

The Center for Cyber Defenders

Expanding Computer Security Knowledge

SAND2015-5781C



PEDs Alert

Marcus Dominguez-Kuhne, Albuquerque Academy;
Alex Mitsdarfer, University of Illinois

Project Mentors: Paul Sery and Wellington Lee / 9312

Problem Statement:

Portable Electronic Devices (PEDs) are prohibited in restricted access areas. The use of radio frequency (RF) transmitters, such as Wi-Fi and Bluetooth is restricted. The purpose of the project was to create an Android application that acts as a fail-safe in case a PED is brought into a restricted area.

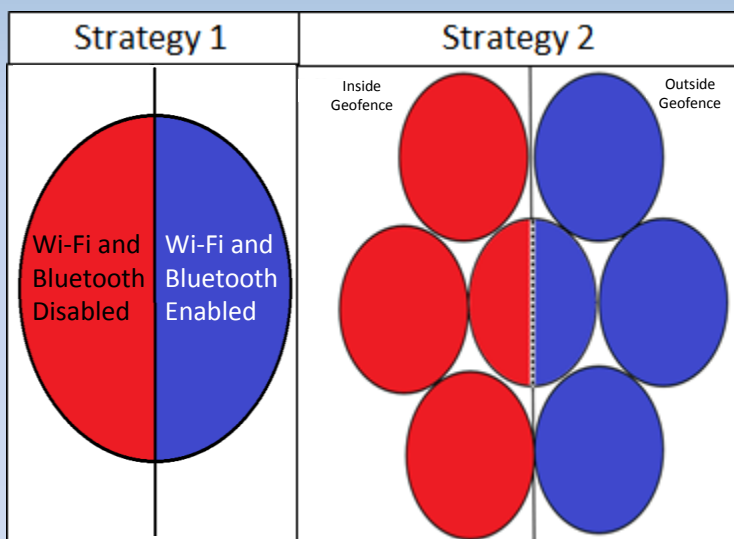
Objective and Approach:

Our goal was to develop an Android application that:

- Does not require user configuration
- Disables Wi-Fi and Bluetooth when entering restricted areas
- Restores previous Wi-Fi and Bluetooth state when exiting a restricted area
- Runs in the background
- Prevents the user from accidentally turning off the application
- Uses minimal power
- Uses GPS and Google Location Services to determine if the user is inside or outside a restricted area
- Employs Strategy 1: one geofence per area and determines which side of the geofence you are on
- Employs Strategy 2: builds on Strategy 1 but adds additional geofences to:
 - Account for GPS inaccuracy
 - Act as a failsafe to reduce errors

Results:

The application currently runs as a background service. Battery consumption can be reduced by altering location service parameters. The application is currently capable of detecting when the user is entering a restricted area and disables Wi-Fi and Bluetooth in response by employing Strategies 1 and 2. It also detects when exiting a restricted area and enables previously disabled components.



Impact and Benefits:

This application for PEDs will help those who are forgetful or rushed so that they do not inadvertently bring PEDs into restricted areas. This application will also help to ensure that a device's Bluetooth and Wi-Fi are disabled while in a restricted area. Overall, this project will help make the restricted areas more secure.



Sandia National Laboratories
operated by
LOCKHEED MARTIN

Sandia National Laboratories is a multi-program laboratory operated by Sandia Corporation, a wholly owned subsidiary of Lockheed Martin company, for the U.S. Department of Energy's National Nuclear Security Administration under con-

