

Meeting Minutes

Date: 4th October 2018

Not in Attendance: N/A

What's Been Done since the Previous Meeting:

All: Schedules checked and shared with group to sort out fixed dates for meetings going forward and decided on Tuesday 11am for Supervisor Meeting and Thursday 1pm for Group Meeting. Read through material sent by the client (Debbie) and prepared thoughts to be discussed in this meeting.

Elina: Emailed the Supervisor with the proposed meeting time and confirmed with the group that the time was accepted starting the week after (week commencing 8/10/2018).

Meeting Discussion Points (notes to aid in next section):

After reading what was sent by Debbie there was some additional information that came to our attention and that was:

- A map or rough sketch of the layout of the hopper and station, particularly the distances between them so that we can determine power sources and means of communications between station and hoppers.
- How much power can the solar panels provide to us (would it be enough to setup a local wireless network between station and hoppers for data transfer and powering reader)
- The data that is currently being recorded by the field team so that we can develop a requirement list for our system
- The type of system they would want, i.e. a mobile/tablet app capable of displaying the information or a desktop/web-based solution, or even a combination of the two (such as a website that works on desktop and mobile)

Also touched on was then means of storing the groups work and we decided to use university provided GitLab space as it was the most logical option.

We discussed how we would structure our meetings and work going forward and although not concrete, yet we plan on a form of agile working with weekly 1-hour meetings acting as both our Sprint planning for the week ahead and a retrospective for the previous week. There are still details to discuss in terms of roles and finalising how we will work, possibly some input from the supervisor and looking at past projects will prove useful in this.

Finally, we thought of some questions that would be useful to ask our Supervisor in our next meeting, including:

- Is there an RFID reader and ring available for demonstration of how the technology works in terms of what the reader would output, programming an RFID chip, what language would work with the available tech?
- Any examples of possible communication methods between the reader and a computer that you have had experience with that could be useful for our situation and where we could look to learn more about how to implement it?
- What counts as technical work in a project such as this for someone who isn't fully comfortable with coding, i.e. would writing technical documents count? Is it more about understanding the technical side of the system then just writing the code for it?

What's Being Done for next meeting:

All: Look at examples of past projects on Moodle and think about and note anything that could be adapted in our process, any documentation that would be good to have or any project practices that look like a good idea to adapt.

Kārlis, Afzaal & Priyesh: Think on the more technical aspects of the project, do some light research on what we could use in implementation and possible strategies for power management and data transfer.

Elina: Write up meeting minutes, check with group and then send minutes to Supervisor by close of play Friday.
(Elina will be the taker of minutes in meetings, with help from the rest of the team for extra detail when needed)

Priyesh: Write up and send an email to Debbie *(in less technical terms)* before the end of the week to get the information we marked as missing during this meeting and report back to the group when a response is received.

Date: 09th October 2018

Not In Attendance: N/A

What's Been Done since the Previous Meeting:

Set up google drive for document sharing and Trello as a project management solution. We have also been granted Developer access to university's GitLab.

Karlis produced a Collaboration plan that outlines our approach to the project and main information sharing methods.

Today's discussion.

- Discussed with Dan various types of hardware that might be used in our project.
 - a. Bluetooth Low Energy
 - b. ZigBee
 - c. Lora
 - d. Iridium
- Wireless connection over wired
- Touched on some constraints of the project such as power supply to feeders and the ways of transmitting the data.
- Types of power supplies: Batteries or Solar panels
- Multiple programming languages will be used in software development.

Date: 16/10/2018

Not In Attendance: N/A

What's been done since previous meeting:

Karlis was assigned with task to research different RFID readers and Power supply options. Dan has sent an email describing different NCF tag options that could be used in our project. **Afzi's** task was to research different wireless network options so we can decide which would be the most suitable. **Elina** has started on Risk Analysis and Project Plan document. **Priyesh** started writing requirements documentation with communication with Debbie and started to look at writing up the project abstract. Team has also sketched basic Network Diagram to outline main parts of the system.

Meeting discussion:

- 1) Meeting started with Priyesh going through requirements from Debbie (our client) and discussion between the group and Dan to their feasibility. Requirements such as: The development platform, Data storage, syncing techniques and extras such as Pictures of birds – this would bring a lot of challenges especially when transmitting pictures from camera and storing them and tracking how long birds sit on hoppers.
- 2) Discussed first steps of software development which are database development and possibly developing the skeleton of a mobile app that will sit on top of that database.
Need to decide if we are going to have one database with a site field or two separate databases, one for south and north and let the app handle switching between them (issue here is if parent bird is from different site and as such would not exist).
- 3) NFC readers: Karlis advised that most readers are not weather proof which means that it will need to be inside the case. As per Dan 134KHz would be the most suitable for our project as they are the smallest to embed in bird rings. Readers has to match ring frequency.
- 4) Power supply: Dan advised to research low-watt solar panels from Voltaic
- 5) Groups main job is to work on software and proof of concept for hardware. At this stage of project we should focus on how we will store and transmit the data

Actions:

Karlis & Afzi: Document hardware solutions, what are trade-offs, advantages and disadvantages of each solution to be able to justify our choice.

All: Continue on open tasks from last week. Add any new tasks arising from this meeting and other research in to the trello backlog to be picked up on completion of those tasks.

Date: 23/10/2018

Not In Attendance: N/A

Meeting agenda:

- 1) Programming constraints related to RFID readers
- 2) Discuss why 134 KhZ reader was recommended by Dan as he advised that generally lower frequencies have longer reading distances, however Karlis' research showed opposite.
- 3) Discuss our architecture diagram so we can go ahead with hardware choices and purchase.
- 4) Discuss database structure
- 5) Advice on measuring power consumption

Meeting discussion:

- Dan advised that he will send some code examples for Mbed so that Karlis can practice before RFID programming.
- As discussed in meeting last week 134 KhZ readers are the most suitable due to chip size constraints. The chip is smallest and easiest to embed in bird rings.
- How to measure power consumption - as per Dan, there are devices that give overview of power consumption in timeline format.
- As well as new rings there are also old rings on birds that are still used in the process. Group needs to be aware of this as old rings are still used to track bird activity. Some birds have both old and new ring on them.
- Group needs to start working on user stories as this will help in database structure development and also clarify user interface requirements. User stories to be discussed with Debbie as we need input from her. E.g How are parents identified? Is it by blood tests or based on who is in the nest, what is the current procedure
- for adding new birds, do rings get reused from dead birds and what each entry in their current datasheet is (i.e. more detail on each column heading, data type and possibly request dummy data)

Actions:

Dan: To send data sheet, pin diagrams and code examples for Mbed so that we can practice programming RFID reader

Elina to email Debbie and ask to specify all information that is required to be stored in database and discuss how certain situations are handled when it comes to recording information about birds.

Pryesh to start on user stories with input from Elina and Debbie.

Karlis and Afzi to explore RFID technologies using Mbed and it's programming once Dan comes back with some examples.

Date: 6th November 2018

Not In Attendance: N/A

Meeting agenda:

- 1) Mobile vs Desktop application for users.
- 2) Discuss User stories
- 3) Hardware components
- 4) Zigbee
- 5) Went through s/s sent by Debbie

Meeting discussion:

- Dan presented us with RFID reader and chip and how it connects.
- This week we discussed importance of use cases and how it will help us to understand requirements. Use cases need to be analysed in detail and there can be many use cases within one user story.
- Database constraints - Researchers register birds at the end of season so every 3 months.
- Researcher vs Technician - Can researches also be technician? Who is registering researchers?
- How to represent system failure and what does it mean to researchers.
- Discussed Zigbee units, Dan suggested to read a book detailing the two modes that a zigbee device can be configured to and then to decide what we want to use.
- Need to think about how the system will handle replacing a faulty or lost ring.

Actions:

- 1) **All team** to work on user stories and use cases
- 2) **Karlis, Priyesh, Afzi** Read up on the 2 zigbee modes mentioned by Dan to help in the group decision on which we will use
- 3) Find out what OS is currently in use by researchers
- 4) **Elina** to message Debbie and ask to clarify data types used in s/s
- 5) **Karlis** to send user stories to Debbie to clarify if user stories match what is being done in real life.

Date: 13th November 2018

Not In Attendance: N/A

Meeting agenda:

- 1) UI Prototype
- 2) Use cases
- 3) Requirements from Debbie
- 4) Zigbee options (API vs AT modes)
 - Can API mode be used directly?
 - Can we 'ping' a feeder if our hub is an API mode but feeder is in AT?
 - Does the RFID reader provide a checksum? - Protocol provides, RFID doesn't
- 5) Loss of packets - Is it okay to have occasional data loss?
- 6) To what extent can the XBEE setup be automated?
- 7) Can we get an access to Balsamiq?

Meeting discussion:

- Use cases - we discussed how to classify users and what would be the best way to plan UI. System requires to have different levels of access. Field workers are not allowed to export data from the database and so on. Dan advised that the best way would be to have users with different privileges rather than having different levels of users.
- The best way to design UI is to have different views for users with certain privileges (**look into JWT tokens to achieve this**) and instead of disabling some options or buttons it is better to hide them so that users are not aware that there are some restrictions for them.
- Zigbee modes discussed with Dan(API vs AT). Decided on going with a **controller in API mode** and having **hoppers in AT mode** to make them simpler (avoid the need for a microcontroller) but accepting the risk that if the controller goes down there will be data loss for the whole system until it's back, however when

weighing this with the likelihood of the controller failing it is an acceptable risk because the controller is so simple (a single board computer) so it's very unlikely to fail hardware wise.

- The **controller** Zigbee device can be programmed to buffer data in case it cannot push it to the central database, adding a layer of redundancy
- The RFID reader provides a checksum however we can't request another reading if the feeder is in AT mode. However, we can read the checksum on the controller / hub and discard the data if we detect corruption.
- Questions to ask from Debbie:
 - What classifies as a basic report and normal report (request examples)
 - Who would register new users into the system? (Project coordinators?)
 - Do birds get separated by projects or are the echos just one project (i.e. will our system need to support splitting and tracking birds into projects)?

Actions:

- 1) Dan to request Balsamiq access for the team and setup Zigbee.
- 2) Elina to send Use Cases to Dan to check and email Debbie for further clarifications.
- 3) Priyesh to request and get Mbed from shed and familiarize self with coding on the mbed and using the zigbees / readers, getting help from Afzi/Karlis as needed

Date: 22nd November 2018

Not In Attendance: N/A

Meeting agenda:

- 1) Discuss 'View Logs' option.
- 2) Review Database draft ER Diagram - disregard log stuff
- 3) Review Network Diagram update
- 4) Review UI design
- 5) Power Usage of Hopper Zigbees

Meeting discussion:

- Database engine MySQL - (MariaDB)
- Trigger that says when user is added the system it will create log table (need transaction IDs , no need to handle rolling back, just proper logging of changes. Table in database - called 'Transaction Logs' and new entry per change, UserID, TransactionID, Changes) Viewed by director (Project Coordinator)
- UI Design - 'Transaction Logs' viewed by 'Admin' people or could be anyone - no harm in it. Could use PowerPoint to design UI.
- Two-Pane App Design (eg. Slack, Skype)
- No need for "Attaching ring on bird" use case

Actions:

- **All**- Figure out what a researcher needs to know about birds and design filters on the database to show just this information. Avoid showing just the raw database on the system. filters - by nest site, visit days, individual bird info. Specific searches (i.e. ring ids bird name, ect).
- **Priyesh** - Auto generate data on (200) birds and test these filters, see that they make sense. (Possible mockup on web browser as a table) - Consider screen sizes for UI.
- **Karlis** - Program Zigbee to scanning mode for power consumption test
- **Elina** - Send questions to Debbie, Use case changes, work with dummy data to help design UI.

Questions to Debbie:

User diary. Photographic diary of their every day tasks.

What do they do on day to day basis.

What data is taken on daily basis?

Date: 29th November 2018

Not In Attendance: Elina Voitane

Meeting agenda:

- 1) Sprint Planning

Meeting discussion:

- Karlis and Afzi described the outcome of meeting with dan, power solutions sorted
- Planning development tasks for the backlog to be worked on over the holidays
- No response from debbie from last weeks questions
- Discussed JPA, idea is understood, practice is needed.
- Looked over database structure draft and decided on possible improvement steps

Actions:

- **All:** Continue work on use case updating and assist on DB and UI design
- **Elina:** Continue UI prototyping and case up debbie
- **Karlis:** RFID and zigbee interaction testing
- **Priyesh:** Create the mock data and practice usage of JPA, test filters on the test data
- **Afzi:** Work on DB design and assist on JPA.

Questions to Debbie:

- 1) Are the feeders powered for all seasons?
- 2) Are they powered 24/7?
- 3) Does the base station have solar panels powerful enough to power multiple devices and is their a battery for night times / absence of sunlight.

Date: 29th November 2018

Not In Attendance: N/A

Meeting agenda:

- 1) Web App
- 2) UI Design

Meeting discussion:

- Clarification on questions for debbie
- Web app discussed, acceptable but introduces concurrent access issue (i.e. two people adding same bird, editing same bird, ect..)
- Need to start coding, too much planning and it's getting less useful
- Bird names to be the unique identifier?
- Order of columns on view in order of importance
- Printed number on rfid ring is unique
- Scrolling interface needs a rethink
- Supporting researcher record visits - not sensible.
- Link the entry in live view to bird page
- Material UI Design
- Need to ask researcher how they want to filter dates for data
- Design form for new bird adding

Actions:

- **All:**
- **Elina:**
- **Karlis:**
- **Priyesh:**
- **Afzi:**

Questions to Debbie:

- 1) Are the feeders powered for all seasons?
- 2) Are they powered 24/7?
- 3) Does the base station have solar panels powerful enough to power multiple devices and is there a battery for night times / absence of sunlight.

Date: 22nd January 2019

Not In Attendance: N/A

Meeting agenda:

- 1) Sailsjs
- 2) UI Design
- 3) RFID questions on adding rings
- 4) Plan for next 2 weeks

Meeting discussion:

- UI design - make sure all parts are consistent. E.g. Alignment to the left or centred.
- Start designing poster
- Discussed assessment method and how the project will be evaluated
- Need to document the reasoning behind using sails.js and vue.js and need to document user design choices and reasoning
- Deadline set for ideal functionality finish for 2 weeks times
- Use mock data in sql db to test the ui functionality further in the system

Actions:

- **All:** Start working on structuring the corpus file.
- **Elina:** Start designing poster. Continue working on UI prototype. Contact Debbie to clarify on best option for ring registration and report export options.
- **Karlis:** Work on live view and export function
- **Priyesh:** Work on database structure, finalize the diagram and integrate models
- **Afzi:** Work on views to match UI prototypes

Questions to Debbie:

- 1) Ask Debbie which way should new rings be registered. Option1 - Scan each ring individually. Option 2 - Create database with rings that hold information about rings. When new rings arrive, new CSV file will need to be imported into database.

Date: 1st February 2019

Not In Attendance: N/A

Meeting agenda:

- 1) Show client UI prototype

Meeting discussion: (refer to UI prototype in google drive)

- **Live View** - No auto refresh, instead show notification when new bird visits recorded
- **Bird View** - Table of past visits should only show date. No time needed
Condition and notes should be kept separate. Only recent condition should be visible, the history can be hidden. Notes do not need history, so can be changed/new information added. More Info and Parent sections should be switched around for easier information accessibility.
- **View Bird Table** - Basic filters at the top of table, more filters to be found in separate window.
- **Register New Nest Site** - Change button on the menu to manage nest sites. User should be able to register new nest site and manage all existing ones (view all nest sites and edit them). Nest site table should include: Name, Description, GPS Coordinates, Distance to hopper (kilometres with two decimal places), Current breeding pair Male & Female (just names, no ID required)
- **Manage Rings table** - Add two columns: Ring colour & Assignment date (when ring was assigned to bird)
- **User management** - When user edits information in the system - other users should not be able to edit at the same time. Add function to lock users out of the system when it is being edited and display who is editing information.
- **Poster info** - It is important that both logos (MWF & NPCS) are displayed together.

Actions:

- **All:** Update existing system
- **Elina:** Update UI design to match what has been requested from client
- **Priyesh:** Update database diagram

Date: 5th February 2019

Not In Attendance: N/A

Meeting agenda:

- 1) UI Design
- 2) Poster
- 3) Show existing system
- 4) New ring registration
- 5) Discuss User Activity monitor

Meeting discussion:

- Poster
 - Move University of Kent logo to the bottom on poster
 - Group members names need to be aligned to the left and to the right (it is not necessary to include supervisor's name)
 - Diagram is too technical, will be better to use existing diagram in technical report and create new diagram for poster that is easier to understand for those who don't know what project is about. Remove title "System Diagram".
 - Good introduction to the project. Need to move text higher.
 - Use logos within system diagram rather than separately at the bottom of poster. Remove Trello and Git Lab logos.
 - Change colour of title as it may not come out well when printed.
- UI design
 - If data is displayed in tables, we should consider adding new data into table in existing view instead of changing view and pressing "Edit" button to save user time switching between screens.
 - Add "Back" buttons.
 - Save/Register/Import ect. Buttons should all move to center of the page - make sure design is consistent
 - Check colours picked for UI design
 - Get rid of Full View window. Instead use "More Filters" and by default tick all filters to show full view.
- New ring registration
 - CSV file will be sent to system users along with requested rings. File will contain information such as: Printed ID, Unique key on NFC & Ring Colour.
- User Activity monitor - not discussed.

Actions:

- **All:** Start working on collating data for Corpus file.
- **Elina:** Update UI prototype. Redesign poster and send new version to Dan this week. Start on Technical report
- **Karlis:** Work on Live View
- **Priyesh:** Work on Live View
- **Afzi:** Work on Bird Table view

Date: 12th February 2019

Not In Attendance: N/A

Meeting agenda:

- 1) Poster
- 2) Show existing system
- 3) Discuss system deployment issues
- 4) Video
- 5) UI design
- 6) User Manual

Meeting discussion:

- **Poster** -Exclude topics that are not related to work that has been done by team e.g. RFID reader, NFC tags, solar panels, mesh network. Talk about 2 phases of project. Phase 1 - Requirements and interaction with the client, decision making on technologies used to create system & justification why it has been chosen. Phase 2 - development and UI design.
- **Existing system** - Improve some UI aspects e.g. make background dark when pop up windows appear. Priority number 1 - work on report export.
- **System deployment issues** - package all the dependencies so that it can be installed on site without an internet connection and with minimal hassle.
- **Video** - short 5 minutes overview to show how system works. Doesn't need to have effects. Can be just recorded screen with voice in the background.
- **UI design** - Colour validation done.
- **User manual** - important aspect of user centered design, needs to be included in project corpus.

Actions:

- **All:** Decide on most important features of the project to include on poster. Think about what part of project each member of group was responsible for and what value it added to the project. Work on Technical report
- **Elina:** Contact Debbie to arrange system trial next week. Finalize poster.
- **Karlis:** Work on User Management and ZigBee setup
- **Priyesh:** Finish Live View, work on CSS, update database diagram.
- **Afzi:** Work on single bird View and bird table view. CSS - match layout and colours to UI prototype.

Date: 19th February 2019

Not In Attendance: N/A

Meeting agenda:

- 1) Poster
- 2) Show existing system
- 3) Abstract

Meeting discussion:

- Poster - version 6 can be used as final version.
- What is left to do in the system?
 - 1) Export function
 - 2) Account settings for users
 - 3) Edit bird screen
 - 4) CSS (center headings in tables, position buttons)
- Meeting with client on Thursday to test existing system
- Plan deployment issues
- UML - not necessary, however need to create system diagram that explains how different parts of system work together.

Actions:

- **All:** Collate documentation for corpus file
- **Elina:** Send poster to Dan. Write project abstract. Update UI prototype. Add user Activity monitor view in UI.
- **Karlis:** Work on ZigBee setup, Edit bird page & Export functionality
- **Priyesh:** Work on CSS to match UI & Export functionality
- **Afzi:** Work on export functionality & CSS to match UI prototype

Date: 21st February 2019

Not In Attendance: N/A

Meeting agenda:

- 1) Show client existing system
- 2) Register New User - Can it remain in View all users window or seperate button in Admin menu?
- 3) Register New Bird button - location
- 4) Pagination bar - Should all information about pages be displayed in footer? This will free up the space at the top of page for filters.

Meeting discussion:

- System needs to have one user that has the highest level of privileges.
- Register new bird button at the top of Bird table.
- All Add New buttons to be moved at the top of the page.
- Export single bird - not required anymore
- Previous Nest Site to be changed to Previous Breeding Site
- User activity - would prefer to see old data that has been changed instead of new data. If possible display both. Only need to see one month of change logs
- Locking users out of system when someone is editing same page would be very helpful but not critical as there won't be many cases when system is used by more than one person at the time.
- Meeting in 2 weeks to test system again

Actions:

Update UI prototype and existing system based on user feedback.

Date: 26th February 2019

Not In Attendance: N/A

Meeting agenda:

- 1) Show existing system
- 2) Discuss corpus files

Meeting discussion:

- Primary priority for this week is to create export function & more filters page
- Next week Friday - potential meeting with one more project stakeholder who could test the system.
- Karlis is working on RFID functionality

Actions:

- **All:** Collate documentation for corpus file
- **Elina:** Work on corpus files and technical report & finalize UI prototype
- **Karlis:** Work on ZigBee setup.
- **Priyesh:** Create system diagram. Work on Export functionality
- **Afzi:** Work on css improvements & Refresh option on Live View page

Date: 5th March 2019

Not In Attendance: N/A

Meeting agenda:

- 1) Show existing system
- 2) RFID functionality
- 3) Discuss corpus files
- 4) Poster Fair

Meeting discussion:

- Last stage of development - Export function pending finishing, filters page & privilege system. Decide on filter options based on input from Debbie (Elina to email Debbie). Exported report should have date.
- Poster Fair - Need to decide who will be demonstrating the system and who will be standing at the poster.
- RFID functionality is now working
- User priorities (POLP) should be finished this week.
- Video to be done for corpus, not for Poster Fair
- There will be no meeting with supervisor next week

Actions:

- **All:** Continue working on corpus files.
- **Elina:** Email Debbie and ask about filters. Continue working on technical report and documentation
- **Karlis:** Work on privilege system
- **Priyesh:** Finish export function & make sure it is dated
- **Afzi:** Work on last UI improvements & More filters page
- **Dan:** To find out if researcher can meet to test the system next week.