

## Group 5

### MEETING AGENDA

Meeting Time: 8:45	Location: Lab 1, ASB SFU Burnaby	Date: 02/07/2019
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Meeting called by	Craig Scratchley
Kind of Meeting	Progress Review 2
Facilitator	Craig Scratchley
Note Taker	Jeff
Time Management	Jerry
Attendees:	Keith, Scott, Ryne, Jerry, Jeff
Missing Attendees:	None
Guest Attendees:	Mohammad Akbari, Craig Scratchley, Andrew Rawicz
Meeting Called to Order at:	8:46 Am
Meeting End at:	9:13 Am

### Topics

Time	Discussion Topic	Presenter	Deadline
8:46 AM	Introduction/Background	Ryne	
8:47 AM	Progress	Jerry	
8:50 AM	Remediation/Risk	Scott/Keith	
8:55 AM	Summary	Jeff	
9:00AM	Questions	Jerry	
9:05AM	Meeting End	Jeff	

Notes:  
2nd Progress review  
Bring engineering journal

## PROGRESS MEETING MINUTES:

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Agenda Item: Introduction/Background

Presenter: Ryne

Discussion:

1. Revised minutes and made changes according to craig's comments
2. Scope, target market remains the same
3. Basic hardware
  - a. Using BLE instead of 2.4 GHz transceivers
  - b. Using Wifi mesh instead of Ethernet in final design for beacon to data processing unit communication (Central data processing unit communication instead of a stationary server)

Conclusion:

1. Discuss current Progress
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Agenda Item: Progress

Presenter: Jerry

Discussion:

4. Progress
  - a. Tested BLE RSSI feasibility and near completion of PoC
    - i. Results show that a lot of factors affect RSSI including direction of antenna and walls/doors
  - b. Ordered system components
    - i. DWM1000 UWB modules
    - ii. Breakout PCB + components (resistors, capacitors, LEDs)
    - iii. Esp micro-controllers
  - c. Working on design document/specs (due 07\*/07)
  - d. Planning Project proposal (due 07/21)

Conclusion:

1. Discuss Remediation and Risk
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Agenda Item: Remediation/Risk

Presenter: Keith/Scott

Discussion:

5. Solution
  - a. Solve trilateration using 2 equations by elimination
  - b. x-y coordinates from Trilateration solved by 6 constants
  - c. 2nd Risk
    - i. ID tag power consumption
      1. ESP32 active transmitting mode at 260mA deep sleep mode at 10uA
      2. Can broadcast for 15H on 4000mAH
      3. Can sleep for 400000H on 4000mAH
    - ii. Decided to use GPIO pin to wakeup ESP32 MCU
  - d. Using RUST as web server language
    - i. New language
    - ii. Language designed for security and reliability
    - iii. Risk: Libraries are bleeding edge and are new
    - iv. Risk: Other courses taking some time
    - v. Risk: Stumble into issues with UWB since currently using BLE
    - vi. Risk: ESP32 BLE antennae is at an orientation where left side has stronger signal

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Agenda Item: Summary

Presenter: Jeff

Discussion:

1. Summarize overall progress
2. Described risks that could cause delays to project

Conclusion:

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Agenda Item: Questions

Presenter: Jerry

Discussion:

5. Questions:

- i) Why instead of using laptops or apps instead of Pi?
  - a. Any linux based device can be used instead of just server/Raspberry Pi
  - b. Need a Root for the Wifi required for the wifi mesh
- ii) Decide where to install beacons?
  - a. Depends on the layout of the building
  - b. Positioning depends
  - c. Need to research standards and safety regulation
    - i. Speak with professionals (civil engineers, aritechtes)
- iii) In Earthquake beacons may be displaced
  - a. Beacons displaced removed from the mesh
  - b. Create our own standard and get it approved
- iv) Does it work for 2 rooms?
  - a. RSSI does not go through walls
  - b. USB can
- v) What is the resolution for accuracy
  - a. 1m to 0.5m
  - b. 5m zone?

Conclusion: