**STEM Outreach - SCADA Home Security**

**(Formerly SCADA Home Automation)**

**Progress Report 1**

**2023-02-07**

**Team Members:**

* Jon Beason - Team Lead/Cybersecurity Engineer
* Chad G Bryan - Computer Engineer
* Ben Calvert - Cybersecurity Engineer
* Ben Curths - Computer Engineer
* Simone Gbouomou - Cybersecurity Engineer
* Ben McAnulty - Cybersecurity Engineer

**Project Summary:**

The SCADA Home Security project will design and develop an interactive physical model that simulates some common components in today’s smart home systems and demonstrates how those systems may be vulnerable to malicious actors via targeted cyberattacks. This model aims to educate and generate interest in cybersecurity amongst prospective students and young professionals entering the field by clearly demonstrating the physical effects of real-world vulnerabilities created by digital cyberattacks.

To accomplish this demonstration. The project will incorporate microcontrollers, including two Raspberry Pis and an Arduino running the open-source ScadaBR and OpenPLC software packages. The ScadaBR devices will connect to an LCD panel to serve as a human-machine interface. The OpenPLC device will be connected to and manage the external sensors and actuators that simulate the common home automation components. These simulated components will include an IR sensor for alarm and intrusion detection, an electronic lock for access control, a DC-motor-controlled door for remote opening/closing, and LED lighting for model illumination and status indication. The final objective is to have the demonstration participant launch preloaded cyber attacks and exploits from an attached device to change the model state without using the embedded HMI.

**Current Project Status:**

As of this report, the outer case construction has been completed, and much of the work on the prototype display model is finished as well. Sensor development has been proceeding well with the magnetic switches, IR beam, and passive IR motion sensor successfully integrated into the OpenPLC software.

Tasks currently in progress include testing and integration of the motorized components of the display as well as the connecting of the slave Arduino PLC board to the RaspberryPi PLC board which will handle the network communication to the RaspberryPi running ScadaBR.

**Individual Responsibility Record:**

* Jon Beason -
* Chad G Bryan -
* Ben Calvert -
* Ben Curths -
* Simone Gbouomou -
* Ben McAnulty -