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

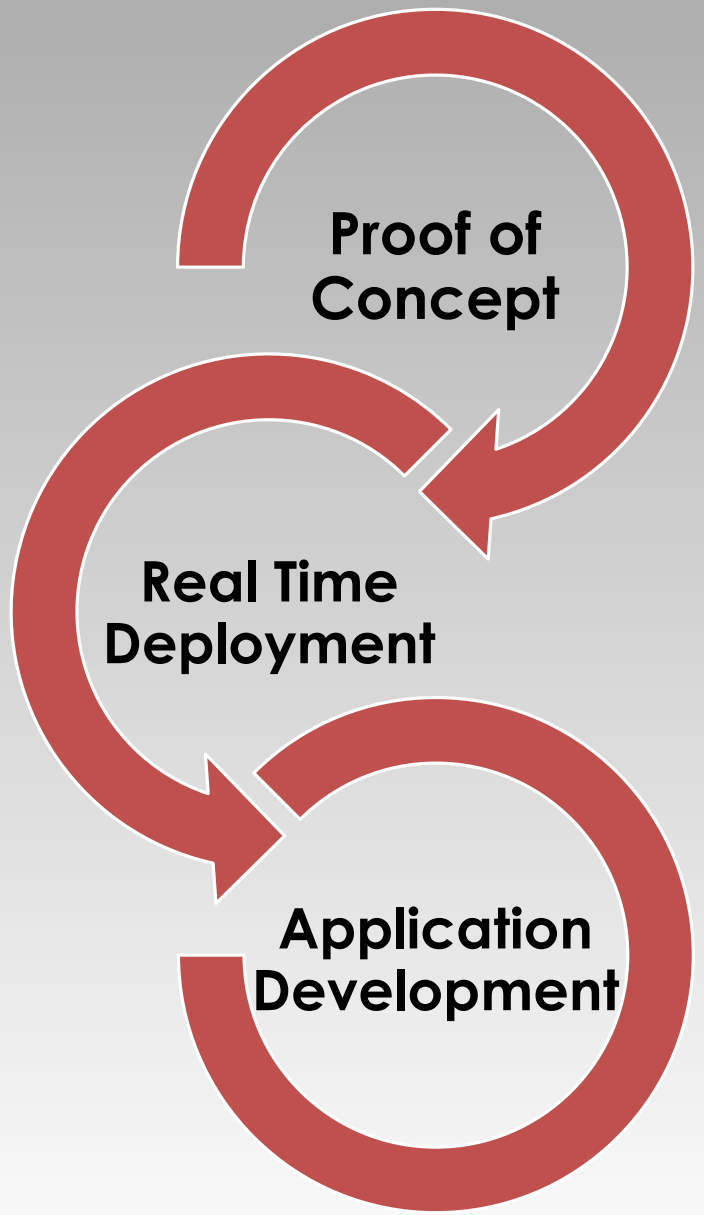
Responsibility

- 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	WBS - Phase	End Date
1	Initiation Phase	30-10-2018
2	Proof of Concept	30-11-2018
3	Development of Data Stream	31-01-2019
4	Integrate Components into Android App	01-03-2019
5	Document and Present Results	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].