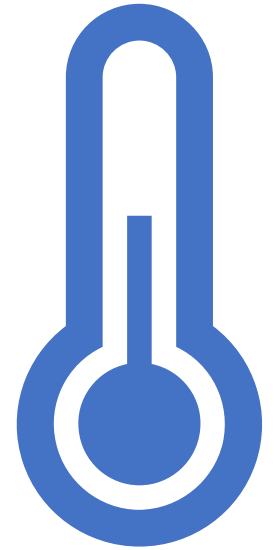
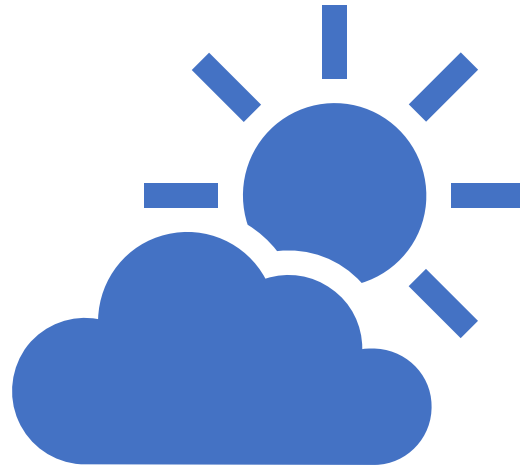


WEATHER STATION PROJECT



Shreyash Vijay Ankam
Keyur Patel
Sam Jeyaraj
Robin Sharma
Sarthak Sehrawat



TEAM

Valerie McQueen



MENTOR

George Seto



SPONSOR



- To interface the sensors.
- Documentation and Formatting
- Code Development
- Weather station modeling
- Documenting minutes of Meeting (MOM)
- To initiate the communication between the weather station and ESP8266
- Creating the trend reports.

- To stream data on thing speak.
- To create the database for storing the Analog value.
- Managing the Microsoft Project



- To develop code for extracting the RTC analog value.
- Time Keeping
- Designing of the compactness of the model
- Security Implementation
- Hardware Integration
- Power calculation for each sensor

- Sensor selection.
- Documenting the project charter
- Managing the Microsoft Project



- To troubleshoot and debug the code.
- Generating the test points.
- Firmware updating and library selection.
- Creating the GUI (Graphical Interface)

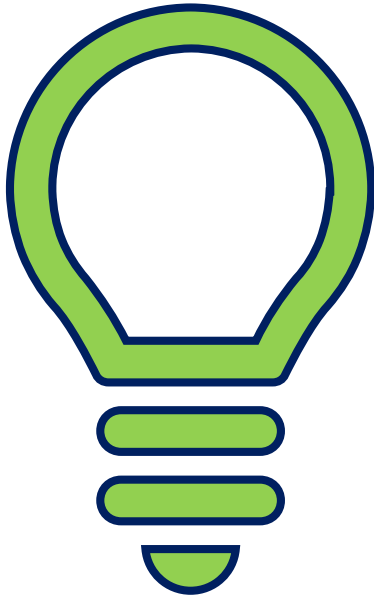
ROLES ASSIGNED



TABLE OF CONTENTS

- Opportunity
- Scope elements
- Requirement Propounded by sponsors
- Success criteria
- Workflow
- Backlog accomplished
- Gantt chart
- Block diagram
- Task completed
- Constraints
- Backlog to be completed
- Executive summary
- Conclusion

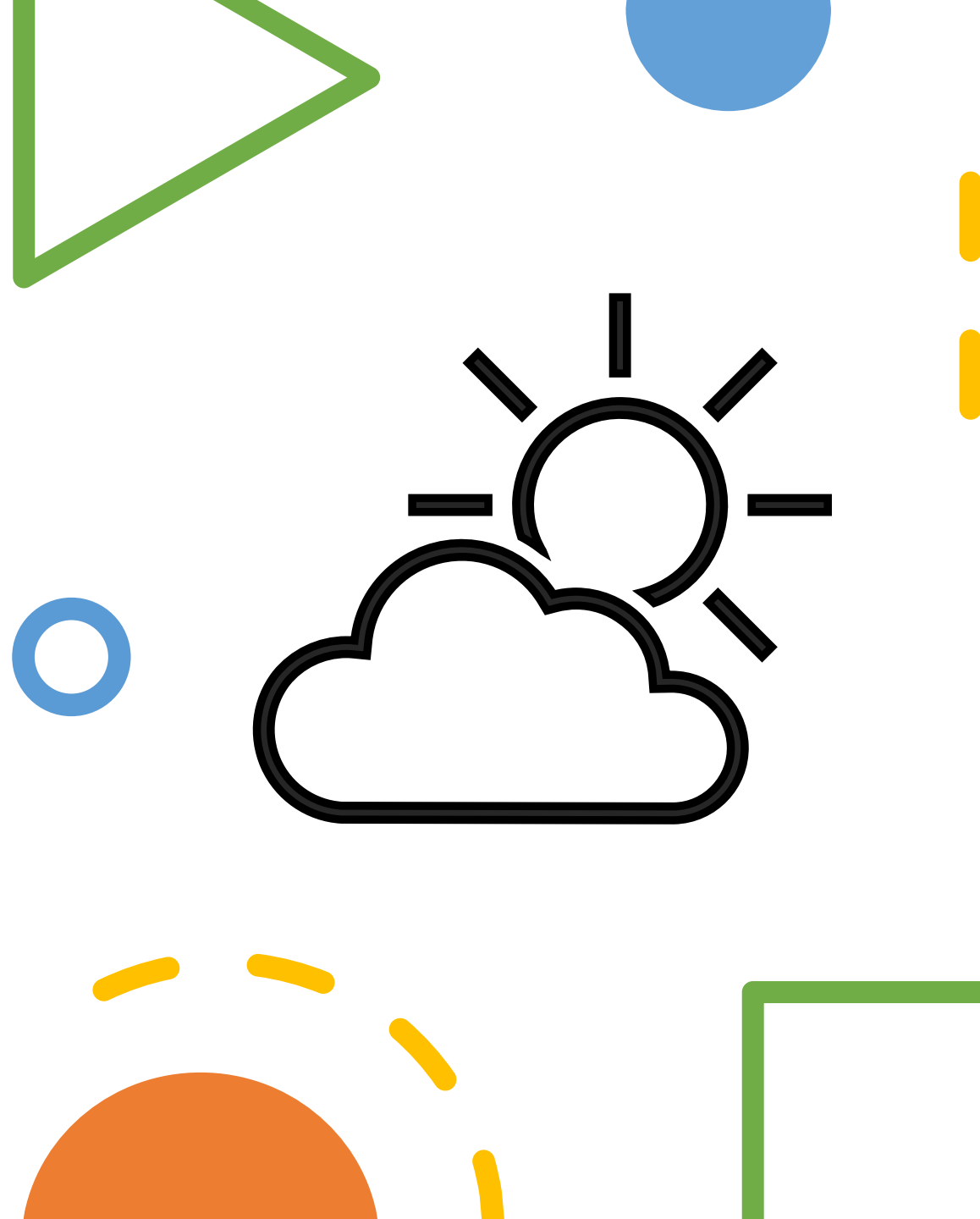
OPPORTUNITY



- The major concern of the owner is the atmosphere around his locality which might be affected by the frequent passing of heavy trucks from the food processors.
- Owner wants to figure out the types of gases having a ramification on the weather in the locality.
- Furthermore, how it has an adverse effect on the flora in the vicinity.

SCOPE ELEMENTS

- Installation of sensors.
- Calibration of each sensor.
- Segmentation of code.
- Aggregation of analog values.
- Implementation of Solar-Powered mechanism.
- Collection of the real-time data
- Generation of graphical representation in ThingSpeak.
- Developing an application for the user interface.
- Designing the weather station.

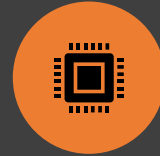


- Ensuring the project has adaptiveness to mobility.
- Considering the alternative approach for the microcontroller rather than opting for the Arduino.
- To have a deep comparison between the Arduino UNO and Arduino.
- Implementing additional sensors for detecting the Nitrogen and Sulphur percentage in the vicinity.
- Ensure to have an appropriate agenda of the meeting defined before the sponsor's meeting.
- Ensure to have a grammatical free-error draft to be mailed.
- Create the flow of how the multiple data aggregation streaming takes place.
- Ensuring the project has adaptiveness to mobility.
- To have a solar-powered mechanism for the Arduino.
- All the data aggregating from the sensors must be in real-time.
- The station must detect the analog values at two different locations i.e., Location A and Location B.
- There must be a comparison between the data extracted from the station at two different locations.
- All the real-time data must be published on App (Applications) or Website.
- The installation of the project must be simple to use for a novice person.
- All trend reports must be based on past readings of various levels.
- Find the solutions for the project rather than the approach.

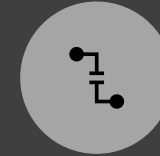
REQUIREMENTS PROPOUND BY SPONSORS



SUCCESS CRITERIA



Every sensor should work precisely without being susceptible to an external environmental factor.



There should be a continuous and unerring flow of data.



Installation and design of the project should be done error-free.



To ensure the security and safety of the device using proper insulation to protect from harsh conditions.



Should be able to keep this project prototype at the technical exhibition at Fleming college.



WORKFLOW

SEMESTER 4



```
graph TD; S4[SEMESTER 4] --> L1[Sensor Configuration, Aggregation of data, Firmware updating, Final Prototype building.]; L1 --> L2[Creating Trend Reports, Configuring Solar Panel.]; L2 --> L3[Hardware Interfacing, GUI generation.]; L1 --> R1[Initial steps for User Manual, Data Streaming, Project Closing Documentation.]; R1 --> R2[Modeling the station, Station Layout.]; R2 --> PS[Product Submission];
```

Sensor Configuration, Aggregation of data, Firmware updating, Final Prototype building.

Creating Trend Reports, Configuring Solar Panel.

Hardware Interfacing, GUI generation.

Initial steps for User Manual, Data Streaming, Project Closing Documentation.

Modeling the station, Station Layout.

Product Submission



BACKLOG
ACCOMPLISHED



ID	User Story	Priority	Estimate	Sprint #
1001	As a sponsor, I want air pollution detection in the weather station, So that I can predict the air quality of the surrounding for my plants.	1	Easy	6
1002	As a team leader, I want every member to document the progress and details of the project, So that the issue could be dealt with more easily by the team.	1	Hard	1
1003	As a quality manager, I want the best selection of sensors for various analog values. So the overall product withstands the harsh climate.	1	Medium	2
1004	Being a Hardware Developer, I need quality equipment, As a means of reducing the risk of Hardware failures.	2	Easy	3
1005	As the mentor, I require the procurement of various sensors. To ensure that overall cost doesn't exceed the budget.	2	Easy	3



BACKLOG 2

ID	User Story	Priority	Estimate	Sprint #
1006	As a hardware person, I need to the testing of each sensor To ensure the proper execution of the model.	2	Hard	5
1007	As a team member I must do the interfacing of each sensor to the board To extract the real-time analog values	2	Hard	6
1008	As a software person, I must ensure the segmentation of the code for each sensor. For easily differentiating the code for each specific sensor.	1	Medium	5
1009	As an IoT Member, I must ensure to generate the Channel ID and API key for writing and reading the data transfer on the IoT platform. For creating the trend reports.	1	Medium	2
1010	As an IoT member, I need to check the upstreaming of data from the sensors to the thingspeak For a continuous flow of real-time data from the board.	2	Medium	8

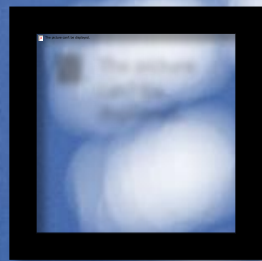
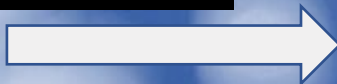


BACKLOG 3

ID	User Story	Priority	Estimate	Sprint #
1013	As a project member, I need to determine the power required for each sensor and the overall consumption of power. So that fuse and another protective setup can be implemented to avoid the damage of the system.	4	Medium	5
1016	As a Communication Leader, I want to know about the detailed progress of the project, So that I can converse with stakeholders to keep them updated.	1	Medium	1
1017	As a Project Team, We need to build a working prototype in 14 weeks, So that we can complete our Technical Review 3.	3	Medium	7

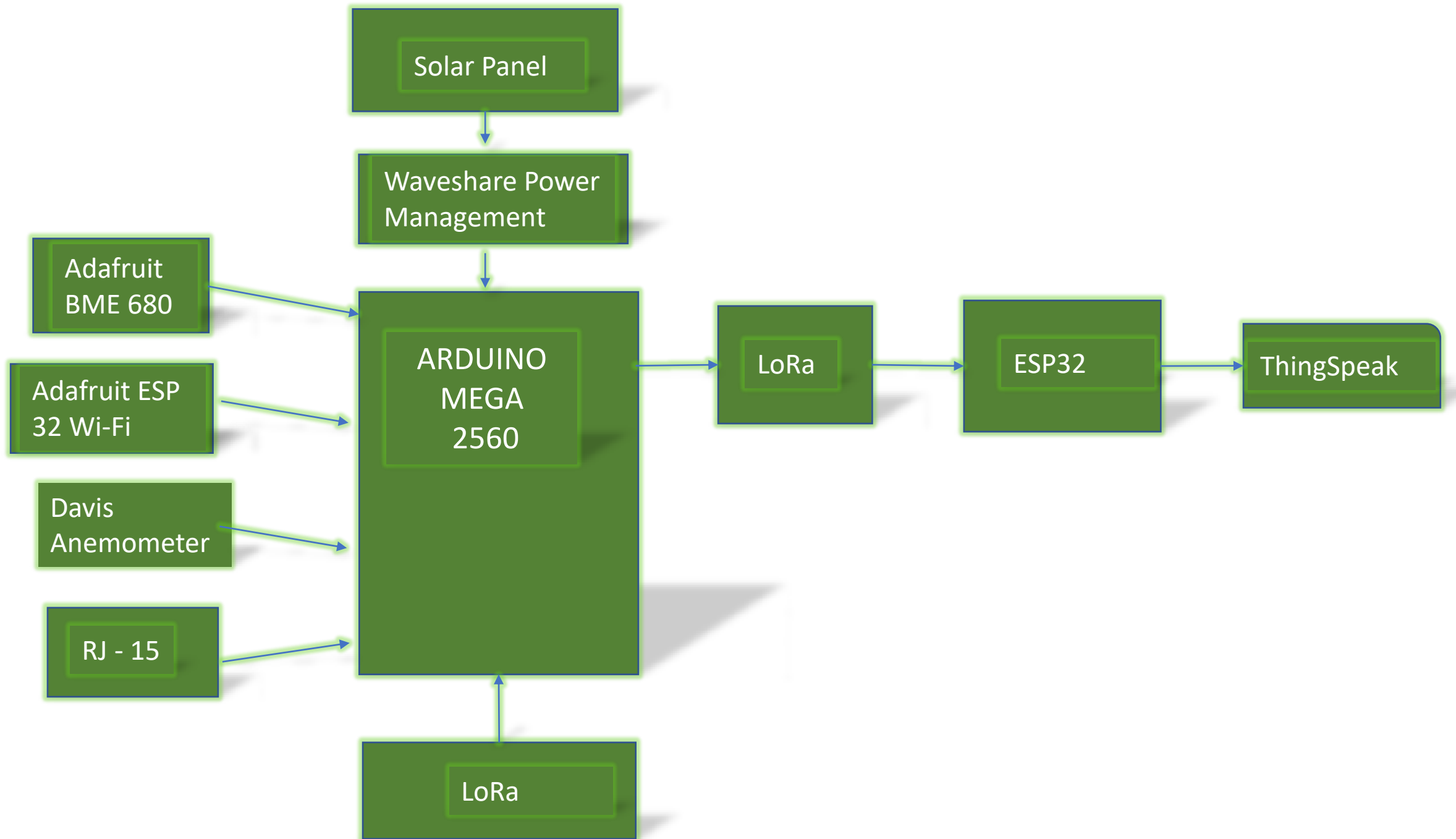
GANTT CHART

Click on the icon

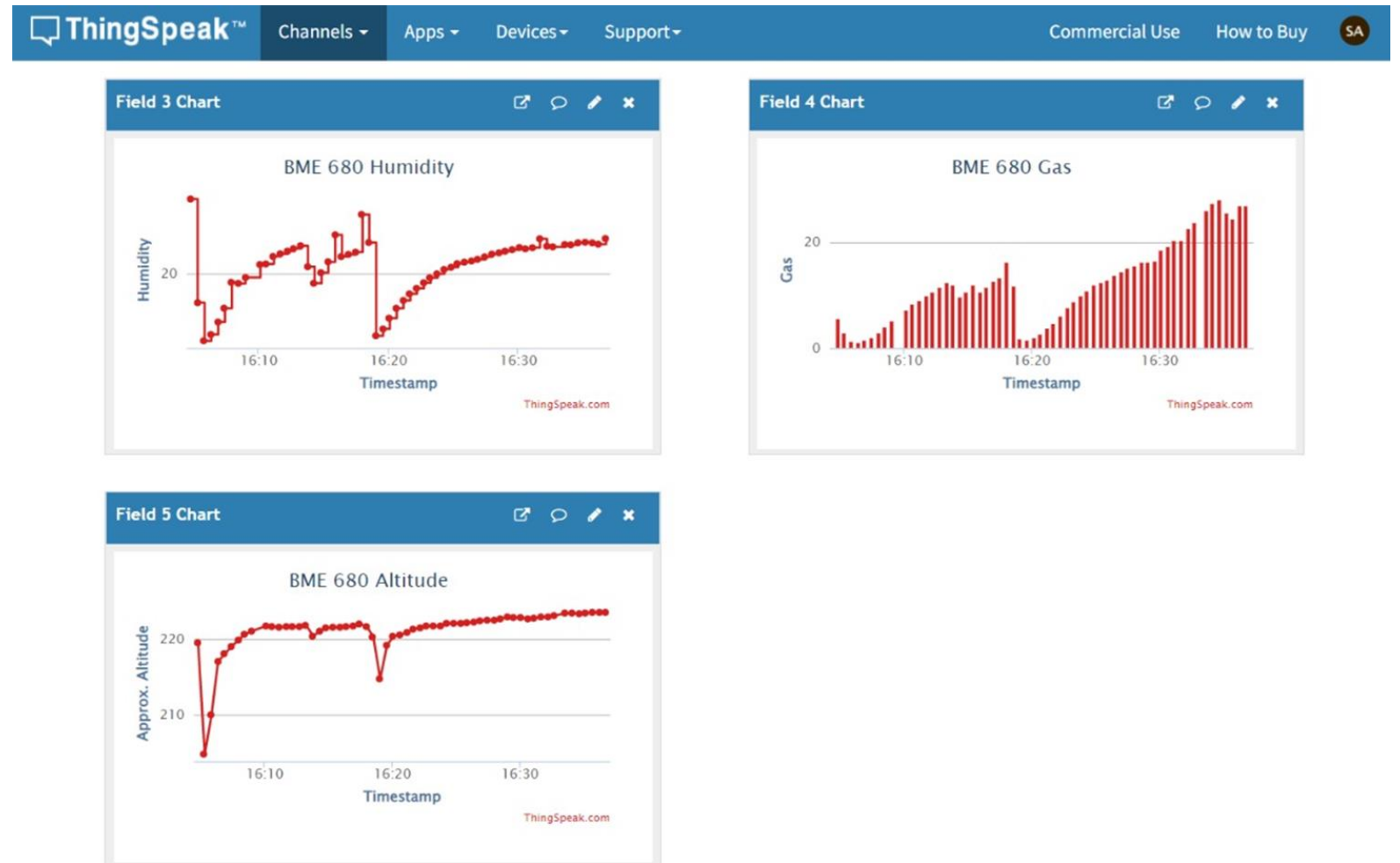




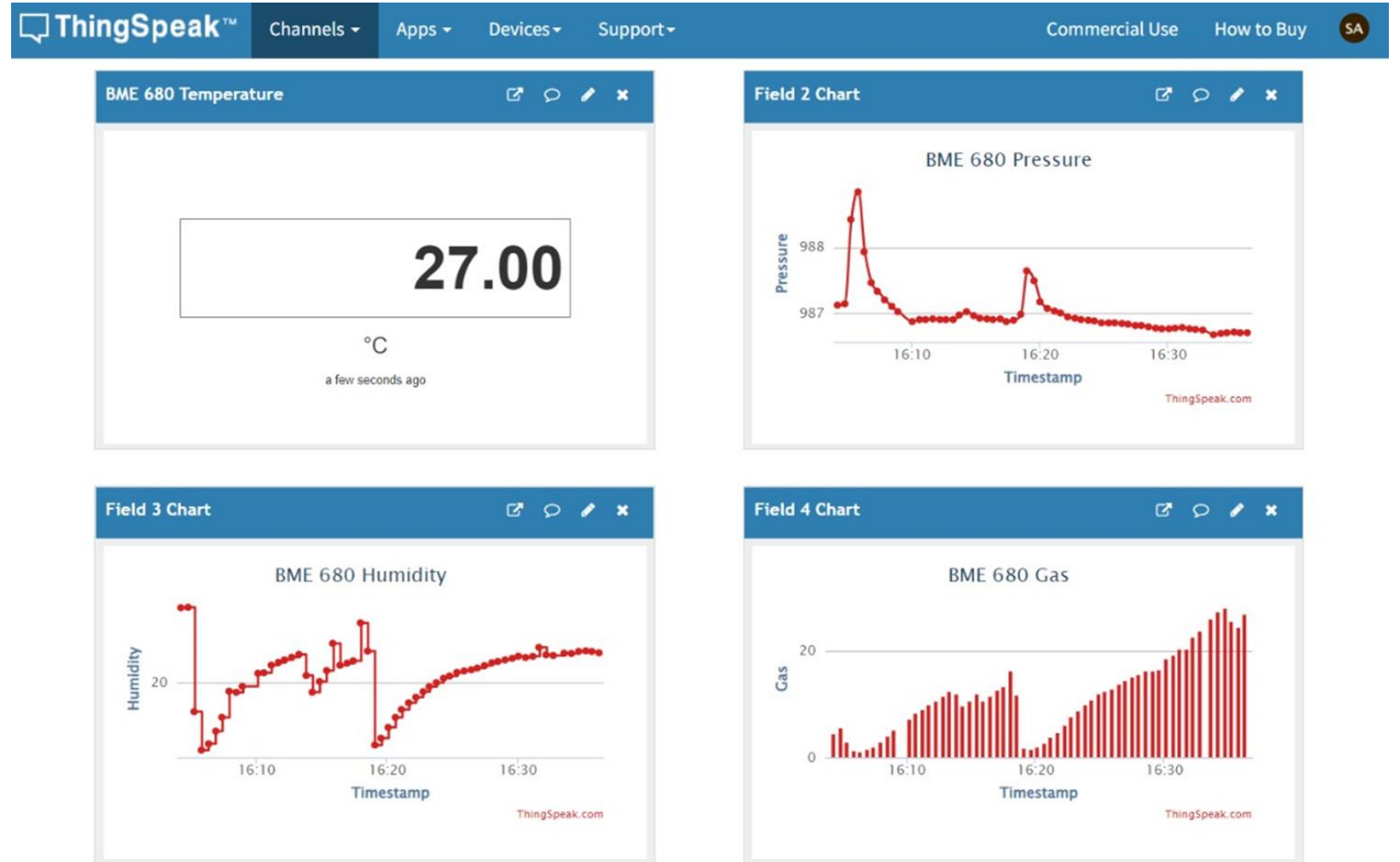
BLOCK DIAGRAM



ThingSpeak GUI



ThingSpeak GUI





Interfacing of the Davis Anemometer

DEMO VIDEO - 1



Interfacing of the RJ11

DEMO VIDEO - 2



Interfacing of the BME 680

DEMO VIDEO - 3



Uploading the data onto the Thingspeak

DEMO VIDEO - 4



BACKLOG TO BE COMPLETED

Product ID	User Story	Sprint	Who is Responsible
1011	As a Bridgeman, I must ensure the interfacing of all the sensors onto the board. To generate a prototype of the overall model.	#9	Ankam and Sam
1012	As a coding member, I must do a combination of the programs for each code from various sensors into one.	#9	Ankam and Sam
1015	As a Sponsor, I want a mobile weather station, So that I can move that to different locations.	#14	Everyone
1019	As a first-time user, I want to get a guided tour of the functions of the User Interface,	#14	Ankam, Keyur, Robin and Sarthak
1020	As an end consumer, I would like the wiring to be insulated and Shockproof	#12	Ankam and Keyur



EXECUTIVE SUMMARY

To recapitulate, the project mainly focuses on how to detect the various pollutants and various factors having negative ramifications on the environment. In order to achieve the goal, the presentation discusses a stepwise approach by deliberating appropriate workflow and overall estimation to be deemed prior to the execution of the project.

CONCLUSION

To recapitulate, Technical Review 4 describes The Deliverables, Project Scope, backlog accomplished, issue backlog, and Resources. Furthermore, provide a vivid idea about the execution to be taken place in the upcoming semester.





ANY QUESTION?

The image is a black background with white and light green geometric shapes. A large white circle on the left contains the text 'THANK YOU'. To its right is a larger white circle containing a white smiley face. A thick, light green arc overlaps the bottom of the 'THANK YOU' circle and the smiley face circle. In the top left, there are two white zigzag lines. In the top right, there is a small white circle with a light green outline. In the bottom left, there is a small solid light green circle. In the bottom right, there are four white diagonal lines.

THANK YOU