**Progress Report Number Three (3/1/2021)**

**Project Name:**

* REsDR (pronounced ‘reader’)

**Name/Roles of Team Members:**

* Ryan Eslick - Team Leader, Reverse Engineer
* Austin Brown - Signals Engineer
* Hunter Griffin - Technical Writer/Reviewer, Software Engineer
* Carter Church - Spectrum Analyst
* Daniel Bangham - Protocol Expert

**Updated Project Summary/Abstract:**

With the recent growth and utilization of software defined radio technology in commercial products, a greater focus on communication security needs to be upheld. The primary objective of the REsDR project is to develop a streamlined process of radio communication protocol recovery given a black box system. This entails initially having no formal understanding of the device, then reverse engineering its communication processes solely from wireless transmissions emitted by the device. The final goal of this project is to effectively decode and analyze the black box’s emitted binary data to achieve full understanding of the device.

**Current State of Project:**

* All group members now have hands-on, working experience with an RTL-SDR device
* Still no access to black box device or recordings
* Last sprint spent researching encoding types, protocols, and hardware limitations
* Continuing to experiment and further knowledge of RTL-SDR devices

**Major Project Issues/Obstacles Identification and possible solutions:**

*Obstacles)*

1. Need black box to begin decoding
2. Better understanding scope of the black box, can we get information that could be pulled from a device that you have physical access to such as study chip datasheet to understand what modulation and frequency ranges are possible on the device

*Possible Solutions)*

1. See if Dr. Wells can send us some files from the system he has generated.
2. Ask Dr. Wells for clarification on scope of “black box” device

**Next Sprint Objectives:**

* Study and understand the given list of protocols
  + Daniel Bangham
  + Hunter Griffin
* Implement demodulation from a steam file in GNU radio on different protocols
  + Ryan Eslick
  + Hunter Griffin
* Research data encoding detection methods
  + Carter Church
  + Austin Brown
* Study the impact of using different USB ports (2.0 vs 3.0) and USB pass through to virtual machines
  + Ryan Eslick
* If the blackbox is received, begin investigating it by seeing what signals we can pick up close to and far away to correlate the data to identify novel signal(s)
  + Entire group effort (if applicable)

**Project Effort Log:**

|  |  |
| --- | --- |
| **Team Member** | **Hours Spent on Project** |
| Ryan Eslick | 9 |
| Austin Brown | 5 |
| Hunter Griffin | 9 |
| Carter Church | 5.5 |
| Daniel Bangham | 5 |