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A successful project I had is one I did during my coop. The project was solely on me to code and program but I had a team of 2 other coworkers who had been in the field for a long time who were looking over me. The assignment was designing and creating a simulator of one of my companies existing lab hardware. This hardware relays information about a train that it is connected to such as wheel wear, diagnostics, and many other types of data. There is a piece of software that connects to this hardware to display the information it feeds us along with modifying certain diagnostic variables. Making changes to and debugging this software would take ages upon ages because developers needed to connect to the hardware to test anything with the software. There are only a few available hardware machines to connect to and many other workers such as the engineers of the hardware also needed to use it. My solution was to create a simulator in C# that would act as the hardware by simulating the same type of messages that the hardware does. The simulator communicates with the software using Wcf (Windows Communication Foundation) which creates service endpoints that listen for the software to request data; the simulator was acting as a server while the software acted as the client. There were also times when our roles would switch where the simulator would act as the client and the software would act as the server so the simulator could request data. Some data was hardcoded dummy-data but most data was modifiable from the Gui which was created using WFP (Windows Presentation Foundation). A big part of testing the simulator's requests and responses was using Wireshark and SOAPUI to verify correct data was being communicated.

The main reasons it was successful were user involvement, clear requirements, and our agile environment. We used Jira to manage each task I had as we worked in an agile environment. Every other day, we would have a stand up to meet and discuss what next steps I needed to take towards the project and which requirements were the most important. The project I was working on was for my other coworkers so in a way they provided the user input, requirements, and knew the expectations of my work as if they were my ‘client’. Agile development made it so each milestone was something small and focused so we could code review everything in detail and make sure our vision and each objective was clear. My coworkers code reviewed my work often and provided the resources needed to succeed. We also did not use any new technology as both WCF and WPF are pretty dated allowing lots of knowledge to be available and we didn’t have any unexpected problems. There were never any strict time frames or unrealistic expectations as I had the entire double block of a coop to complete this project, and by halfway through I had exceeded the basic functionality they were looking for. The rest of my time there was further improving and implementing greater features to this project along with assisting them in other work. I am currently still working there part-time and continue to add features to my project when they request it.