EE/CprE/SE 491 WEEKLY REPORT 7
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 continued working on their components as well as planning out how the migration to shadcn UI would look like. Yusef began blueprinting the implementation of the Yjs socket and evaluating Peeyush's implementation of the socket. Ethan started testing the new UI library (shadcn), and prepping to configure it into the project next week. Nick met with Hang to discuss transition of Map Box component, ready to begin development, started work on lightning talk presentation. Ponciano started implementing Apache ECharts into the codebase and added two new widgets as well. Evan went through libraries that could help out the diagram formatting.

Pending issues

N/A

Accomplishments/Contributions

Past week accomplishments

- **Nick McCullough:** Met with Hang to get updates on his end goals for Map Box once he is finished with 492. He is focusing on the timeline aspect and giving users more data on the bottom of the Map Box page. Created my own branch “nick-mapbox” for development on the Map Box. Reviewed code base for the Real-Time Data and the System Overview portions of the right-hand side column to gain a better understanding of the current functionality, and how to improve it. Got a head start on the lightning talk presentation for the team, so we don’t have to rush it.
- **Ponciano Ramirez:** Added in Scatter Plot and Pie Chart widgets and implemented Apache ECharts into our codebase. Updated all other widgets to use Apache Echarts and pushed all my changes to the repo.
- **Ethan Messmer:** Analyzed codebase more thoroughly, looking at some more files that Justin recommended, and started working on local testing for shadcn, getting a few of the components into a simple mockup for the market dashboard. Tested and started making a list of which components can be transferred directly from Mantine to shad, and which would have to be heavily modified.
- **Yusef Harb:** Reached out to Peeyush to get his implementation of the Yjs socket. Thoroughly went through files taking notes on how Peeyush approached the implementation. Created a phased migration team plan for migrating from shadcn to mantine ui to propose to the team. Blueprinting Yjs implementation and the files that will need to be refactored.
- **Evan Sivets:** Went through the libraries that were found interesting, and looked into more uses and how helpful they would be for our codebase. Working on replicating real life examples into the code.
- **Tristan Nono:** Experimented with the widgets component more to get a better understanding of how widgets worked. Researched into Apache ECharts to understand how they work and then implemented two widgets from Apache ECharts such as gauge and bar charts to replace the pre existing gauge and bar chart widgets for a better visual.

Individual contributions

NAME	Contributions	Weekly hrs	HOURS cumulative
Nick McCullough	Met with Hang to align Map Box development upon his graduation. Nick's dev branch is ready. Reviewed VM codebase further for specific section of the page to update. Started lightning talk presentation progress.	5	34
Ponciano Ramirez	Added Apache ECharts into our codebase and created two new widgets. Also updated previous widgets with Apache ECharts as well.	6	33
Ethan Messmer	Researched deeper into the shadcn library started making a list of applicable shad components, and began researching radix and tailwind to gain a better understanding	3	35
Yusef Harb	Created branch "yusef/implement-crdt" to track Yjs addition. Received Peeyush's rendition of Yjs and evaluated the difference between the original branch. Took notes throughout the evaluation. Looked into files that will be started on first in the implementation. Created a phased plan migration to shadcn to propose to the team.	6	34
Evan Sivets	Worked on researching the best libraries for SVGs. Was not able to test them but got a good idea of what is needed for the code base.	3	29
Tristan Nono	Implemented widgets from Apache ECharts. Did more testing with the widgets component to get a deeper understanding of the component and looked into areas for improvement.	5	28

Plans for the upcoming week

- **Nick McCullough**
  - Meet with Hang again to discuss updates/challenges
  - Begin development on Real-Time Data component, attempt to integrate Dexie.js/IndexedDB and Web Workers
  - Investigate a bug with TAs, in regards to selecting “Line” on the Map Box page
- **Ponciano Ramirez**
  - Start working on implementing ShadCN into our widgets components and replace it over Mantine UI
  - Start improving the Widgets components and make it easier for users to add in there data for charts
  - Remove any unneeded code in the codebase to make it easier to read and understand as there is a lot of unused code.
- **Ethan Messmer**
  - Continue creating Shad components for practice.
  - Configure shad into VM/repo
  - Dive deeper into radix/tailwind
  - Create figma designs with shad components based on the previous version
  - Have a meeting with Rolf to confirm the configuration changes from shad
- **Yusef Harb**
  - Solidify with the team how shadcn migration will look
  - Go more in-depth with Peeyush's implementation of Yjs (take notes)
  - Continue blueprinting implementation of Yjs
  - Begin implementing Yjs
  - Reach out to Franck to see where he is at
- **Evan Sivets**
  - Work with libraries that I have researched
  - Connect with Sklyer to progress in SVGs
  - Work on Implementing my own graphs for practice
- **Tristan Nono**
  - Find ways to display the widget in a friendlier way for the user.
  - Look into ThingsBoard to take ideas such as the process of adding widgets
    - This can help in making the process user friendly
  - Implement new widget types
    - Heatmap
    - Radar

Summary of weekly advisor meeting

Week 9 Notes 4/11

- Still need to make a new Google account with team id for access to Firebase
- Members should start making videos on their progress (demo video)
- Ideally, before every meeting ,merge all changes into main and use master VM to demo
- If changes are unstable/branch not nearly done, do not merge into main.
- If a member doesn't merge into main cause of above point, prepare to present your VM/have demo videos with your branch
- Recommended to contact Rolf and Peeyush through teams
- Professor urges when you contact Peeyush to include Rolf
- This semester, the goal is to understand the deeper aspect, requirements, scope of each action item and overall project
- Secondary goal is to understand the codebase and try to implement something
- Last few meetings of semesters will be sure planning is solid for faculty presentation
- Start preparing for faculty presentation
- DM Rolf if you want to join Thursdays meeting at 3 pm

Archived Weekly Meeting Notes

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

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