* Agenda
  + Team Registration / Start-up
  + Advisor
    - Kaikai requires updates every Sunday
      * We need to provide him an update now
      * I personally think we should go with him to keep us on track (BJ)
  + Tasks
  + Scheduling
    - Weekly
    - Milestones
      * Abstract / Prez - Intro (**6/26**)
      * Report / Status Prez (**7/12**)
      * Overall architecture design (**7/12**)
      * Part Verifications & Ordering (**7/22**)
  + Business
* Team
  + Max
    - Documentation
    - Presentation
    - Research
    - Coding Assistance
    - Assembly Assistance
    - Weekdays
      * Wed (San Jose ~1730)
      * Online after 5pm
    - Weekends
      * Primary - San Jose
      * Secondary - Martinez (1 hr away)
    - 10 - 15 hours / week
  + Anahit
    - No documents
    - Some Presentations
    - Coding
    - Board / Peripheral Comm
    - 10 - 15 hours / week
    - All week available
    - 8/3 - 8/7 out of town
  + Ali
    - Open to all ideas
    - Mostly learning from scratch
    - No more than 20 hours
    - Available every day of the week
  + Brian
    - Works internship 800 - 1730 M - F (40hrs)
    - SRE Team Manager Fri 6-midnight, Weekends 12hrs (18hrs)
    - Summer School M - Th 7-9pm (8hrs)
    - Senior Project 9 - 11pm M-Th and Weekends 7-10pm (15hrs)
* Tasks
  + Abstract
  + Project Workbook
    - Finish Intro, design, detailed implementation
  + Presentation
  + Report
* Concept (Abstract, Presentation, Report) (**due now**)
  + Minimum Viable Product
    - Need / Purpose
    - Requirements
    - Plans to implement
    - Audience
    - Market / Customer
* Constraints
* Design (Abstract, Presentation, Report) (**general details due now**)
  + Chassis
    - Which chassis should we use for the drone?
    - Propellers
    - Landing Struts
  + Powertrain
    - Battery
      * Motor
        + LiPo
      * Electronics
        + 9V
        + We may want a regulator and distribution box to manage battery
    - Motors
  + Control Systems
    - Primary uC board (ASM)
      * Peripheral Interface
        + Sensors
      * Comm Protocol / Interface
    - Secondary uC board (Motor Control)
      * PWM controller
      * Comm Interface
  + User Interface
    - Hand held
      * Switch
      * Beacon?
      * RF out
      * GPS Out
* Manufacturing / Development (**overview due now**)
  + Phase 1
    - Build module circuits
    - Begin Source Code architecture
      * C++ / Python
  + Phase 2
    - Interface Modules
  + Phase 3
    - Assemble Product
* Testing (**overview due now**)
  + Failure Modes and Effects Analysis
  + Motor Control
  + Peripherals
  + Automation
  + Phase 1
    - Develop Modular Source Code
    - Progression Test on Phase 1 modules
  + Phase 2
    - interfacing source code for both controllers
    - Interfacing source code for hand held
* Business (**due now**)
  + Initial Investment Costs
  + Manufacturing Costs
  + Operational Costs
  + Cost / Benefit Analysis
  + Return on Investment (for our investor)

For the week (7/9)

* Ali
  + Presentation outline
  + Chapter 2
    - Background
    - State of the Art
  + Bill of Materials
    - Just make a table for now
    - Anahit and Brian J can fill in as we go
* Anahit
  + Choose a uC
  + Choose cameras
  + Spec out peripherals for drone
    - RF module
    - IR sensors
    - WiFi module
  + Chapter 3
    - Describe hardware components
    - Communication Protocols
* Brian J
  + Send Prof K initial update
  + Spec a Voltage regulator daughter board
  + Spec an ESC - done
  + Spec a Chassis - done
  + Spec a battery - done
  + Spec out Hand held device
  + Hardware diagram
  + Describe it in report (Chapter 3)
  + Brian J update 8-6-2017
    - Police Lights will be a custom designed PCB fitted for mounting onto the drone central assembly within the chassis. It consists of Blue and Red LED’s, some EE circuit components, and is controlled via 555 timer chip, and GPIO signal from the RPi as an enable.
    - Police Siren circuit will be embedded with the Police light PCB. It will be activated via the same GPIO signal from the RPi and an enable.
    - The environmental sensing will be done by the crazyflie board which contains each of the following sensors: Barometric pressure sensing for altitude chosen because IR sensor boards did not give us the range we required (2m vs 9000m), accelerometer for 3 axis tilt sensing, gyro for 3 axis rate sensing, and 3 axis digital compass for heading / direction finding. This board will interface with the RPi via I2C bus.
    - The ESC will be a RacerStar 4-in-1 20A Brushless ESC 2-4S for Quadcopter Drone. It will interface the Rpi, 4 motors, and Battery. The RPi will be connected to its own low current battery supply. We are going to try interfacing this so that we can use a larger chassis.
      * If we cannot get this ESC to work with the crazyflie controls, we will have the development done for the Big Quad deck which offers us control over the same chassis, but at lower currents which means the drone may operate slower.
    - The module being used for the RPi battery and real time clock after power down is the DS1307 RTC Module with Battery for Raspberry Pi. It will interface using the I2C address 0x68.
    - The chassis for the drone will be supported by the XIRO Xplorer Aerial UAV Drone Quadcopter -- Standard Version. We will need to remove its built in ESC / Controller attachment and install our own assembly. The assembly will be roughly laid out in SolidWorks first in order to ensure proper fitment for installation.
    - The RPi job will be to handle all video and extra peripheral controls
      * There may be a need to add IR sensing for object avoidance if video detection cannot do the job.
    - The Crazyflie board will handle all on board sensing and flight controls. It will be programmed with the latest firmware, and then modified by the team to give the autonomous functionality it needs. It should be able to send PWM signals to the ESC, and if that is not feasible, it will for sure send its PWM signals to the Big Quad deck. It will also communicate with the RPi telling it when to use the camera control. This can be a single GPIO output that just tells the RPi “Yes” and the RPi takes over from there.
    - This should cover all the hardware for now. Anything else will need to be added later on. The goal is to get each individual module working on its own using a simple breadboard, wires, circuit, and Crazyflie controller. Once these are working correctly, the custom circuits will then be designed in DipTrace, and sent to fabrication. Once returned, they will be assembled, tested, and ultimately installed onto the drone in the proper configuration.
* Max
  + Outline report
  + Fill in Chapters 1 and 2