

EE/CprE/SE 492 WEEKLY REPORT 9/27

January - December

Group Number: 1

Project Title: Applying and Evaluating Blockchain in Energy Delivery Systems

Client: Grant Johnson

Advisor: Dr. Gelli Ravikumar

Team Members/Roles:

Owen Snyder - Frontend/UI Developer

Josh Edwards - Backend API Developer

Emileo Xiao - Testing/Evaluation Lead

Dylan McCormick - Lab Integration Lead

Thai Pham - Blockchain Lead

Weekly Summary (Short summary about what the group did for the week. This should be about a paragraph in length. These are just a few questions to help you get started. What was the overall objective for the week? In general, what tasks were completed? Were there any changes made to the project?)

The overall objective of the week was to start transferring our code and projects from local, onto our VMs given to us by our faculty advisor through Git. Our python socket can now read from a dummy CSV and parse it before sending it to a client through websockets. The blockchain network still needs work to be done. Caliper is running on one of the VMs.

Past week accomplishments (Please describe/summarize as to what was done, by whom, when and, collectively as a group. This should be about a paragraph or two in length. Bulleted points are acceptable as well. Please keep only your technical details related to your project. Figures, schematics, flow diagrams, pseudocode, and project related results are acceptable, but please ensure that they are legible (clear enough to read) and to provide an explanation. If researching a topic, please add a few details about what was learned and how it is relevant to the project. If two or more people worked on a single task, be sure to distinguish how each member contributed to the task. Specific details relating to the assistance provided

to other members may be included here. Do not include classwork, such as individual reflection assignments, and group meetings as part of your duties.)

Owen Snyder - Researched past team's implementation of UI integration with the backend, and possible implementations for the UI going forward once the BC network is implemented.

Josh Edwards - Have a Python server that is emulating the Opal-RT we will be interfacing with in the PowerCyber Labs. Also have a rudimentary client side which will be distributed across each node to publish the findings to the ledger.

Dylan and I collaborated to look into celery as a message handler with RabbitMQ as the broker for said messages, but our faculty adviser feels this may not be the best route in the end.

Emileo Xiao - Added Docker and HyperLedger Caliper on one of the VMs. Started running Caliper on the VM and put basic test benchmarking to setup the configuration.

Dylan McCormick - Studied up on DNP3 and IEEE standards for possible implementations. Made example code using celery and RabbitMQ to test possible usability for the project.

Thai Pham - Currently researching and learning about chain code development, have an ETA of about Oct 13th on whether we will be making our own code or be working off of the previous team's and further improving it.

Pending issues (If applicable: Were there any unexpected complications? Please elaborate.)

Owen Snyder - N/A

Josh Edwards - N/A

Emileo Xiao - Caliper still needs to connect to the blockchain network on a different VM instead of locally.

Dylan McCormick - N/A

Thai Pham - N/A

Individual contributions (Creating this section is optional, but it is Required to include the "Hours Worked for the Week" and their "Total Cumulative Hours" for the project for each member somewhere relevant in your report. Your individual

weekly hours should be at a minimum of 6-8 hours for this course. So please manage your time well. Also, ensure that individual contributions support your claim to the weekly hours. Be honest with the reports.) NAME Individual Contributions (Quick list of contributions. This should be short.)

Team Member	Contributions	Weekly Hours	Total Hours(from this semester)
Owen Snyder	Research on UI Implementation	5	16.5
Josh Edwards	Continued Python Websockets, experimented with celery	6	19
Emileo Xiao	Worked with Thai to expand the blockchain	6	20
Dylan McCormick	Studied different standards IEEE,DNP3. Made mock examples with celery/RabbitMQ	8	20.5
Thai Pham	Researching and going through HyperLedger-Fabric documents as well as old team's code to learn how to create chain code.	3	20

Comments and extended discussion (Optional)

Feel free to discuss non-technical issues related to your project.

Plans for the upcoming week (Please describe duties for the upcoming week for each member. What is(are) the task(s)? Who will contribute to it? Be as concise as possible.)

Owen Snyder - Continue development of UI portion and help other team members with development of more urgent parts of the project

Josh Edwards - Further develop the client side to be more robust in collection of the PMU data from the Opal-RT's. Am going to discuss with Grant about propping up some introductory endpoints that will later develop into the automatic execution of smart contracts on this data.

Emileo Xiao - Need to work with Thai Pham to get his blockchain network running on a VM so I can connect it to Caliper and run tests. If there is time, I need to meet with Owen Snyder to tell him what data is returned from the tests so he can development the frontend UI.

Dylan McCormick - Work to create a showcase a client that has a queue and grabs data from mock PMUs and async waits for messages to aggregate and push.

Thai Pham - Currently researching on how to develop chain code and shell scripting to be able to move beyond the tutorial and lean towards personalized implementation for the project. Will probably look through old teams material to see if there's anything of value to use.

Summary of weekly advisor meeting (If applicable/optional)

(Provide a concise summary on the contents and progress made during the advisor meeting.)

We met with our client and advisor. Advice was given for all team members on what to work on. Goal is to have a mini demo of multiple parts of the project next week showcasing a step close to actual system integration.