
EE/CprE/SE 491 WEEKLY REPORT 6

Due: 4/15/2025

Team: sddec25-17

Project Title: Grid-UI: Developing Advanced Web-Interactive Interfaces for GridAI Power Grid Management Software

Team Members__Role/Component:

- | | | |
|---------------------------|-------|---|
| ● Nick McCullough | _____ | Team Manager / Map Box |
| ● Ponciano Ramirez | _____ | Dashboard / Widgets Designer |
| ● Ethan Messmer | _____ | Module Design / Market Dashboard |
| ● Yusef Harb | _____ | Record Keeper / Live Code Editor |
| ● Evan Sivets | _____ | Test Lead / SVG-Diagram Designer |
| ● Tristan Nono | _____ | Dashboard / Widgets Designer |

Client / Advisor: Dr. Gelli Ravikumar

Graduate TAs: Peeyush Gupta & Rolf Anderson

Previous GridAI Team ([sdmay25-43](#)):

Hang Thang (Map Box), Rangsimun Bargmann (Widgets), Jesus Soto (Widgets), Justin Soberano (Market Dashboard), Skyler Kutsch (SVG), Franck Ndoutoume (Code Editor)

Weekly Summary

This week, the team looked into shadcn UI to migrate to instead of Mantine UI, which is currently used. The team also continued going in-depth on their components and reaching out to relevant team members. Yusef looked into a socket library to implement CRDT and continued going through the live code editor code base. Ethan worked on comparing Mantine and shadcn, as well as coordinating with Justin on the market dashboard codebase. Nick messaged Hang to align with Map Box goals transition, researched Web Workers and reviewed codebase. Evan met with Skyler and they talked about what all is to do for the future of SVG Diagrams and what they can do each week to grow on it. Ponciano met with Jesus again to determine what type of widgets to work for the semester and more about how we could implement Apache E-Charts to our project.

Pending issues

N/A

Accomplishments/Contributions

Past week accomplishments

- **Nick McCullough:** Messaged with Hang to get clarification on Map Box status + scheduled meeting with him for next week to get deeper understanding of where he will leave off and I will begin development. Reviewed codebase in VM further. Researched [Web Workers](#) and why it is important for our project to allow background threads to compute large dataset calculations while the main thread stays on UI to keep the website responsive for the user, critical for performance.
- **Ponciano Ramirez:** Was able to implement Apache Echarts into the codebase and implement it into some of the widgets that we currently have. Was also able to create two more new widgets and researched more about how we could improve our overall widget design.
- **Ethan Messmer:** Analyzed codebase more thoroughly, looking at some files that Justin recommended, as well as communicating with Justin regarding prior understanding of codebase and a possible change in UI library from [Mantine](#) to [shadcn UI](#). Finding which makes more sense for GridAI.
- **Yusef Harb:** Spent this week looking into the best socket to implement CRDT. The main sockets were Yjs and Automerge. Yjs is the socket I will go with, as it is actively maintained and has the best performance for p2p editing. Experimented with live code editor with a focus on how interactions are currently handled on the frontend.
- **Evan Sivets:** Met with Skyler on Tuesday and went through all the code and caught it running. Went through the plan for the future and what to do to improve on the part of the project. Worked on improving what we talked about in my own time.
- **Tristan Nono:** Played with the application to better understand how the widgets work. Researched [ThingsBoard](#) to get an idea about what certain widgets can be implemented in the project. Scoped out what the current application has to see what is done and what can be potentially worked on/implemented.

Individual contributions

<u>NAME</u>	<u>Contributions</u>	<u>Weekly hrs</u>	<u>HOURS cumulative</u>
Nick McCullough	Messaged with Hang to align Map Box development upon his graduation. Researched Web Workers. Reviewed VM codebase further.	4	29
Ponciano Ramirez	Added Apache ECharts into our code and created two new chart widgets. I was also able to update our LineChart widget to use the Apache ECharts library as well.	6	33
Ethan Messmer	Researched the Mantine and shadcn libraries extensively, weighing which one we could go with for the project. Communicated with Justin to see his thoughts on the potential change and to get clarification on the codebase.	5	32
Yusef Harb	Experimented with the live code editor in GridAI. Took notes of where it is currently at. Researched a socket library that can effectively implement CRDT. Solidified understanding of Typescript. Looked into shadcn UI and comparisons to Mantine UI.	4	28
Evan Sivets	Looked through all the code to try and make the diagrams as they are meant to be presented. Worked on trying to get them static and more in a traditional single-line diagram. Also went through libraries to see what layout would work best for said diagrams.	5	26
Tristan Nono	Was able to start the application and see how it flows. Worked on how widgets are created through the application and reviewed the codebase for that component to see how they work. Researched ThingsBoard for potential implementation of new widgets.	5	26

Plans for the upcoming week

- **Nick McCullough**
 - Meeting with Hang scheduled to contextualize our understanding of code base, and set a game plan to be prepared to start development where he leaves off
 - Start working on small updates to the Map Box page to get used to development environment and comfortable with Map Box component development
 - Research and focus on real-time overlay for displaying real time data
 - Research and compare how our current iteration of Deck.GL works vs future goals
- **Ponciano Ramirez**
 - Start looking on how to add ShadCN into our codebase and began to replace it over Mantine UI
 - Start reworking our entire widget design to make it more friendly for users to
- **Ethan Messmer**
 - Start creating Shad components for practice.
 - Start making GitLab issues and coordinate with Justin on what needs to get done.
 - Make figma markups using Shad's components instead of Mantine's.
 - Analyze more of the files Justin suggested.
- **Yusef Harb**
 - Look over socket files and begin planning how migration will look
 - Strengthen understanding Yjs and how implementation will look
 - Blueprint implementation of Yjs
 - Reach out to Franck and see where he projects the component will be at end of the semester
 - Reach out to Peeyush to get his implementation of Yjs
- **Evan Sivets**
 - Meet with Skyler on SVGs and understand more on what will be done with them.
 - Look over more examples of how to use SVGs in the workplace and how to use them for the project.
 - Work with the code and entirely run through everything to understand how everything works.
- **Tristan Nono**
 - Look into Apache charts (did not have the time to do so)
 - Work on a custom widget to get a feel for how they are developed
 - Potentially meet with Jesus to get a better understanding of where the project is standing and to get more pointers for the project.

Summary of weekly advisor meeting

Week 8 Notes 4/4

- Still need to make a new Google account with team ID for access to Firebase
 - Make a team plan for how a migration to shadCN UI would look like
 - Continue reaching out to 492 members for questions and their progress
 - If there are any problems with the VM reach out to Rolf with a screenshot of the issue
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Archived Weekly Meeting Notes

Week 7 Notes 3/28

- Make a new Google account with team ID to give to Rolf for Firebase access
- Look into ShadCN and compare it to Mantine and determine which will be better
- Prepare to present a recommendation on whether GridAI should migrate to ShadCN
- Continue meeting with 492 team members and Peeyush to understand the objectives and scope
- Continue to document findings through the codebase and each component's action items
- Ensure the VM setup is fully operational

Week 6 Notes 3/14

- Repository has been provided; be sure to look through it
- Still awaiting individual VMs
- To access VMs, go to <https://git.ece.iastate.edu/sd/sddec25-17>
- Editor access to Firestore and individual accounts coming soon
- After starting VM, follow README in the repository for instructions on installing and initializing the project
- Rolf will email the team soon with more
- For the setup process, watch the video in the teams chat
- Reach out with questions about the codebase to previous team members
- Prepare an understanding of the code by the next meeting

Week 5 Notes 3/7

- We presented our understanding of each component along with questions
- Intends to give us a Figma license this week
- Schedule a meeting with Peeyush to figure out Mapbox requirements
- Understand the road map between the code editor and the map box
- Gelli has to talk to 492 to get requirements for us
- Identify key components/key features in terms of logic and aesthetics. Lay it out for each component
- When we get the codebase, dig through it
- The codebase should be done by Monday and shared with us by the end of the week
- Code editor and Mapbox, message Peeyush and cc Rolf and Dr Gelli

Week 4 Notes 2/28

- We presented our understanding of GridAI
- Presented the components each of us want to work on
- We will get access to the codebase and an individual VM in the upcoming 2 weeks
- Figma education license will be provided next week
- He will share documents with more info next week
- Next week, present the responsibilities and requirements of the project
- Also, presents a deeper understanding of the components
- Pose and prepare any questions

Week 3 Notes 2/21

- Last semester GridAI team presented to us
- Showed structure diagrams of how the backend and frontend are built and should be configured
- 5 main components: SVG diagrams, market dashboard, collaborative code editing, map box, and widgets
- Widgets and main dashboard inspired by Thingsboard
- For naming branches, follow convention ...<yourName>/<feature>
- Have a staging branch when finishing changes and wanting to merge into master branch
- By next week, create a presentation to present our understanding, scope, and questions about the project
- Treat the previous team (currently in 492) as our mentors

Week 2 Notes 2/14

- The previous team members gave a presentation
- Gitlab files will be provided to the team in a few weeks
- Showed structure diagrams of how the backend and frontend are built and should be configured
- The professor gave lots of tips for this project:
 - Have branches for just one or two features
 - Use an issue board so everyone is on the same page
 - Keep secrets, like credentials, in repos secret storage
 - Make lots of commits, describe them well, and merge them into master when done

Week 1 Notes 2/7

- Student and advisor introductions
- Went over the technologies and progress of GridAI thus far
- Grid AI backend is complete and runs on Go and Python
- Utilizes Deck.gl for managing a large number of nodes and lines
- Three layers are used in Deck.gl (IconsLayer, LineLayer, and HeatMapLayer)
- The professor emphasizes understanding the market through the next few weeks