Alpha Presentation
Dynamic Spectrum Access for Networked Radios
The Capstone Experience

Team Raytheon
James R. Voss
William Bonner
Matt Bowser
Srinivasa Settaluri

Department of Computer Science and Engineering
Michigan State University
Spring 2011
Project Overview

• Create a policy containing:
  – Frequency range, tuning bandwidth, # of segments, power, sample bandwidth, segment bandwidth, power delta, base output power, segment spacing

• Retrieve radio data

• Analyze and report recommendations

• Send chosen recommendation to radio
System Architecture

- **Hardware**
  - Network enabled radio
  - Android OS phone

- **Software**
  - NDK in C
  - Android SDK in Java
  - SQLite in Java
Policy Selection

Secondary Radio

Primary Radio

Create a New Policy
Policy Create/Edit

Radio Spectrum Analyzer

Creating a new Policy

Policy Name:
New Policy

Minimum Sampling Frequency (500 - 3000 MHz):
1750

Maximum Sampling Frequency (500 - 3000 MHz):
1850

Tuning Bandwidth (10 - 100 MHz):
20

Number of Segments (1 - 12):
3

Segment Bandwidth (0.5-5.0):
1.2

Power Delta (0.01-0.99):
.2

Base Power (-100.0-40):
13

Segment Spacing (0.1-1.5):
0.3

Create/Update Policy

Discard Policy
Spectrum View
Choose Recommendation

Radio Spectrum Analyzer

- Recommendation 1850.75
- Recommendation 1870.75
- Recommendation 1880.75
- Recommendation 1890.75
- Recommendation 1720.75
- Recommendation 1770.75
What’s left to do?

- Port tcl networking code
- Improve graph usability and speed
- Improve recommendation algorithm
- EZ Connect
- Laptop command line version