Indoor Positioning using Ultra-Wideband Ranging Systems

ENGO 500: Trilateration Nation

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Project Overview

- Ultra-wideband ranging radios
- Real-time location system
- Android application

Decawave mdek1001 [1]

Project Performance Framework

Objectives

- Improve current position application
- Improve application user interface

Measurement Criteria

- Statistical testing of position performance
- Subjective user experience testing

Sustainability

Maintenance

- Software/firmware compatibility updates
- Android software updates
- mdek1001 firmware updates

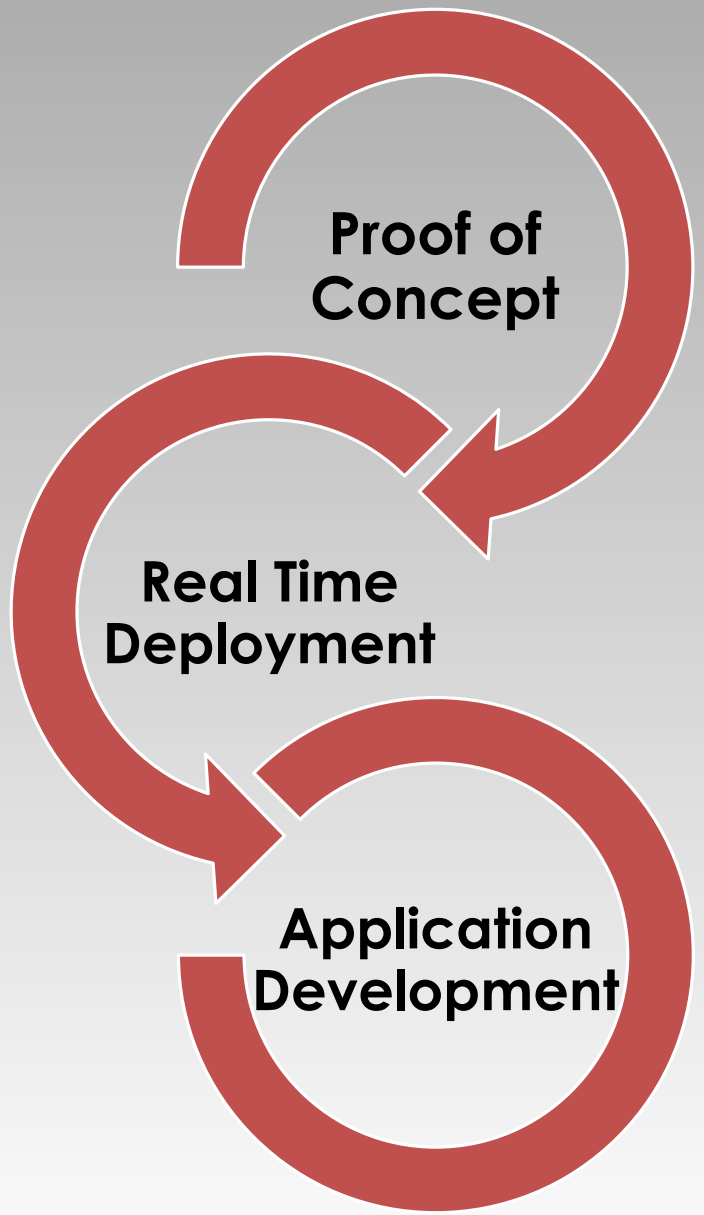
Responsibility

- Position, Location and Navigation (PLAN) research group
- Future undergraduate / graduate students

Project Issues and Risks

Risk	Severity	Probability
Software Development	High	Medium
Product Reliability	Medium	Medium
Project Completion	Medium	Low

Risk Management



Project Plan

WBS	Phase	Start Date	End Date
1	Initiation Phase	18-09-2018	30-10-2018
2	Proof of Concept	31-10-2018	30-11-2018
3	Development of Data Stream	01-12-2018	31-01-2019
4	Integrate Components into Android App	01-02-2019	01-03-2019
5	Document and Present Results	04-03-2019	Spring 2019

Project Team and Resources

Team Members

- Paul Gratton
- Jamie Horrelt
- Katherine Pexman
- Jeffrey Plett

Collaborators

- Dr. Kyle O'Keefe
- Chandra Tjhai
- Asal Naghdi
- Dr. Steve Liang

Project Benefits

- Improvement of positioning algorithm
- Precise positioning without the use of satellites
- Application of indoor positioning in real-time
- More flexible design
- Improvement of user interface
- Ex: mining, construction, airport navigation, rescue crews

References

[1]“MDEK1001 – decaWave”, decaWave.com, 2018. [Online].