

# EE/CprE/SE 492 WEEKLY REPORT

1/27/18 – 2/09/18

## Implementing OpenPLC's into a Cyber Defense Competition

**Group number: 16**

**Faculty Advisors: Drs. Jacobson and Rursch**

### Team Members/Role:

Matthew McGill — *Meeting Facilitator, Project Manager*

Brennen Ferguson — *Hardware Engineer*

Joseph Young — *Security Engineer*

Liam Briggs — *Hardware Engineer*

Joshua Przybyszewski — *Software Engineer*

Nicholas Springer — *Security Engineer*

Val Chapman — *Testing Engineer*

### ○ Weekly Summary

Presented our technical problem to the PIRM group. We were able to take some of this feedback and create action items that we will be implementing into our final presentation to ensure that when presenting all of the audience is aware of what a CDC is since the largest feedback we received is what is a CDC and how does this actually help the situation.

### ○ Past week accomplishments

**Matthew McGill:** We have a meeting scheduled with the IASG White Team, and we are looking forward to everything we will discuss with them. We are hoping that this meeting will trigger a series of action items that we can then accomplish. A meeting agenda has been created to make this meeting as efficient as possible. I sat down with one of the developers, and made some significant progress on the web application we are building to interface with Factory I/O. Documentation is sparse, but we ran into some technical issues that I will elaborate on below.

**Brennen Ferguson:** Created an elevator scene and wrote some ladder logic to run the scene. Created a scene that uses the palletizer in Factory I/O, and currently writing some ladder logic. Set up a remote desktop for ladder logic development.

**Joseph Young:** Researched potential methods for exploiting intentionally vulnerable systems in the VCenter environment. Recreated some of the testing environment on a personal machine to speed up testing.

**Liam Briggs:** Began work on Brennen's remote machine to avoid the performance issues of the virtual machine. Dug around on the VM to attempt to find an issue to no avail. Reached out to Real Games to see if there was a more up to date version of the SDK instead of the 2 year old github page.

**Joshua Przybyszewski:** Attempt establishing FactoryIO interactions with Dart application. Began investigating a .NET application instead of a Dart application.

**Nicholas Springer:** We finished the presentation and gave the presentation for a technical challenge. Continue to determine security vulnerabilities that can be implemented in the servers.

**Val Chapman:** With the change of our front end framework from dart to .NET I explored new testing tools to ensure that our system is tested properly and tested at an appropriate quality to hand off at the end of the semester.

○ **Pending issues (if applicable)**

**Matthew McGill:** Prior to the work accomplished these past two weeks, my team was planning on creating an Angular Dart application that would interface with Factory I/O. However, it turns out that the SDK the developers have provided (on GitHub) only works with .NET applications, so we have to completely rewrite everything we've done so far. Hopefully we will have some updated progress to report in two weeks after rewriting and working with the Factory I/O provided SDK.

**Joseph Young:** Lack of direction without input from the White Team. It would be useful to have a more targeted goal for the environment's vulnerabilities.

**Liam Briggs:** Creating a large interconnected factory scenario

**Joshua Przybyszewski:** Figure out how to test .NET and if it will work with FactoryIO actually. Weigh the cost of scrapping the Dart application.

**Nicholas Springer:** Work on the list of security issues to add in servers and begin implementing them.

○ **Individual contributions**

Team Member	Contribution	Biweekly Hours	Total Hours
Matthew McGill	Contacted and scheduled a meeting with the president of the Information Assurance Security Group on campus, and continued development on the implementation of the Factory I/O SDK, re-working the platform on which we are developing the application.	12	58
Brennen Ferguson	Created a scene using the elevator in Factory I/O, and began creating a scene using the palletizer in Factory I/O. Set up a remote desktop for ladder logic development.	12	62

Joseph Young	Continued security research and testing in the VCenter environment	8	54
Liam Briggs	Continued work on Factory I/O environment and VM troubleshooting. I contacted Real Games for updated SDK	10	62
Joshua Przybyszewski	Continued progress for the web application	12	59
Nicholas Springer	Maintained and updated virtual machines and the teams credentials for testing	14	82
Val Chapman	Started on Documenting usage the Factory I/O and working on what documentation will be needed by the blue team.	10	54

**Plan for coming week**

Our plan is to have the meeting the white team for the CDC, and to set up our .NET application to allow for simple interaction with users and the backend.