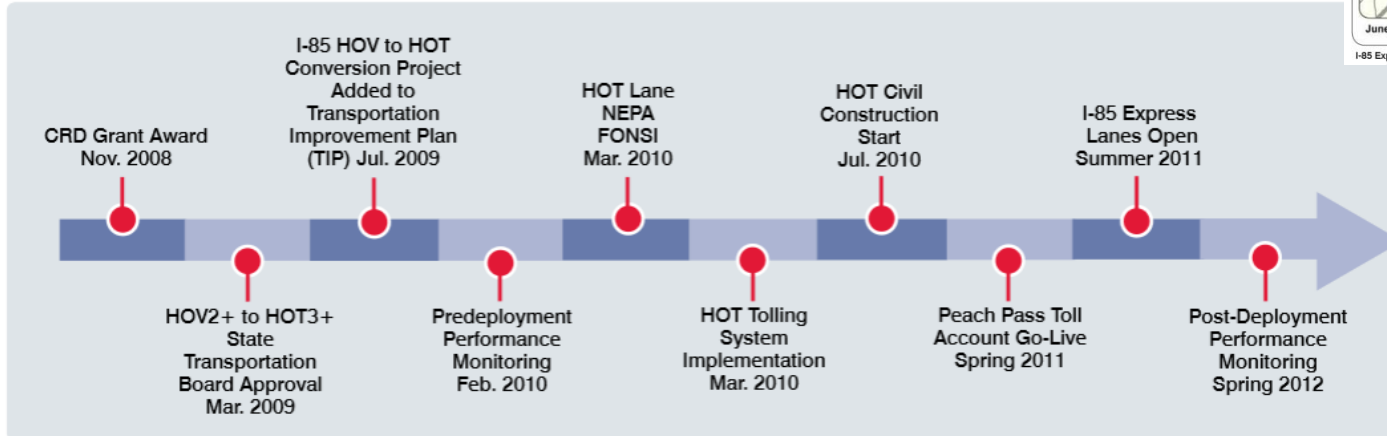


[Home](#) > [Federal Programs](#) > [Congestion Reduction Demonstrations](#) > [Atlanta](#)

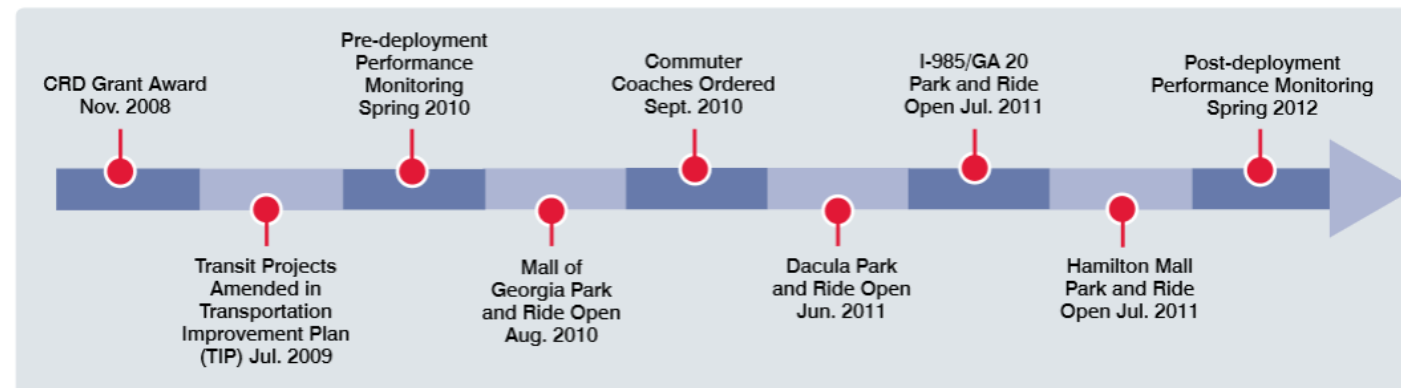
UPA/CRD Annual Report Atlanta I-85 Express Lanes and Transit Projects



Timelines



I-85 Express Lanes milestones



Project Milestones and Deliverables Example

<https://www.officetimeline.com/blog/project-plan-presentation>



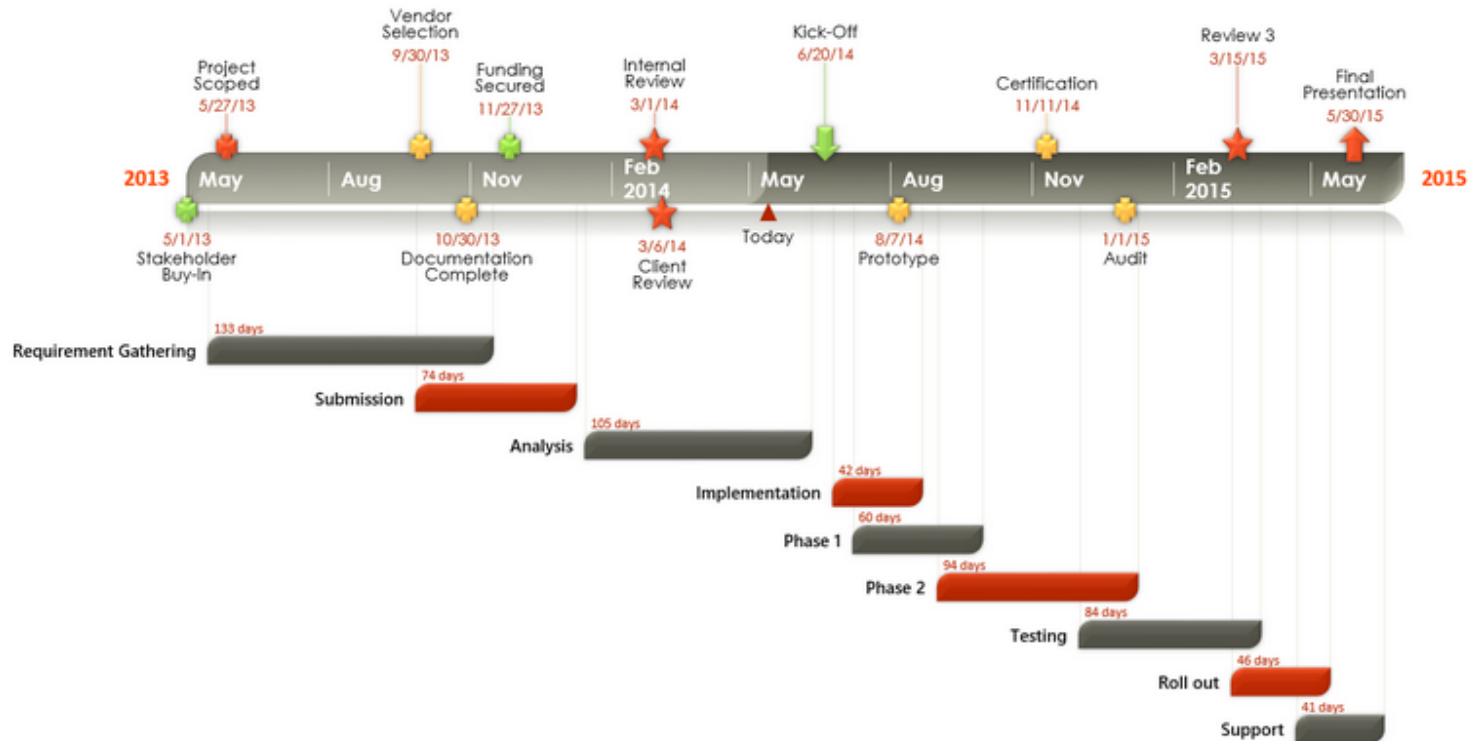
Search



Make professional timelines *quickly*, right inside PowerPoint.

Start Making Timelines

Project Plan Review



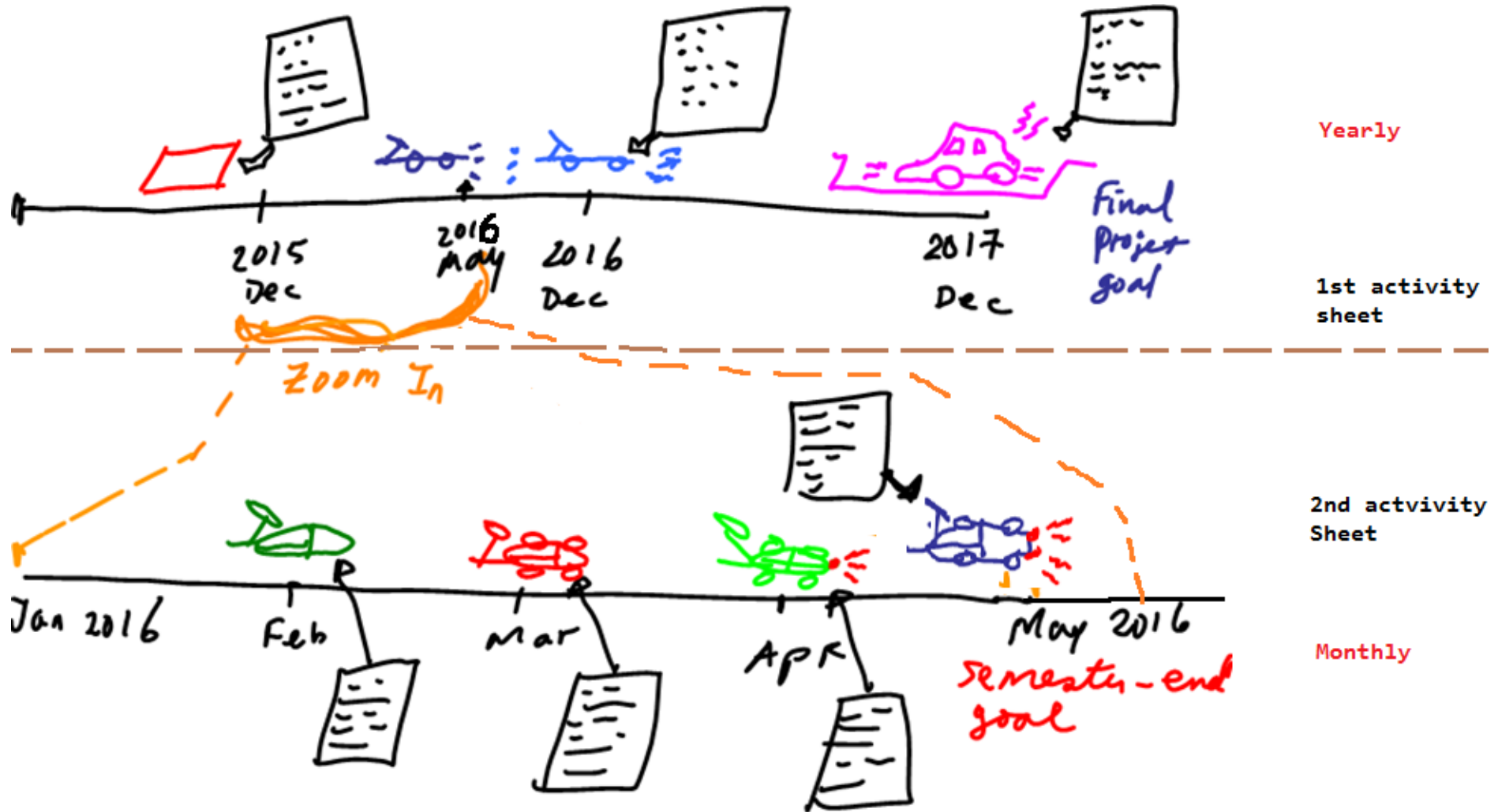
Project Milestones and Deliverables Example

www.ttopstart.com/news/frequently-asked-questions-to-prepare-for-successful-horizon-2020-applicati

Search

Tasks	Lead partner	2015				2016				2017				2018			
		3	6	9	12	15	18	21	24	27	30	33	36	39	42	45	48
WP 1 - Title																	
Task 1.1: Title	X				D1.1												
Task 1.2: Title	X			M1				D1.2									
Task 1.3: Title	Y									M2							
WP 2 - Title																	
Task 2.1: Title	Z			D2.1													
Task 2.2: Title	X							D2.2									
Task 2.3: Title	Y											M3				D2.3	

HOW TO MAKE OUT Project Milestones and Deliverables for Final Product and for Semester-End Demo Product



Milestones and Deliverables for the Final Product {for each team}

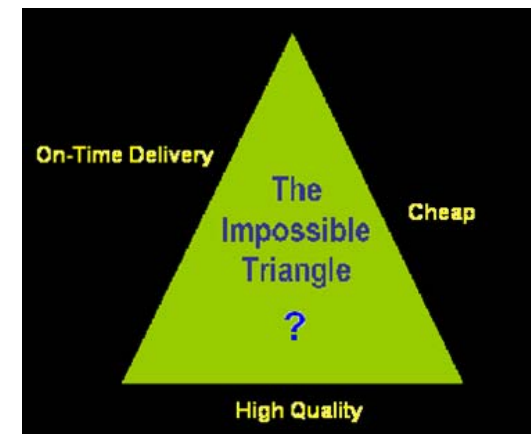
- **Deliverables and Milestones toward the FINAL PRODUCT**

Milestones and Deliverables for Semester-End Demo Product {for each team}

- **Semester-End Deliverables and Milestones** (“Demonstration Product for April Presentation”)

Components of Implementation Plan

- Final Product
- Clear Set for Semester-End Deliverable
(“Demonstration Product for April Presentation”)
- **Next Step? --- Plan for Implementation**
 - Produce/Deliver high **quality** product **economically**, **environment-friendly**, etc
 - **Develop of Plan to Transfer the Design to Reality**
- **Strategy**
 - **Allocation of Time**
 - Details of Tasks to be executed
 - The Order the Tasks to be done
 - **Allocation of Personnel**
 - Who will work on which tasks



Semester-End Deliverable: Implementation Planning

- **DETAIL**
 - You should be very detailed with your plan
 - Instead of “construction”
 - Breakdown to much smaller tasks;
 - “order motor”, “manufacture brackets”, “align optical components”
 - Instead of “Coding”
 - Breakdown to much smaller modules;
 - “video module A”, “homing subroutines”, “collision avoidance algorithm”,
 - Timeline (**From Monthly to Weekly** in the Milestones)
 - Gant Chart
 - Spreadsheet
 - Project Calendar

Implementation Planning -continued

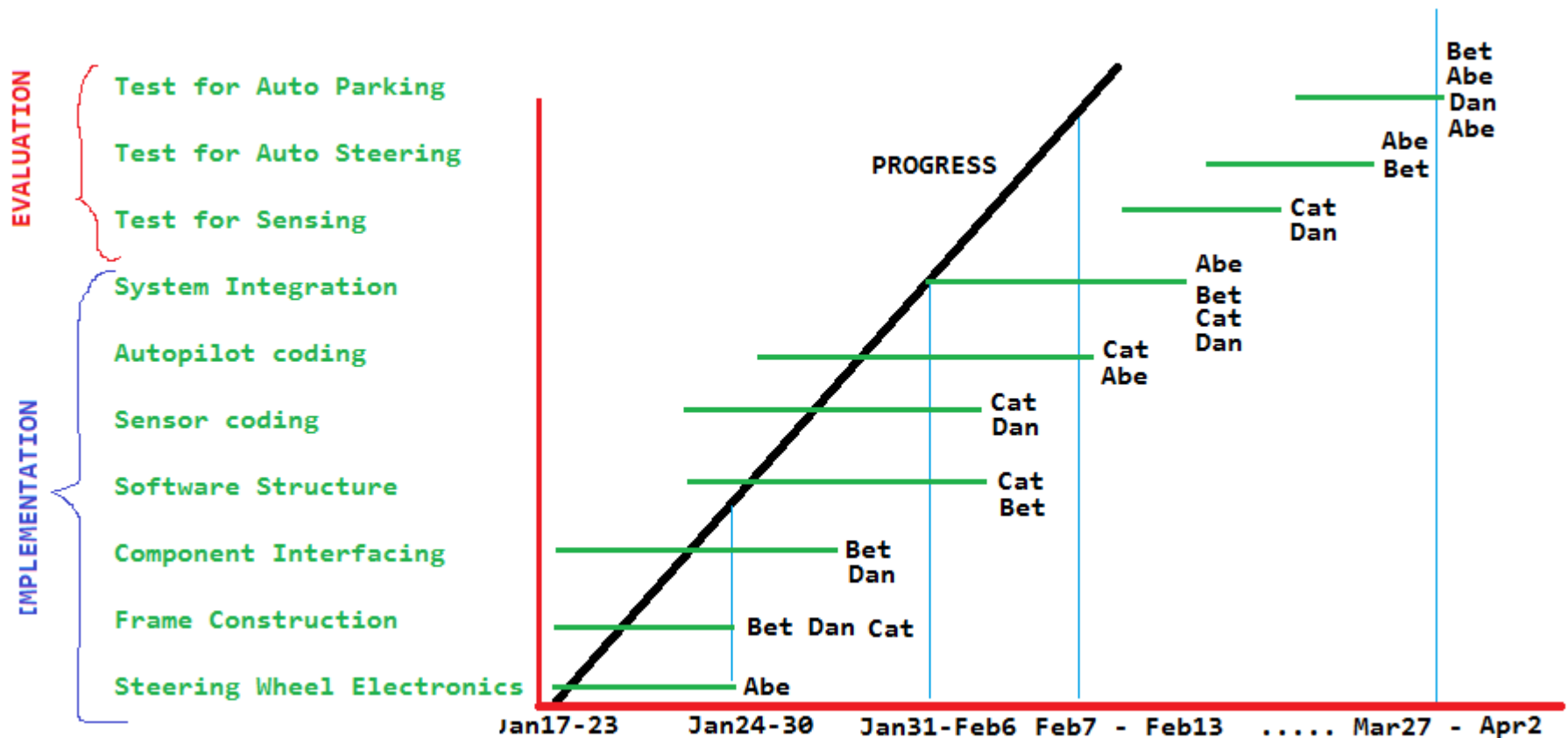
- “x3”
 - Everything takes longer than you think – even if you think it will take longer than you think.
 - Parts will not arrive when promised by suppliers
 - Building parts yourself will take longer than expected
 - Software coding takes much longer than you think
 - Rule of Thumb: (estimated time) x 3
- Include Evaluation Plan
 - Test plan/procedures to evaluate a design against all of the design requirements
 - What to test
 - How to test

Semester-End Deliverable: Implementation Planning

- Example-0

Semester-End Deliverable

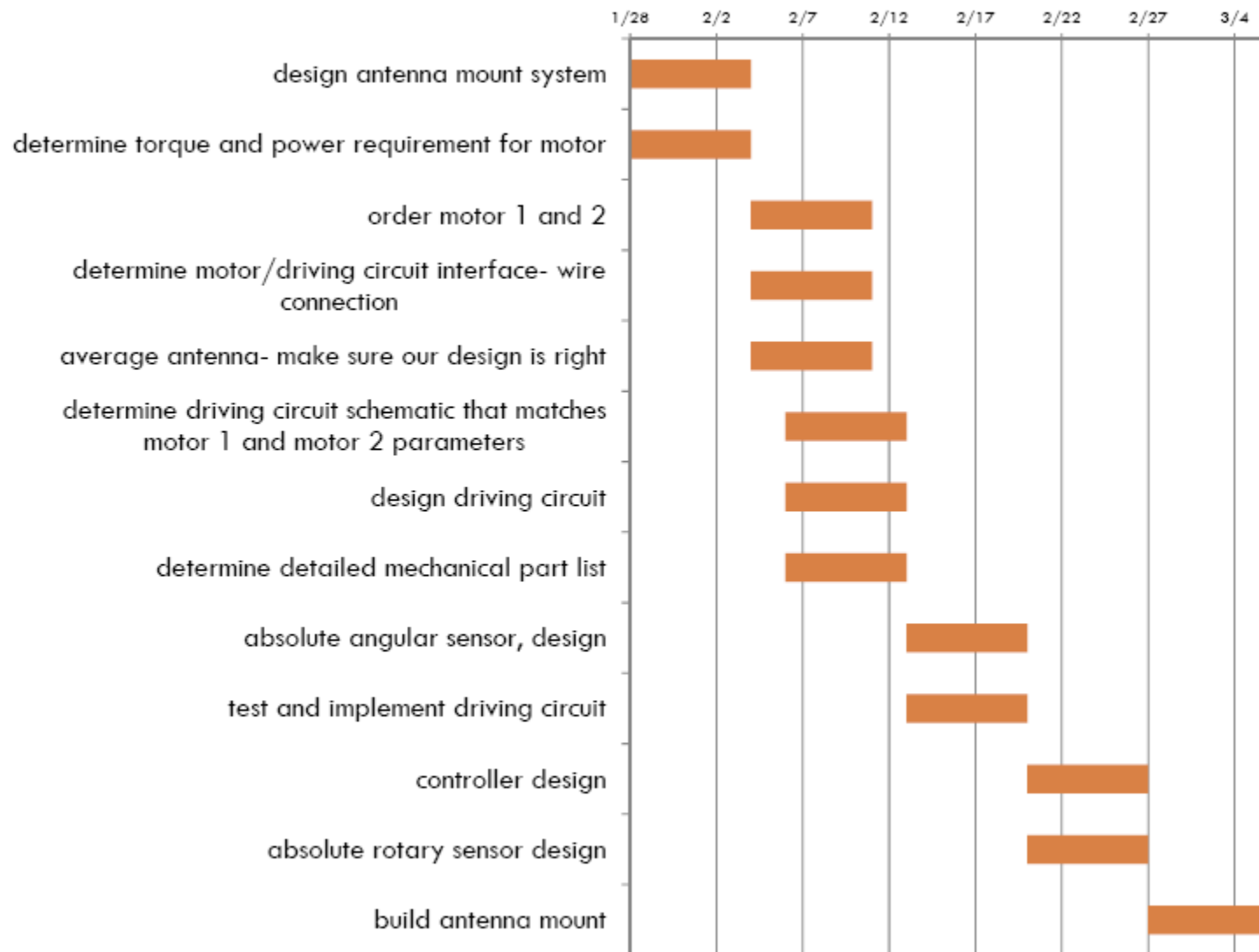
"Rear-Right Collision-Avoidance with an autopilot steering on a car frame of 4 wheels"



Sample - 1

Week	Beginning Date	Deliverables
Week 1	08-Feb-09	<ol style="list-style-type: none"> 1) Order the following parts <ul style="list-style-type: none"> - Line Tracker Input Sensors - Miniature car - Basys System Board FPGA - Ultra-Bright LEDs - Connecting wires - Seat vibrators - Electric switch (for turn signal) 2) Use relevant block set to create simulation with Simulink®
Week 2	15-Feb-09	<ol style="list-style-type: none"> 1) Develop LDWS system algorithm 2) Consult with faculty advisor (Dr. Gloster) to critique the algorithm
Week 3	22-Feb-09	<ol style="list-style-type: none"> 1) Use VHDL to develop the input module (interpret data from line tracker module) 2) Use VHDL to develop the control unit module (process data received from line trackers module)
Week 4	01-Mar-09	<ol style="list-style-type: none"> 1) Construct demonstration set 2) Critique and test VHDL software
Week 5	08-Mar-09	<ol style="list-style-type: none"> 1) Test model on demonstration set 2) Update VHDL code in input module if needed
Week 6	15-Mar-09	<ol style="list-style-type: none"> 1) Develop user tests: Power User Test and Normal User Test 2) Develop and critique plan for user documentation
Week 7	22-Mar-09	<ol style="list-style-type: none"> 1) Create user documentation based on previous plan
Week 8	29-Mar-09	<ol style="list-style-type: none"> 1) Beta testing with select power users 2) Update user documentation accordingly
Week 9	05-Apr-09	<ol style="list-style-type: none"> 1) Beta testing with normal users to ensure that user documentation is comprehensive and easy to follow

Sample -2



Sample -3

Cap II		Implementation & Evaluation Plan (FINAL)	r2.15.12
WEEK	TASKS	MEMBER	
Feb. 6 - 11	Finalization of parts to be ordered	Brima	
	Order parts (send list to Dr. Harris)	Bathiya	
	Study how to interface microprocessor + sensors	Kurubel	
	Study software development guide for Etool (CC2540 programming IDE)	Bathiya	
	Finalization of camera sensor to use	Lauren + Kurubel	
	Calculate power requirements & identify battery required battery	Lauren	
	Sign up for Apple Developer Program and obtain Xcode IDE	Brima	
Feb. 12 - 18	Obtain an iPhone 4S	Brima	
	Follow up with Dr.Harris on status of order	Bathiya	
	Create schematic on P2PICE	Bathiya + Kurubel	
	Create PCB layout on Pad2Pad software	Bathiya + Lauren	
	Research antenna connection	Lauren	
	Investigate availability of IAR Embedded Workbench License	Lauren	
Feb. 19 - 26	Program mini-dev kit to get built-in temperature readings	Kurubel	
	Program dev. kit receiver to sync with the device	Lauren	
	Complete PCB layout and send schematic to Pad2Pad	Bathiya + Lauren	
	Study reference iPhone app code	Brima + Kurubel	
Feb. 28 - Mar. 3	Program mini-dev kit to read values from accelerometer - Set the sensor to provide continuous stream of data	Lauren + Bathiya	
	Deploy reference iPhone code and test the connectivity	Brima	
	Analyse accuracy and precision of these temperature readings	Brima	
Mar. 4 - 10	Prepare test environment - Find warm and cold setting - Prepare easy method of modifying ambient temperature quickly	Lauren	
	Program mini-dev kit to read values from built-in temperature sensor - Start with one reading of temperature, then program to provide continuous readings	Lauren + Bathiya	
	iPhone App Development - Identify main features needed to implemented in iPhone - Design and sketch user Interface (block diagrams) to outline the app - Address data storage format	Brima + Kurubel	

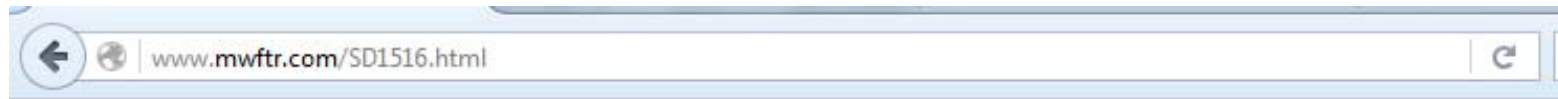
Sample – 3 (continued)

Mar. 11 - 17	<p>Program the microprocessor</p> <ul style="list-style-type: none"> - First, deploy previous code to read built-in temperature sensor values - Then adapt accelerometer reading code for the external temperature sensor 	Lauren + Bathiya
	<p>iPhone App Development</p> <ul style="list-style-type: none"> - Start programming a shell of the program with required user interface - Using reference code, incorporate required Bluetooth communication code 	Kurubel + Brima
Mar. 18 - 24	<p>Program the microprocessor</p> <ul style="list-style-type: none"> - Continue to develop code to read values from external temperature sensor - Debugging - Test communications link between capsule and BLE receiver on PC 	Lauren + Bathiya
	<p>iPhone App Development</p> <ul style="list-style-type: none"> - Continue programming/incorporating Bluetooth code 	Kurubel + Brima
Mar. 26 - 31	Finalize microprocessor programming, debug	Lauren + Bathiya
	Finalize iPhone coding, debug	Kurubel + Brima
	Test connectivity between capsule and iPhone	Bathiya + Kurubel
Apr. 1 - 7	Use test environment to evaluate performance of data collection	Lauren
Apr. 8 - 14	Prepare for EGE Day	All

Implementation and Evaluation Plan - Summary

- Summary
 - Detailed Road Map from Final Design to Reality
 - Detailed Plan to achieve quality project and to deliver on time.
 - Starting from this week
- Today's Task
 - We will do this as a class activity today
 - Much more detailed plan than the samples
 - **Implementation and evaluation (tests) tasks – Detail (divide into small tasks)**
 - **Weekly Tasks**
 - **Monthly Deliverables**
 - **Members in charge**
 - Use fillable project calendar
 - Submit the calendar file (by the end of the class)

Implementation and Evaluation Plan - FORM



Lecture Notes:

[Syllabus](#) of the course

Lecture 1: [Introduction](#)

Lecture 2: [Design Process](#) - Overview (assignment embedded)

Lecture 3: [VIP and Teamwork](#)

Lecture 4: TRIZ

Lecture 5: [Problem Formulation](#) (Team assignment at the last page)

Lecture 6: [Design Requirement](#) (Team Assignment)

Lecture 7: [Solution Generation](#) (Team Assignment for Individual and Team Conceptual Design)

Lecture 8: [Alternative Designs, Analysis, and Top Design Selection](#) (Team activity + Presentation Requirement)

Lecture 9: [Oral Presentation + Elevator Pitch](#)

Lecture 10: Project Implementation and Evaluation Plan (Plan Form in [MS Word](#) and [PDF](#) formats)

Project Calendar Form for Project Implementation and Evaluation

PROJECT IMPLEMENTATION AND EVALUATION PLAN
 Electrical and Computer Engineering
 Howard University

Senior Design Class
 Dr. Charles Kim

TEAM NAME: _____

TEAM MEMBERS: _____

SEMESTER-END DELIVERABLE: _____

MONTH	WEEKLY TASKS		MEMBER In CHARGE	MONTHLY DELIVERABLES
	Week (FROM day TO day)	TASKS		
JAN	18 - 22			
	25 - 29			
FEB	1 - 5			
	8 - 12			
	15 - 19			
	22 - 26			

Class Schedule Jan-Feb 2016

- **Jan 27:** Lecture on Progress Reporting & Presentation
- **Feb 3:** Guest Speaker (Anthony Waterman)
- **Feb 10:** 1st Progress Presentation