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Evaluation of Process Automation System Architecture for use in Quality Data Analysis

Curtiss-Wright Defense Solutions

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Prepared by

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Dear Sir,

This report entitled “Design of Process Automation System Architecture for use in Quality Data Analysis” is my 2A Work Term Report which was prepared to fulfill the course requirements of NE 250. The purpose of this report is to evaluate the complex system architecture responsible for the process automation and determine its strengths and shortcomings with respect to general practice automation techniques.

During my 2A work term, I worked closely with Mr. Steven Dick (my directing supervisor) and the rest of the Quality Engineering department at Curtiss Wright Defense Solutions. Our responsibility as a team was to ensure the product (printed circuit boards) were adequately assembled, tested, recorded and inspected before being sold and shipped to the customer.

Mr. Dick and I were responsible for the process automation in this department, so I would like to thank him for the support and guidance he provided. His assistance aided in getting me through the steep learning curve. He gave me all of the available documentation, developer comments and necessary insights for the creation of this report, along with answering all of my many questions.

In addition to Mr. Dick, I would also like to thank my brother, Linford Rodrigues, a fifth-year electrical engineering student from McMaster for taking the time to proofread my report. I hereby confirm that I have received no further help other than that mentioned above in writing this report. I also confirm that this report has not previously been submitted at this or at any other academic institution.

Sincerely,



Leander Rodrigues

ID: 20670272

**Contributions**

During my time with Curtiss Wright Defense Solutions (CWDS), I was working closely with the Quality Engineering Department team. It consisted of six technical engineers, one department manager (a supervising engineer) and myself as the only coop student. Of that only my acting supervisor Mr. Steven Dick (a technical engineer) and myself were responsible for contributing to the project outlined in this report. Mr. Dick would communicate with other departments and supervisors to determine the technical data that would like to have in the form of reports, and It was my responsibility to provide the information while maintaining/debugging the existing system architecture.

The goal of this process automation project was to do away with the necessity of repetitive manual tasks which would hinder the effectiveness of the Quality Engineering (QE) department. The QE department has a lot of responsibilities, the most prominent of which is direct-to-customer communication. Any issues they have pertaining to the production cycle, quality testing, or even payment/warranty/return processes are tasked to the QE department. The implementation of an automated report process would remove the inconsistencies of manual reporting, in addition to giving time back to the other busy engineers.

My specific responsibilities varied on a day to day, but I largely dealt with the technical side to the reporting. I was the only technical consultant for the system architecture, since Mr. Dick had other responsibilities. He had informed me that the existing automation system was developed by a former employee of CWDS, and the rotating coop students from term to term would contribute to the system via new reports, additional features or faster code structures.

I was assigned with reading through the existing codebase to remove redundancies, debugging any errors/alerts mentioned by the rest of the department, and implementing additional features to the report, like filters/buttons/tables. Any time remaining was spent documenting the system architecture in a clear way to facilitate understanding for future coop students or other engineers.

The contributions I made will be present in the automation system unless upper-management/ department supervisors decide to do a complete system overhaul. Until then, the additional functionality/speed I have implemented will be visible through the generation process of the automated reports, and could be improved upon by future coop students entering the same position.