Post Mortem Report for the

Real-time Air Monitoring System

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Introduction

For the past thirteen weeks, the idea of producing a Real-Time Air Monitoring System (RTAMS) has brought together four passionate and skilled individuals - Samuel To, Marvin Lee, Tessa Ryan and Rouzbeh Roshanravan have worked very hard in pursuit of the system's realization. This report shall examine the process that brought this project from concept to reality and document the personal experience of each member of AirTack.

Current State of the Device

As described in the project proposal, the RTAMS is capable of detecting hazardous levels of various gases and other environmental factors and responding in one or several ways to protect persons and property. Sensed factors include carbon monoxide gas ($CO_{(g)}$), natural gas (methane), smoke (particulate) levels, humidity ($H_20_{(g)}$) levels and temperature. Once a threshold level of a detected substance is reached, the system will alert the user with an SMS and initiate a ventilation system. The system is composed of three separate types of modules, as Figure 1 illustrates below.

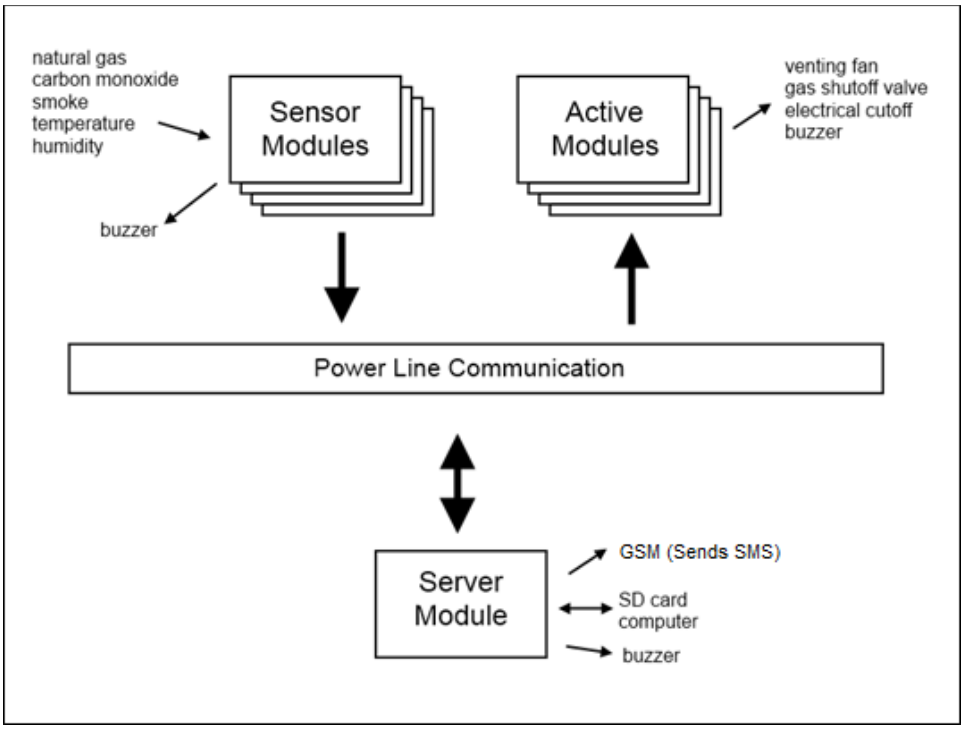

Figure 1: High Level System Design Diagram

The current state of the device will be explained in this report according to each component module described in Figure 1.

Server Module

There is only one Server Module, which serves several functions and acts as a central node for the network. It is fully functional and communicates with the Sensor and Active modules as designed to monitor and respond to environmental stimulus.

Sensor Module

There may be many instances of Sensor Modules; our proof of concept device consists of a single instance with four on-board sensors (temperature and humidity are measured together from a single sensor). The role of the sensor module is to read the values from the sensors and raise an alarm and communicates with other modules when a sensor detects a hazard. If an alarm signal is received from another module, the alarm will sound. The sensor module can also send its sensor data value to other modules when requested. An important feature of the system is that additional sensor and active modules can be intelligently added to the system- this has been fully implemented.

Active Module

There may also be many instances of Active Modules, installed in strategic locations. The role of the active module is to prevent damages to property by preventing a hazardous environment from developing by initiating ventilation response. The active module requires a server module to operate. At this time, the active module is fully operational. An important feature of the system is that additional sensor and active modules can be intelligently added to the system- this has been fully implemented.

Deviation of the Device and Challenges

Overall Device

The overarching design and purpose of the device has not changed since the early planning an concept stages of the project. At its heart, the RTAMS device was intended to monitor environmental levels of five environmental factors in real time with user friendly data analysis. Response mechanisms were to include SMS text messages, ventilation management (turn fans on), buzzers and maybe circuit breaking. Circuit breaking functionality was not developed, but all other response mechanisms were implemented and are functional. Different modules within the device were intended to communicate via powerline communication, which uses existing electrical infrastructure in the home and does not require any additional renovation for a simple, safe installation. Powerline communication was successfully implemented, as was system modularity - a user can easily remove or add sensor or active modules to the system without having to interact with any low-level code. Similarly, we intended for additional sensor and active modules to be seamlessly added or removed from the system without user interaction in low-level code. The proof-of-concept device which was developed includes a single server, sensor and active module. In the future, the RTAMS will be further developed to achieve this goal, intelligently detecting which sensors/modules are plugged into the network at any given time.

Server Module

The server module was intended to act as the brain of the RTAMS, and its initial design requirements were met in full with no deviation from the initial design aside from SD card integration. SD functionality remains stand-alone as data streaming provided an acceptable transfer method. Some bugs still exist, particularly occasional packet loss during reception of information from the sensor module after a request for data is made. The server module was intended to keep track of all the modules, manage incoming data and storage functionality and interface with a PC to provide data analysis and graphing capabilities. Though communication between the server module and the PC has worked just fine in the past, in order to ensure that clean data is received by the PC for the live demo, data will be streamed directly from the sensor module instead.

Sensor Module

The sensor module was intended to act as the "nervous system" of the RTAMS and its initial design requirements were met in full with no deviation. As intended, the sensor module contains five sensors (carbon monoxide, natural gas, smoke (particulate), humidity and temperature). It consistently monitors these environmental factors and latency is minimized by sending alarm signals directly to other modules.

Active Module

The active module design did not deviate at all from its initial design requirements.

Powerline Communication

A powerline communication protocol was written from scratch using arduino libraries. Its design and implementation was completed exactly as initially intended. It was operational during our project but unfortunately the Mamba shields the powerline communication used were fried very soon before the demo and could not be replaced. Video evidence of its operation exists.

Future Plans

Overall Device

In general, the team is planning on continuing work on this project on a hobby basis as we are able, due to graduation and co-op commitments. Before the demo, there was no intent to commercialize the RTAMS because the intent from the beginning of the project was to complete it for the sake of the learning experience. This decision is now under consideration.

In the future, we hope to implement different communication protocols such as Wi-Fi to create a failsafe system. This will also allow devices to be spaced further apart, making wires less of an issue. Additionally, an internal battery may be added so that devices can be truly portable as long as Wi-Fi is present. Conforming to CSA standards is a must if this project is to become a product- the accurate testing required to conform to these standards was beyond the scope of the proof-of-concept device.

Optimizing the physical design to use fewer materials as well as developing enclosures is also an idea under consideration, especially if commercialization becomes a goal. Cost reduction will be an important priority, particularly reducing the price gap between commercial sensors and our product. Simpler, cheaper and more specialized microcontrollers could be used.

Optimizing the communication library is also a priority, as it is still presenting some bugs which we suspect are causing occasional data-packet loss.

Server Module

Feature wise, AirTack is comfortable with the features that have been implemented for the server module directly.

Sensor Module

There is the possibility of adding on additional capability for the module to interface with new types of sensors that monitor factors beyond the current scope. The limiting factor of this is the number of pins on the microcontroller itself. If the number of pins required exceeds the number of pins physically, then an additional sensor module maybe needed.

Active Module

There have been ideas with regards to a circuit breaker device that will be able to cut off power to specific areas when necessary. Also, adding additional ventilation with multiple fans will allow for greater coverage of area as well.

Budgetary and Time Constraints

Budget

Required Materials	Estimated Cost	Actual Cost	Comments
3 Arduino Microcontrollers	$180.00	$0.00	Did not have to purchase, had our own and borrowed from ESSEF.
MQ4 Sensor (Methane)	$5.00	$4.95	
MQ7 Sensor (Carbon Monoxide)	$8.00	$7.25	
Optical Dust Sensor - GP2 (Smoke)	$12.00	$23.90	A single replacement sensor had to be purchased.
RHT03 Sensor (Temperature and Humidity)	$10.00	$9.95	
SM5100B GSM Cellular Module	$100.00	$99.95	
Microcontroller Accessories	$75.00	$50.10	
3 Arduino Mamba Shields	$175.00	$164.85	
Test Equipment	$50.00	$67.14	AirTack was able to obtain help from professionals at AirCare to test the device with accurate equipment.
Shipping Costs and Backup Fund	$180.00	$47.20	
Total	**$795.00**	**$475.29**	**We came in under budget.**

Figure 2: Budget

Time

The original Gantt chart from our proposal is included in Appendix below. The following table illustrates our initial milestone timing goals and when these milestones were actually reached.

Task	Goal for Completion	Actual Date of Completion
Research	Jan 13	Jan 14
Proposal	Jan 21	Jan 21
Functional Specifications	Jan 30	Feb 11
Design Specifications	Feb 8	Mar 14
Assembly of modules/coding	Feb 22	Mar 24
Integration	Mar 8	Apr 1
Debugging / Prototype modification	Mar 15	Apr 22

Figure 3: Project Timeline

Inter-Personal and Technical Experiences

Group dynamics

The AirTack team worked well together throughout the semester and we are proud to say that we did not experience any conflict. The following chart describes how tasks and workload were distributed.

High-Level Task	Samuel	Marvin	Tessa	Rouzbeh
Powerline Communication Protocol Design and implementation	X			
Sensor Module circuit design		X		
Sensor Module programming		x		
Central Server Module programming	X			
Active Module programming	X			
GSM SMS Module programming				X
SD card shield		X		
Data analysis scripts in R			X	
Data streaming from arduino to computer			X	
Module and System Testing	X	X	X	X
Documentation	X	X	XX	X
Module and System Testing	X	X	X	X

Figure 4: Workload Distribution

Samuel To

Building projects is not a new experience for me; what is new is planning, designing, and building a large project with a team of other engineers. Over the last few months I have gained valuable experience in working with others in a team and planning out our schedule.

Working on a project with a team has been a new experience. On other projects, I was used to having to design and build every part. Through this course I've learned to rely on others to take on different tasks while I focus on my own task. I find that having other people working in tandem can speed up the development process. It's also advantageous to have a team to fall back when there are issues in the project and to have a second pair of eyes to go over my section.

This project had me take on a more managerial role since I had the most knowledge with the Arduino platform. This was a new experience for me because I had not performed this role before. Throughout this semester, I learned how to work with the teammates and assign each team mate tasks that appeal to their strengths. I also gained appreciation towards properly planning and managing our time. Our group had not taken into consideration proper scheduling and as a result we were pressed to finish on time. Going forward, creating a schedule and following it will be a high priority for me.

This project has given me some experience in designing a product from the ground up. It made me consider the constraints and issues that may occur during development such as: development time, budgeting, and testing. It also made me consider which development cycle to follow. For our project, we were following the waterfall model, where the development follows a single path. In hindsight, this project would have benefited from following an iterative model, where the project will go through several design iterations.

Technical skills I've learned during this semester include learning about network collisions and interrupts. My main task was designing and programming the communication protocol and the associated hardware. I devised a method to automatically assign addresses to devices on the network and to reduce packet collisions. I have also learned to take advantage of hardware interrupts when designing the hardware.

This project was very enjoyable and the lessons I've learned will be very valuable as I continue to pursue my Engineering degree. While I will continue to build my own individual projects, I will consider working on larger projects.

Marvin Lee

I have been very privileged to have been able to work with a group of highly talented individuals over the duration of a semester.

The impressive part of our group was our ability to take on new challenges and not be afraid to take them head on. Team members were able to voice their opinion as we had a very open setting and took all opinions into consideration when making a decision as a group. This was the first time in an academic environment where 4 members had to work together very closely for hours at a time for the whole duration of a term and I believe that we were able to accomplish the core goals of the course.

I was able to take a lot of positive experiences with regards to this project. The biggest roadblock for me personally was the fact that I had no prior experience using an Arduino Microcontroller before. What I also didn't know was that the development community for this family of microcontrollers was very large and open for questions. I was able to work on many aspects including: multiple analog/digital pins, powerline communication, hardware breadboarding as well as working with all the different sensors in our system.

For me the greatest highlight was spending a morning at Aircare to calibrate the sensors and see how the professionals do it. It was very rewarding to see how something that the team was working for weeks come together and had something to show for it in the real world. It was definitely a good idea to build up a relationship with their organization as they may be crucial in aiding with further development of the project.

But for me, the most rewarding part of the project was that I was able to put all the knowledge that I had learned over the last five years into practice and had something to show for it. There are many technical skills that I will take away from this as well as non technical ones. Going through a full project lifecycle is crucial in preparation for our entry into the industry as engineers and I will proudly display it on my resume for potential employers to see.

In the end, I believe that we were able to get very close in accomplishing our goals. Not every project turns out to be a success and that given the circumstances, the team put in their best efforts. The project played to the strengths and qualities of the team members and that is why we were able to accomplish the things we did.

Tessa Ryan

This semester has been an experience to remember and I feel immensely privileged to have lived through it with my talented teammates. There are no others I would rather have completed this project with. The vast amount of learning we did in this short 13 week period has been nothing short of amazing. Through the development cycle, I've picked up a multitude of new and valuable skills that will stand by me in the future.

I was consistently impressed by our collective creativity and ability to take on difficult and at times frustrating challenges over and over again. Problems we encountered which may have felt overwhelming for one person were addressed with a team mind and we accomplished a great deal as a result. This course is unique in that it offers opportunities for this teamwork to continue in a single project over the course of a term. I am very proud of our ability to work together - not once over the course of the term did we experience any conflict between group members, even when difficulties arose. I feel that this is reflected in our productivity.

What I liked most about doing this project was that we were given an opportunity to apply our own unique talents. Each of us had specialized knowledge that came in handy and together, we were able to cover all the bases needed for the project. For example, I have a strong interest in real-time applications, data analysis and statistics. We designed the project so that real-time data analysis was an integral component of the system, allowing me to apply my skills as a feature in a larger project. I was also thrilled to be able to calibrate and test our finished device at AirCare, an organization in British Columbia which strives to improve air quality in the Metro Vancouver area via emissions testing on vehicles. It was extremely rewarding to see the device operating as expected in the company of professionals who shared my enthusiasm for the project and made accurate testing possible. The opportunity to interact with industry professionals as part of our project was also appreciated.

The most difficult part of this project was the learning curve involved in working with new equipment. Prior to this experience, I had no exposure to arduino devices or their peripherals. This challenge presented a valuable experience, especially under significant time constraints. Resourcefulness and creativity allowed myself and my teammates to rise to this challenge.

My experience with AirTack has been overwhelmingly positive and I look forward to continuing further work with Sam, Marvin and Rouzbeh on the RTAMS. The opportunity to go through an entire project lifecylce was invaluable and I think our collective experience was very much in line with the goals of the course.

Rouzbeh Roshanravan

In the past four months, working on this project has helped me learn many different things. Working with a group of engineers all with different perspectives, ideas and backgrounds has been a great experience for me. I have gained many technical and non-technical experiences throughout this journey. I learnt that working in a team is very interesting and more beneficial rather than working individually, since everyone has different weaknesses and strength. For example there has been many situations in which one person gets stuck in a problem while another group member can solve it immediately. Even though our project is not in a very stable state, seeing this project coming from an idea to life was a great, enjoyable experience which was not possible without everyone's hard work and dedication.

From a technical perspective, I have improved my programming and coding skills, especially programming in C. I have also became skilled at soldering and working with microcontrollers such as various types of arduino boards, GSM shields and power line communication technologies. I also got to use various sensors and learnt about various gases, their properties and how various sensors can be tested and calibrated. Throughout this project, I was also lucky to use some designing software such as adobe illustrator and Microsoft Visio for designing the logo of our company.

Aside from the technical skills, working in a team taught me how to be a very good listener and learn to work in a team effectively. This experience also showed me how important time management is and how the quality of meetings is more important than the quantity of them. I realized that small factors can be important and can hugely impact the end results of a project. Even though we managed to keep track of each stage of the project, we still felt that more testing time would be beneficial at the end. I also learnt that, working in a team can sometimes be extremely challenging since everyone has a different point of view and approach towards solving various problems; however, the better part was the learning of how effectively a group can communicate and solve various problems. Another important skill that I was able to improve was my communication skills. Keeping track of various tasks in a journal, emails, all the reports, and finally preparing for final presentation were some of the main factors that helped me in improving this skill.

This experience has been very precious to me and I am very happy that I got to work with such intelligent, hard working team mates.

Conclusion

All things considered, the Real-Time Air Monitoring System (RTAMS) project was a great success. The design of the product deviated very little from our initial design and all intended functionality was implemented. Our design choices were well supported the device functioned well as a whole. We are still discussing the future of this product. Before the demo and reception of feedback from professors and teaching assistants, we did not intend to commercialize the device but this is now being reconsidered. If the project is to be commercialized, several aspects will be changed as we optimize the design for mass production and maximum usability for the home environment.

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Appendix 1:
Old Gantt Charts

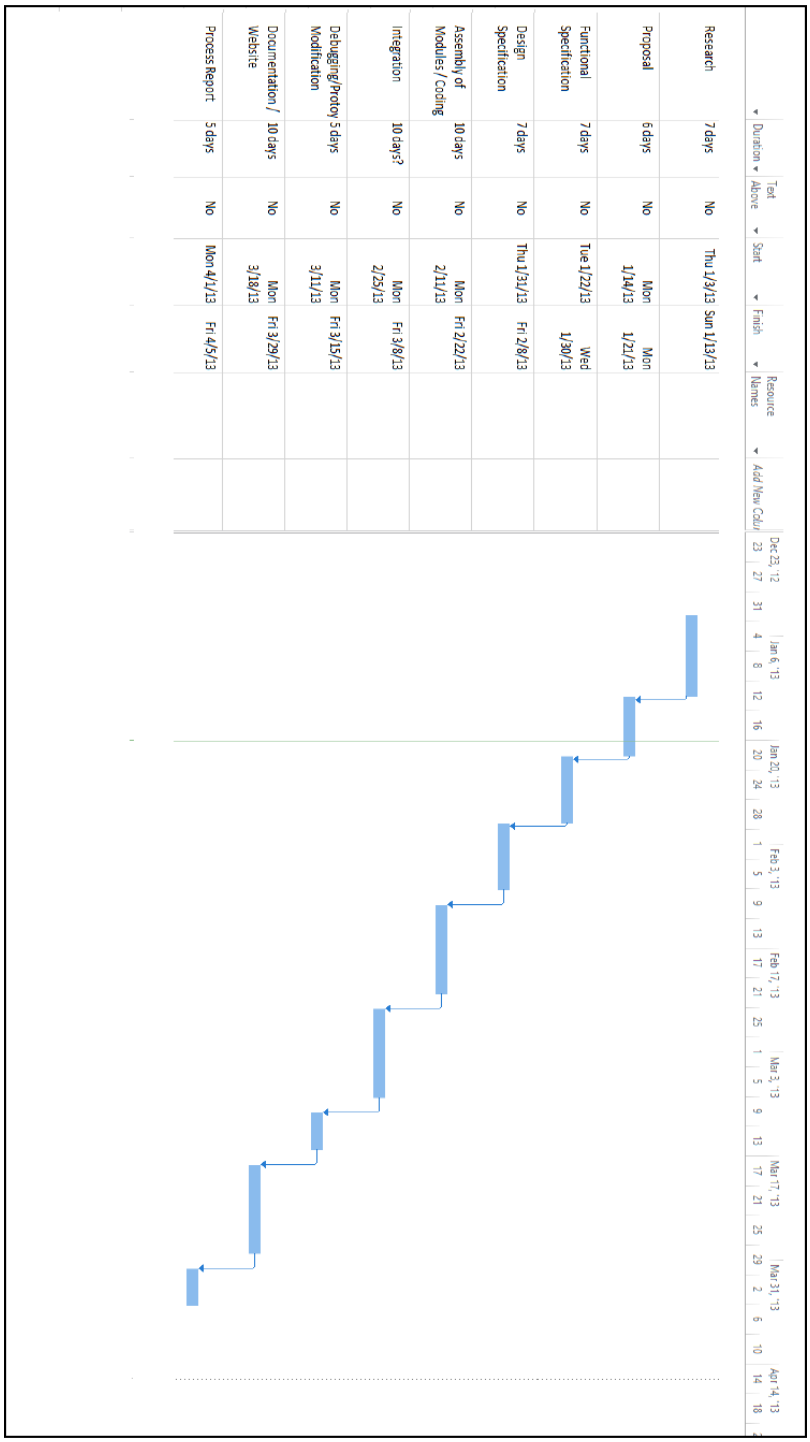

Figure 5: Proposal Gantt Chart

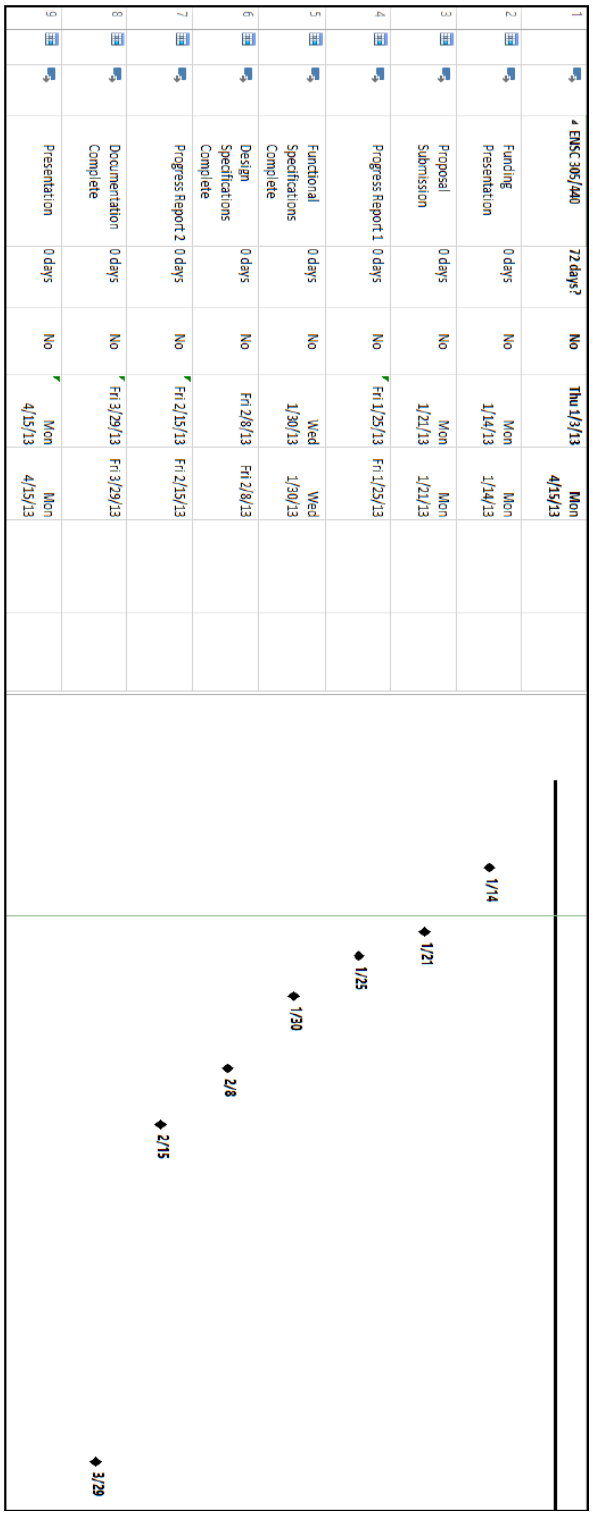

Figure 6: Proposal Milestone Chart

Appendix 2:
Team Meeting Minutes

Contents

AirTack

AGENDA

January 10, 2013
13:30-12:30
ASB at Simon Fraser University

Purpose of Meeting: To decide on a project and discuss details

Present: Tessa, Marvin, Sam, Rouzbeh

Multisensor that detects:

-smoke (particulate)
-carbon monoxide
-natural gas
-maybe humidity
-air conditions and % makeup of oxygen, nitogen, etc.
-maybe temperature sensor

How are we going to do it?

Microcontroller
Use powerline as communication system? Serial connection. Ethernet over power line? Modulates the signal and connects it through the power line so don't have to run wires all over your house. Power line is like a big switch. "Powerline Communication"

Real time computer monitoring system:

Involves a PC component. Could connect to server with your phone.
Basic communication through texting
Custom threshold levels for alert systems
Mechanical response – fan control, ventilation control, gas cutoff

Proposal due on January 21st
ESSS ESSEF Funding Proposal due January 14th, 2013

AirTack

AGENDA

January 18, 2013
13:30-12:30
Simon Fraser University

Purpose of Meeting: To discuss latest developments and action items

Present: Tessa, Marvin, Sam, Rouzbeh

Minutes:

- Work distribution for proposal
    - Check action items
- List of parts to order
    - Sensors, Arduino and accessories

Action Items

- Tessa
    - Executive Summary / Proposal, formatting of final document
- Marvin
    - Gantt chart, milestone chart, funding, budget, company profile
- Sam
    - Design solutions, start compiling requirements, order parts from Sparkfun
- Rouzbeh
    - Logo design, letter of transmittal

Next meeting will be held on January 27, 2013.

AirTack Inc.

AGENDA

January 27, 2013
13:00-18:30
Lab 1, SFU Burnaby

Present: Sam, Tessa, Marvin

Absent: Rouzbeh

Purpose of Meeting: To test newly arrived hardware, get everyone on the same page, iron out development organization and begin work on functional specifications documentation.

Minutes:

- Possibly using Raspberry Pi as central server of the system?
- Discussion of task organization and project development model.

A. Implementation of statistical analysis and retrieval of data by the user

Discussion and Action:

- Decided to keep SMS for alerts only (outgoing texts only)
- Will write a program in Java or C on a computer so can connect computer to arduino via USB to retrieve data and view graphs generated in real time on computer from arduino's data (stored locally).
- Discussed and nixed possibility of writing an Android app to facilitate data transfer and graph viewing on a cellphone, plugged into arduino via USB.

B. Possibly using Raspberry Pi as central server of the system?

Discussion and Action:

- Decided to stick to arduinos and just use a computer and USB connection, as per above
- Don't want to work with uploading images or wifi at this time

C. Discussion of task organization and project development

Discussion and Action:

- Decided to follow an iterative implementation of the Waterfall method

The next meeting was arranged for Tuesday, January 29, 2013 at 2:30 PM, tentatively in Lab 1.

E. Other Business

- Sam tested the newly arrived hardware
- Each of us now has the Arduino software installed on our laptops and got an LED blinking on the board.

Everyone left around 6:00 PM.

AirTack Inc.

AGENDA

February 19, 2013
13:30-14:30
Lab 1, SFU Burnaby

Present: Sam, Tessa, Marvin, Rouzbeh

Purpose of Meeting: To check in and discuss progress, solve problems, etc.

A. GSM Update – problem with SIM getting registered to network.

Discussion and Action:

- Had issues determining frequency. Use Fido/Rogers because they're on GSM.
- Configuration #3 was used
- There's a programmers guide to the GSM module- should use this as reference.
- Was not registering, then suddenly did, but this is not reproducible. When it does register can call it.
- Should be reading a log- serial monitor on Arduino.
- Seems easier to do than was expected, just have to deal with these problems.

B. Tessa - Stats analysis update

Discussion and Action:

- Will be in a stream instead of a file (over serial) if we monitor in real time.
- If monitoring just the history, will just be a CSV file.
- Bash or shell script

C. Marvin – Coding of natural gas and smoke sensors.

Discussion and Action:

- Doing coding for two sensors, will have that done by Thursday.

E. Sam -

- Been working on communication protocol
- Can now send up to 60 bytes at a time. Problem was not enough delay in reading.
- Was just reading from serial – give 100ms. But when we implement, won't be reading from serial so can just send whole packet.
- Next thing have to do is make the protocol – assign addresses, etc

F. Including safety and sustainability in the Design Spec.

Discussion and Action:

- Off the shelf components that are easy to re-use and re-purpose for another project. Many of our components are re-used parts from previous ENSC 440 projects, from the ESSEF Parts bank.
- Highly modular – can replace certain parts if something goes wrong and not the whole system, mitigating waste.
- Whole device is meant to ensure safety!
- Our final product will not have exposed wires or anything
- Powerline communication safety? Address danger associated with this. High current. Talk about this.
- We will make use of fuses to ensure safety.
- Reliability – we will ensure calibration is complete with reasonable threshold levels because this is a critical system meant to protect human life and property. Safety is our main concern.
- Testing will occur on each module and the final integrated project.

G. Assigning Deadlines

Discussion and Action:

- **Sam:** still working on communication protocol- will be done by next week.
- **Rouzbeh**: No deadline for GSM, needs fresh eyes. We will all take a look to try to fix the SIM registration problem.
- **Marvin**: Coding for sensors will be done by today.
- **Tessa:** Stats analysis software by end of week.
- **WE ARE ON TRACK** ☺

H. Design Spec- due Monday March 11th.

Discussion and Action:

- Need to ensure that this document includes Safety and Sustainability section, as we missed this in previous reports.
- REVIEW THE RUBRIC before handing in/writing.
- Tessa and Rouzbeh are looking into instruments we could use for testing- this may mean buying CO detectors or natural gas detectors to use to help provide a control for testing.

I. Progress Report Meeting (this Thursday)

Discussion and Action:

- Reiterate the progress made in the minutes above.

- **AirTack Inc.**

AGENDA

March 05, 2013
14:00-15:30
Lab 1, SFU Burnaby

Present: Sam, Tessa, Marvin

Purpose of Meeting: To check in and discuss progress, solve problems, etc.

A. Outstanding difficulties

Discussion and Action:

- Humidity sensor (Marvin)
- Communication protocol (Sam)
- Still some issues with GSM Module (Rouzbeh)
- Scripting for real-time part of data analysis. Using powershell? (Tessa)
- Need to start saving data to SD card.

B. Design Specification Report

Discussion and Action:

- Will be submitting it late, pending permission from Steve due to 425 midterm (Sam and Tessa) on same date as it is due.

AirTack Inc.

AGENDA

March 15, 2013
13:00-17:30
Lab 1, SFU Burnaby

Present: Sam, Tessa, Marvin

Purpose of Meeting: To begin the integration and testing process of the project lifecycle.

A. Assigning of new tasks and due dates for integration process

Tessa:

- Test correct reception of CSV data from arduino on PC for data analysis – Tessa, by Sunday.

Tessa and Marvin:

- Server must send a request for data from modules (sensor module). Modules must respond to this request with their data. Server must then compare data received to acceptable values and initiate an action response.

Marvin:

- Putting the packet together on the sensor side as a char string for the central server to process
- Server must send a request for data from modules (sensor module). Modules must respond to this request with their data. Server must then compare data received to acceptable values and initiate an action response.

Rouzbeh:

- Communication between central server and peripherals – make buzzer sound, turn the fan on. Eventually need to turn these on when a system broadcast goes out (turn on all buzzers when ALARM broadcast sent by central server, turn on all fans when FAN broadcast sent by central server)

Still to do:

- Central server must take packet sent by Module and turn it into CSV format and store it on SD card.
- SD must be re-mapped on the MEGA for the final product. Testing on the Uno should be okay.
- Processing command code from packet. Recieve commands from communication code and make the action response happen according to the command sent. One packet is 16 bytes, 3 for address and command, so 13 bytes data can be sent. Each data piece is 2 bytes. This does leave space for all five sensors (5*2 bytes)

AirTack Inc.

AGENDA

March 26, 2013
12:30-15:30
Lab 1, SFU Burnaby

Present: Rouzbeh, Tessa, Marvin, Sam

Purpose of Meeting: Final integration and planning of testing processes.

Minutes:

- **Rouzbeh:** Completed packet sending code, dropped of GSM Modules for team to integrate. Has to travel to Calgary this week.
-
- **Tessa:** Finishing touches on making R code for data analysis interface correctly with the format of CSV file the packet will create.
-
- **Marvin:** Writing CSV to SD Card
-
- **Sam:** Working on the Active Module, getting responses integrated (buzzer, fan, GSM)

All integration must be completed by April 1st. Next meeting on Friday, March 29th.

Progress report is due April 1st, 2013. Discussion of this report will happen at next meeting and writing will occur over the weekend.

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AGENDA

April 9, 2013
13:40-15:30
Lab 1, SFU Burnaby

Present: Marvin, Rouzbeh, Tessa, Sam

Items for Discussion:

1. Remaining Tasks for Completion
    a. Completion of central server module coding (Sam, today)
    b. Testing of smoke/particulate sensor (done today)
    c. Integration of sensor module with central server
    d. Deadline for EVERYTHING programming or otherwise (outside of testing) is THIS FRIDAY.

2. Beginning testing with test plan which was delivered to the instructors.
    a. Keeping in mind that this is how we will be assessed.
        i. Sensor testing done today successfully
        ii. System testing to follow after all coding completed (above).

Today we successfully tested every sensor using burning paper and butane. The expected results (spikes in data) were achieved. Processing of this data is still to be done so we are correctly interpreting values (analog voltage outputs translated into digital values).

AirTack Inc.

AGENDA

April 11, 2013
13:40-15:30
Lab 1, SFU Burnaby

Present: Marvin, Tessa, Sam

Items for Discussion:

1. Remaining Tasks for Completion - Deadline for EVERYTHING is THIS FRIDAY
    a. Solder the buzzer
    b. Solder the humidity sensor
    c. Debug smoke sensor (intermittent for some reason, maybe the loose wire.
    d. Data requests from Server module
    e. Tweak stats packet according to new order of data
    f. Central server is done
    g. Test the GSM with a working SIM card.
    h. When receive an alarm, have to be able to turn on a fan.

2. TESTING BEGINS SATURDAY.
    a. Tessa has contacted VGH, AirCare and friends for help in terms of equipment access. All sensors already calibrated in factory except for natural gas and carbon monoxide – we will focus on getting help confirming the accuracy of these sensors.
        i. **Stephen Stewart from AirCare** has agreed to help us test our device using their gas sensing equipment! We will be going to AirCare in Burnaby on April 18th at 9:00 AM.

AirTack Inc.

AGENDA

April 18, 2013
9:00-14:30
Lab 1, SFU Burnaby

Present: Marvin, Tessa, Sam, Rouzbeh

Items for Discussion:

1. Testing today at AirCare with Stephen Stewart was successful. Must tweak certain parts of code to reflect our datapoint accuracy.
2. Ensure project fulfills new (revised) test plan, which will be submitted to Professor Whitmore ASAP.
3. Marvin and Rouzbeh have exams on Saturday, but writing of post-mortem and design of the presentation will take place Thursday/Friday/Saturday/Sunday in preparation for the Demo on Monday @ 2:30 PM.
    a. EVERYONE must write their one page reflection for the post-mortem ASAP.
    b. Minutes will also be included in the post-mortem.
4. We will meet again on Sunday to practice the presentation in preparation for the Demo on Monday @ 2:30 PM. Friends and family will be invited.

Worked for a couple hours on the aforementioned documentation/presentation.