Week 3 - Group 56 Meeting Minutes

Date: Wednesday, 13/08/2025

Present: Evan Buhagiar, Claudia Ghosn, Ethan Almonte, Cam Hao Ha, Tanvir Hasan Roni.

Apologies: Michael Murimbechi.

Chair: Tanvir Hasan Roni.

Completed by: Cam Hao HA.

Agenda:

1. Update / passing the info from the structure team , by Evan.
2. Team meeting to review last week minutes/ completed tasks done in the last week.
3. Meeting with the Structure team to review current design
4. Brainstorm to refine design.
5. Finalize budget and budget allocation between team
6. Finalize and submit Bill Of Materials - Boms

Proposer: Tanvir Hasan Roni. Seconder: Cam Hao HA

Meeting Minutes

Summary of Reports:

- Reviewed last week's minutes and confirmed completion of previous action items.
- Evan shared updates from the **STRUCTURE** team, including the proposed top-mounted motor design for the vertical lift bridge and their budget request of $46, which raised concerns about overall budget allocation.
- Met with the Structure team to review their current design, focusing on motor placement and compatibility with the Systems team's requirements.
- Brainstormed refinements to the bridge design, including position tracking methods: Evan suggested using motor speed and time calculations for simplicity, while Claudia proposed additional sensors for scalability. The team agreed to use Evan's approach for the prototype and consider Claudia's for future development.

- Brainstoremed about the system architecture for live data for remote UI. The team agreed to use ESP32 as a webserver for simplicity.
- Discussed budget allocation: Evan will have further discussion with the STRUCURE team and other SYSTEM team for budget allocation .
- Claudia worked on the Bill of Materials (BOM), incorporating HC-SR04 sonar sensors, a traffic light module, and a DC-AC converter. Will continue to work on it with other team members.

Individual Reports

Evan Buhagiar:

Share updates from the structure team, highlighted their top-mounted motor design for vertical lift bridge. Highlighted the $42- $46 budget (including delivery fee), may strain the overall $100 budget of the whole team. Committed to discuss further with the team to finalize the prototype's design and finalize the budget. Proposed calculating bridge position using motor speed and time for the prototype, which promotes simplicity for the MVP.

Claudia Ghosn:

Worked on the Bill of Materials, including HC-SR04 sonar sensor which is budget-friendly, available and compatible with ESP32. Recommend to use at least two sensors per bridge side at different angles for ship detection. Suggested a counting system to ensure no traffic remains during bridge operation. Proposed additional sensor for bridge position tracking, suitable for scaling, but agreed to Even's simpler approach for the project's prototype. Also communicated with the other Systems teams that share the same Structures team and decided we should all use the same motors, as they are cheap and meet our requirements.

Ethan Almonte:

Updated the software flowchart to include authentication and finalized version two of the data flow diagram. Reviewed last week's software tasks and confirmed completion.

Cam Hao Ha:

Discuss on software architecture, proposing a remote web server hosted on cloud (ioT concept) using Node.js and WebSocket for modularity and live data update, avoiding bottle neck and preventing single point of failure on ESP32 as web server. Agreed using ESP32 as webster for the MVP thanks to its simplicity. Facilitated brainstorming on bridge position tracking, weighting Evan's and Claudia's proposals. Review completed tasks from last week.

Michael Murimbechi:

Absent due to illness, apologised for not attending.

Tanvir Hasan Roni:

Present research on ultrasonic sensors, emphasizing motor heat management and

compatibility with project needs. Propose a $9 DC-AC converter for the project, included in the BOMs. Contributed to budget discussion, supporting efforts to finalize with the structure team.

Action Items from Previous Week:

	Date Required	Person Responsible	Action Description
□	13/08/2025	Cam Hao Ha [SOFTWARE]	- Running simulate esp32 to test the interaction with the existing UI. **Completed** - Authentication page **-Pending** - Authentication mechanism. - **Completed** - Server Design **-Pening**
□	13/08/2025	Michael Murimbechi [SOFTWARE]	Finish the C++ course and start a test Arduino file in the esp folder **Completed**
□	13/08/2025	Ethan Almonte [SOFTWARE]	Finalise the flow Chart and Start to create the Git where all the code will be stored for the remainder of the session.**Completed**
□	13/08/2025	Evan Buhagiar [MTRN]	Select motors & motor controllers on Core Electronics. - **Completed**
□	13/08/2025	Claudia Ghosn [MTRN]	Select the following parts on Core Electronics: a 'limit switch' (x2), a piezo speaker, and a perfboard.**Completed** Also will go through the Scoping Document and will start to fill it out. **Completed**
□	13/08/2025	Tanvir Hasan Roni [ELEC]	Select the following parts on Core Electronics: a buck converter, and an ultrasonic sensor.**Completed** Also assist in motor research.**Completed**

New and Incomplete Action Items:

	Date Required	Person Responsible	Action Description
□	27/08/2025	Cam Hao Ha [SOFTWARE]	- Authentication Page - Page Routing - Backend development - Work With Tanvir to test different sensors: IR sensors, Motor Driver, Buck Converter, Leds, Limit switches, Ultra Sonic Sensor - Research on Arduino Cloud Service. - Support in documentations.
□		Michael Murimbechi [SOFTWARE]	- Support UI testing.
□		Ethan Almonte [SOFTWARE]	- Integrate UI and back end. - Test with live data -
□		Evan Buhagiar [MTRN]	- Finalise BoMs and submit. - Finalize budget with Structure team
□		Claudia Ghosn [MTRN]	- Finalize BoMs and submitted - Scoping documentation.
□		Tanvir Hasan Roni [ELEC]	- Work with Cam Hao for wiring, and testing each component. - Merge components to one main code.