
EE/CprE/SE 491 WEEKLY REPORT 8

Due: 4/22/2025

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 has been working on their branches, implementing their developments. Yusef began working on the yjs implementation, starting with the backend and planning out the mantine to Shadcn migration for their component. Nick met with Dr Gelli and Rolf to discuss Map Box and the Apache Kafka backend while researching how to implement custom map node icons. Ethan configured the base for Shadcn into the project as well as several components. Ponciano and Tristain added 4 new widgets to our project and met with Rolf to understand how we are integrating real-time data into our project.

Pending issues

N/A

Accomplishments/Contributions

Past week accomplishments

- **Nick McCullough:** Met Dr Gelli on Apr 15 (1 hr) to discuss expectations with Map Box. Researching on how to implement custom icons for each node (EV charging stations, solar panels, transformers, substations, etc). Nick met with Rolf (1 hr) on Apr 17 to discuss and learn more about the Apache Kafka backend set up. Finalized Ethics presentation for Apr 22. Nick had multiple engineering exams this week and work demands, so it was a lighter week on this project.
- **Ponciano Ramirez:** Added in Polar Chart and Candlestick widgets, and also attended a meeting with Rolf and Jesus to learn more about how our project will plan to integrate real-time data.
- **Ethan Messmer:** Analyzed codebase more thoroughly, added the base configuration for shadcn, and started manually installing components including the Button, Tooltip, Avatar, Accordion, tabs, dialog, textarea, input, checkbox, sonner, and dropdown-menu. Also tested the components to make sure they are implemented properly, with correct styling, and are as light as they can be.
- **Yusef Harb:** Installed dependencies for yjs into the frontend and backend docker images. Shelled into Docker to validate installation. Blueprinted how the backend implementation of yjs will look. Backend implementation will be focused on 2 files, the majority of the implementation will be in fileSocket.tsx while index.tsx needs minor changes to support the new socket change. Contacted Franck to update him on my yjs implementation and inquired about his progress and anticipated finishing point.
- **Evan Sivets:** Researched more into Power plants and how they consume their energy, as well as how they go about documenting it. Worked with libraries that were researched prior to implementing the code.
- **Tristan Nono:** Implemented two useful widgets from [Apache ECharts](#), heat map and radar. Started to brainstorm ideas on how to improve the settings to make customizing widgets more accessible, and researched [ThingsBoard](#) to get an idea for how to implement widgets in a more user-friendly manner.

Individual contributions

<u>NAME</u>	<u>Contributions</u>	<u>Weekly hrs</u>	<u>HOURS cumulative</u>
Nick McCullough	Met with Dr Gelli and Rolf to discuss Map Box and Apache Kafka backend. Researched how to implement custom icons for each node. Finalized Ethics presentation.	4	38
Ponciano Ramirez	Added two new widgets and met with Rolf to get a better understanding of how to integrate real-time data into the project.	5	38
Ethan Messmer	Researched deeper into the Shadcn library, added the base configuration of Shad, and added necessary components.	4	39
Yusef Harb	Installed dependencies necessary for yjs socket implementation. Blueprinted backend yjs implementation. Researched more yjs features to implement for a better collaborative environment. Created a migration plan showing how each mantine import maps to its Shadcn equivalent. Reached out to Franck for suggestions as well as updates on his progress.	3	37
Evan Sivets	Messed around with working around different libraries that would format the single line diagrams. Mapped out diagrams on paper based on real-life examples.	3	32
Tristan Nono	Got the implementation of the heat map and radar widgets from Apache ECharts. Researched ThingsBoard for how to make the widget process more user-friendly and started making ideas for improvement on the widget settings.	5	35

Plans for the upcoming week

- **Nick McCullough**
 - Practice/prepare Ethics presentation before Apr 22
 - Implement node icon update changes
 - Begin development on Real-Time Data component, attempt to integrate Dexie.js/IndexDB and Web Workers
- **Ponciano Ramirez**
 - Meet with Jesus to further discuss how his code is working and how to integrate real-time data into our project
 - Start implementing Shadcn components into our dashboard and widgets components now that we have Shadcn installed in our codebase
 - Start working more on how to further enhance the UI for users to create widgets
- **Ethan Messmer**
 - Continue adding Shadcn components
 - Make a list of components that can be translated from the current library into Shadcn
 - Start making a Figma markup of the market dashboard using new components
 - Collaborate closely with Justin on the design, learning how it should look
- **Yusef Harb**
 - Before integrating, get a firm understanding of how the socket is currently connecting
 - Begin implementing backend yjs integration
 - Reach out to Franck to see how things are progressing
- **Evan Sivets**
 - Added libraries to better format graphs
 - Worked on making graphs from real-life examples
 - Worked on the lighting presentation
- **Tristan Nono**
 - Add improvements to the widget settings to make customization more efficient.
 - Find other widgets from Apache ECharts that might be useful.
 - Practice the presentation on 4/22.

Summary of weekly advisor meeting

Week 10 Notes 4/18

- Faculty presentation is on May 5th at 11:30 am
 - Create a calendar event for Dr. Gelli, Rolf, and Peeyush
 - Continue to merge changes into the staging branch
 - Thursdays/Friday morning merge staging into the main branch
 - Continue making the dashboard more user-friendly, like ThingsBoard
 - Investigate how easily Mantine components can be converted to ShadCN
 - Aim to minimize time spent on the UI overhaul
 - Encouraged to use GPTs to help with repetitive migration tasks
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Archived Weekly Meeting Notes

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

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