Daniel Savin - 40010051
Karl Noory - 40059592
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Vicentiu-Cristian Badea - 40027683
Jun Young Kim - 40063176

Milestone 2

1. Information on stakeholders

We have performed a total of 7 interviews, following the above script: 4 of the participants self-identified as female 3 as a male. The average age of participants is 30.9 years with the median of 24 years. No correlation was observed between the age, gender, and the amount of plants owned.

Stakeholder 1, potential customer: Inessa, female, 49 years old. Nurse, living in a suburban area of Laval. Main interests include reading, cooking, and connecting with nature. Owns 6 plants for emotional reasons and thinks that they give good moods and promote a healthy atmosphere at home. Has inconsistent plant care routine, however that does not translate to plant loss.

Stakeholder 2, potential customer: Natali, female, 22 years old. Accounting student living in Montreal. Owns 19 plants for aesthetic and emotional reasons. Main interests include cooking, music (dancing and listening) and hiking. Owns 19 plants, from which 2 are preserved and 2 are bouquets. Takes care about plants consistently, generally has no problems with plants.

2. Interview script

Interview script was designed to cater mostly to people who own plants. The following questions were asked one after another, to obtain the resulting answers.

1. Small talk.
    a. How is the weather?
    b. What have you been doing during quarantine?
2. Establishing the user profile (I).
    a. How old are you?
    b. What gender do you identify as?
    c. What is your current occupation?
    d. What are your three main interests?
    e. What type of phone do you have?
    f. How many plants do you own (real or fake)?
    g. What is your relationship with plants: emotional or material?
    h. Do plants affect your emotional state? If yes, how?
3. Assessing the problem (IIA).
    a. Give me a situation where you had problems with your plants.
    b. What is most frustrating about owning a plant?
    c. Have you ever had trouble keeping your houseplants healthy?
    d. Do houseplants die on you often? Why?
4. Understanding the environment (IIB).
    a. Where are your plants situated?
    b. How much free time do you have daily to take care of your plants?
    c. What is your plant care routine(s)?
    d. What tools do you use to help yourself take care of your plants?
5. At this point, the information is recapped by reassessing user demographic, amount of plants, problems, and emotional connection (IIC).
6. Analyst's inputs on the customer problem: It is hard to keep our houseplants healthy because we do not have exact data, is this a problem you relate to (III)?
7. Then, the general idea of the project is described: “We aim to make a sensor system that will allow to track soil moisture, light exposure and ambient temperature. Based on that data, notifications will be sent to the user” (IV).
8. Assessing the opportunity (V).
    a. What kind of features would you like to see in the solution?
    b. What price would you pay for a product that has these features?
9. Assessing the reliability, performance, and support needs (VI).
    a. How exact and precise would you want your information to be?
    b. How often would you like to be updated with information?
10. Other requirements (VII).
    a. Do you see any environmental or legal issues that may arise from using our solution?
11. Wrap-up (VIII).
    a. Any other questions I should be asking you?
    b. May I give you a call if I have follow-up questions?

c. Thank the interviewee.

12. The analyst's summary (IX).

3. Interview Outcomes

Interview answers were written down as precisely as possible so each member of the team could give the outcomes that were taken out of each interview without setting the interviewee. The outcome table for each teammate and each interview can be found in 9.2 Interview Outcomes. Based on outcomes, the following conclusions were drawn.

1. Hardware:
    a. Some plants are grown outside, thus the product should be somewhat rugged.
2. Software:
    a. Data is not relevant for most users; notifications are more important.
    b. There should be an option for choosing the frequency of notifications.
    c. Some users have iPhone.
3. User experience:
    a. Majority of users have an emotional attachment to their plant.
    b. Proper watering (amount and schedule) is the biggest concern.
    c. If a plant gets sick, users are not sure what is wrong.
4. Production/marketing:
    a. The more plants a user has, the less they are ready to pay. While users with <10 plants are ready to pay from 20$ to 40$, users with more plants are ready to pay up to 10$ for a device. This is of concern since the preliminary study of market and hardware shows that a Wi-Fi/Bluetooth module itself is 10$.

The points 2a, 3b, and 4a are deemed most important for our team since we are aiming to make a product for indoor plants and Android users primarily. Finally, a plant “doctor” device is an interesting idea, but there are many variables that are either impossible to measure within the scope of the project (time) or are too expensive to integrate (money, refer to point 4a). Without those variables, the data would not be conclusive (ex.: Interview 7: Japanese Beetle was eating leaves; measuring soil moisture would be useless in this case and having motion sensors for insects is an overkill).

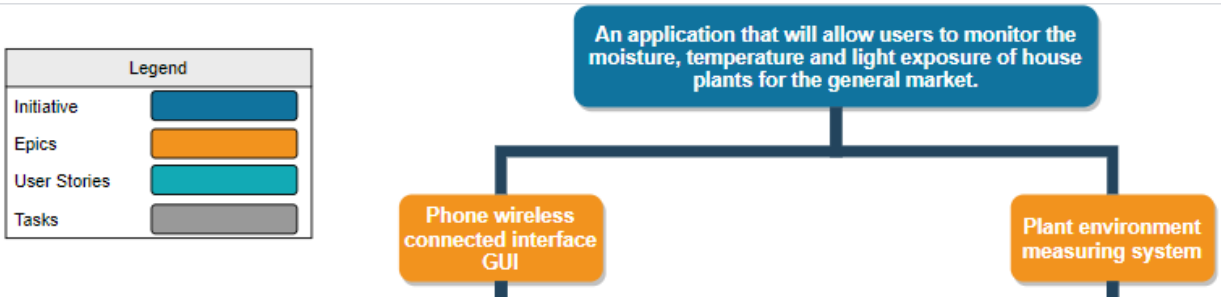
4. Product Backlog

In order to provide a clear visual representation of the product backlog, the initiative, epics, user stories and tasks have been compiled into a graphical representation, which will be broken down into several components below to contain its clarity.

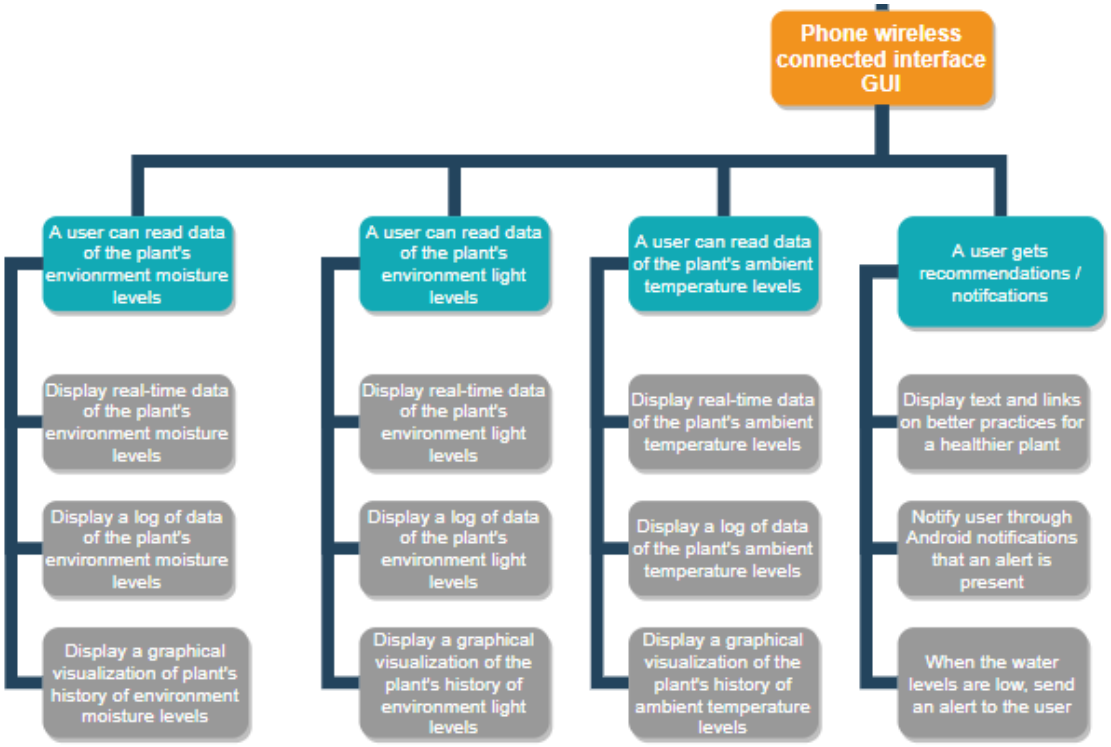
The legend shown below will serve to distinguish the following rectangular shapes into the components mentioned above.

The initiative, as stated, is developing “an application that will allow users to monitor the moisture, temperature and light exposure of house plants for the general market. The initiative has been split into two epics:

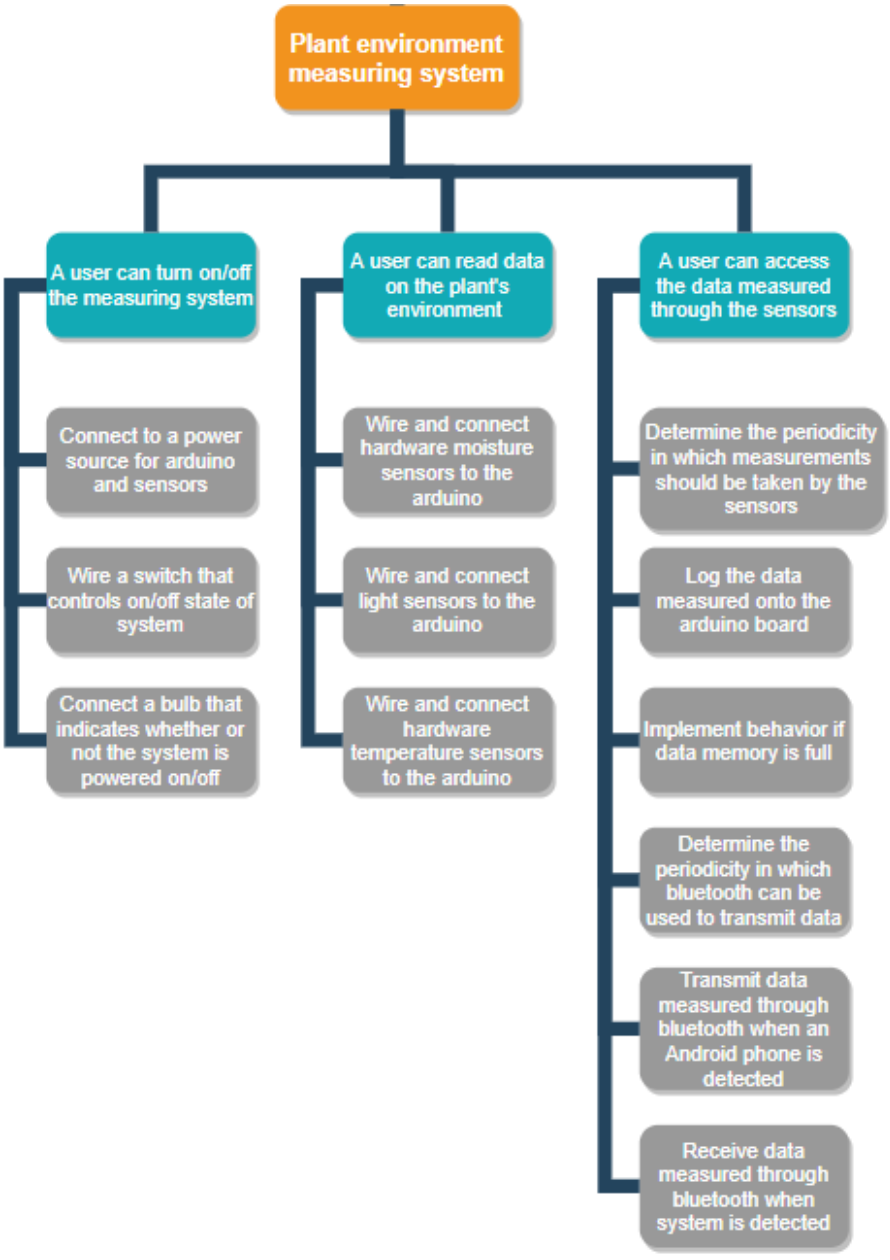
1. Phone wireless connected interface GUI
2. Plant environment measuring system



Following the epics, we have specific user stories for each one and their related tasks.



The main purpose of the Phone wireless connected interface GUI will be to display the read data from the product onto the user's phone. According to the different sensors used on the hardware, the tasks have been split into their respective User Story containers. The phone application should also notify or recommend solutions to the user based on the acquired data.



The plant environment measuring system has been split into the requirements of the hardware components of the product, giving the user the ability to turn on/off the measuring system, read the plants data and access the data measured. The above is further split into their relevant tasks.

The diagram above represents our initial idea for our product, after several brainstorming and design meetings. In fact, this initial planned product backlog was designed before conducting the interviews with our potential users. After acquiring additional information from consulting our

stakeholders, we have restructured the product backlog to contain the inputs of the interviewees. This new revised and weighted product backlog can be shown below. The revised plan represents our system and how we will achieve sprint 1, together with the relevant user stories and respective tasks. Product backlog can be found in 9.3 Product Backlog (clickable), at the end of the document.

5. Computer simulation plan

The goal of our computer simulation is to learn more about plants behaviors and growth reactions to the surrounding environment. From the simulation, we hope to see how trends over time can help plant care takers optimize for goal (plant growth, food production, oxygen production, etc.…). The main aspects of the simulation should be plant profile simulations, environment simulation and finally hardware simulation. The results should show us how change in the environment helps or hinder plant processes like photosynthesis for example. All the data collected from the virtual hardware should be represented in graphs that are comprehensive for end users. The collection of the data over time can help us discover new facts about certain plants that have previously never been noticed by plant owners.

The simulation should be designed with a programming language that is data focused like Python or MATLAB since we will be dealing with multiple changing variables. Additionally, we have the option of simulating the physical hardware with platforms like UnoArduSim which would allow us to play around with certain configurations to find the optimal solution without risking any budgetary losses.

6. Ethical Dimensions

Many mobile applications have inherent ethical pitfalls such as collecting too much information (i.e. application having access to more than necessary user information like contacts and location), misdirecting ads that either hinder the use of the application itself (ex: pop-ups, unskippable ads in the middle of application use, etc.) or are by nature advertising something unethical, trivial microtransactions, and vaguely phrased questions to trick users into giving positive answers (ex: prompting users to fill out surveys filled with questions of biased connotation).

Furthermore, given the wireless nature of Wi-Fi connection, this can potentially lead to a breach in security.

For the hardware side of the project, there is the concern over the longevity of the product and its potential environmental effect. If many units are sold but the product itself has a short shelf life, this may lead to a negative ecological footprint. The product will contain a plastic casing, three sensors and a battery. The disposal of these items should be studied and recycled where possible.

As for the app development process, when using code or software not designed by team members, proper credit must be given and never stolen.

Finally, as app developers, we must be completely transparent with the user base and have a clear privacy policy which dictates what exactly is done with the information the application records.

7. Team blog

Date	Who					Type of Activty	Number of hours spent	Purpose	Output	Hours spent					
	Jun	Karl	Vily	Thom	Dan					Jun	Karl	Vily	Thom	Dan	
Milestone 1															
26-Sep-20	1	1	1	1	1	meeting	2	brainstorming for opportunity statements	Input for Milestone 1 on Sept 29	2	2	2	2	2	
27-Sept-20	1	1	1	1	1	meeting	2.5	Ranking opportunity statements and preparing mission statement as well as expectation of originality	Input for Milestone 1 on Sept 29	2.5	2.5	2.5	2.5	2.5	
									Total hours	4.5	4.5	4.5	4.5	4.5	
									Total team hours						22.5
Milestone 2															
7-Oct-20	1	1	1	1	1	meeting	1.5	Preparing interview questions and creating meeting minutes	Intput for Milestone 2 on Oct 13	1.5	1.5	1.5	1.5	1.5	
10-Oct-20	1	1	1	1	1	meeting	1.6	Going over interview results, project backlog and ethical dimension	Input for Milestone 2 on Oct 13	1.6	1.6	1.6	1.6	1.6	
12-Oct-20	1	1	1	1	1	meeting	0.5	Compiling and peer reviewing each other's work	Input for Milestone 2 on Oct 13	0.5	0.5	0.5	0.5	0.5	
									Total hours	3.6	3.6	3.6	3.6	3.6	
									Total team hours						18

8. Expectation of originality form

Faculty of Engineering and Computer Science

Expectations of Originality

This form sets out the requirements for originality for work submitted by students in the Faculty of Engineering and Computer Science. Submissions such as assignments, lab reports, project reports, computer programs and take -home exams must conform to the requirements stated on this form and to the Academic Code of Conduct. The course outline may stipulate additional requirements for the course.

1. Your submissions must be your own original work. Group submissions must be the original work of the students in the group.

2. Direct quotations must not exceed 5% of the content of a report, must be enclosed in quotation marks, and must be attributed to the source by a numerical reference citation. Note that engineering reports rarely contain direct quotations.

3. Material paraphrased or taken from a source must be attributed to the source by a numerical reference citation.

4. Text that is inserted from a web site must be enclosed in quotation marks and attributed to the web site by numerical reference citation.

5. Drawings, diagrams, photos, maps or other visual material taken from a source must be attributed to that source by a numerical reference citation.

6. No part of any assignment, lab report or project report submitted for this course can be submitted for any other course.

7. In preparing your submissions, the work of other past or present students cannot be consulted, used, copied, paraphrased or relied upon in any manner whatsoever.

8. Your submissions must consist entirely of your own or your group's ideas, observations, calculations, information and conclusions, except for statements attributed to sources by numerical citation.

9. Your submissions cannot be edited or revised by any other student.

10. For lab reports, the data must be obtained from your own or your lab group's experimental work.

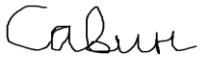
11. For software, the code must be composed by you or by the group submitting the work, except for code that is attributed to its sources by numerical reference.

“We certify that this submission is the original work of members of the group and meets the Faculty's Expectations of Originality”.

We certify that we have read the requirements set out on this form, and that we are aware of these requirements. We certify that all the work we will submit for this course will comply with these requirements and with additional requirements stated in the course outline.

Course number: ELEC/COEN 390
Instructor: Dr. Wahab Hamou-Lhadj
Date: October 13th, 2020

Daniel Savin - 40010051



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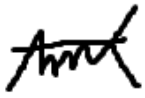
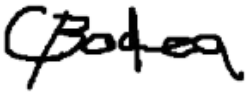


Vicentiu-Cristian Badea - 40027683



9.0 Appendix

9.1 Interviews

Questions		Interview 1 - Linda	Interview 2 - Mo	Interview 3 - Elena	Interview 4 - Jeremy	Interview 5 - Inessa	Interview 6 - Natali	Interview 7 - Dimitri
Small talk	How's the weather?	A bit chilly.	Chilli as of late	Weather really bad	The weather is very nice!	Good! I love it, it's very beautiful this time of the year.	Great. Very sunny, warm and just like cozy and vibing.	Good.
	What have you been doing during quarantine?	Have gotten more plants. Found a job.	side projects like indie game development	Studying, car rides with friends, netflix	Applying to jobs, I was supposed to get a job in machine learning but I couldn't in San Fran, so I've been stuck at home doing projects and stuff	Me? Sports, good food, walks with my dog, reading, studying, walks in nature.	A lot of things.	Worked and made a few trips to nature to relax.
	Thank you for your time	You're welcome		it's already finished??	You're very welcome	What?	You're welcome.	[Silence]
Establishing the customer or user profile	How old are you?	22 years old	24 years old	22 years old	30 years old	Uh, could ask a few days earlier, but now Im 49	Currently 22, 23 in 3 weeks.	47
	What gender do you identify as?	female	male	female	male	female	female	male
	What is your current occupation?	Working full-time job and seeking to start my career in architecture.	freelancer, I like making indie games	graduate student in criminal law	Unemployed	Nurse	Student	Programmer
	What are your main 3 interests?	Plant-care, self-care (work-out, skin, mental, gym, food), social life.	drawing, music and video games	making people awkward, making iced coffee, workout, singing	Technology, gaming, work/life balance	Reading, cooking, connecting with nature	Food/cooking/nutrition, outdoors and vibing with music	Sport, books, video games
	Do you own android phone, and if no what OS?	No, I use iPhone.	yes, an android 10	no, I use iphone	Yes, android phone	What? No, I got an IPhone.	Yes, Samsung A70.	I got 2, one is Android 8 another one is Android 10
	How many plants do you currently own? If fake, why not live ones?	Real: 62, Fake: 5, Goal: 100	I own around 5 plants	2 real plants and 3 fake	Live plants: over 20 plants, no fake plants	6	19 plants (2 dried, and 2 bouquets included).	7 live plants
	What is the relationship you have with plants: material or emotional?	Emotional relationship. They help cope with hardships, growth. Growth as in physical (leaves growing) and human relationships.	Material as I use them to grow vegetables (chili peppers)	Emotional, one is called archen and the other called tul. When a petal falls, it really hurts me. Named them after favorite actors, it feels like im taking care of someone i love.	Split in two, equally emotional and functional. The ones outside are made for food, and the ones inside are more decorative. I would feel bad to let them die, but they do feel like a burden to take care of at times.	Emotional	Both.	Material.
	Do plants affect your emotional state? How?	They do, if I see one plant die, I feel like I've let it down. I begin to guilt myself. They keep me distracted in a good way.	Not really	Yes, I look at them and they make me happy. They brighten my day.	Yes, positively if they are doing well, negatively if not, because I would have to figure out why.	Very, they give me a good mood and they create a relaxing atmosphere.	Yes, they make me happier, cozy, makes me feel like not lonely. Give soul to my appartment.	Yes, of course! I like looking at them.

Assessing the problem	Give me a scenario when you've had problems with your plants.	Slightly degrades the relationship with my mother. I'm addicted to my plants, they take up alot of space, others don't necessarily appreciate the clutter. When going through hardships, one plant died which was the straw that broke the camel's back.	Forgetting to water them	Tul was starting to lose leaves, Archen lost its leaves when changing from a pot to another one.	Lots of bugs, kind of annoying. Sometimes we forget to water them or water them too much. Other problems can include weather, bu it happens. If its too cold outside in the morning, it might kill the plants	I got a flower from my sun and it started dying. I think it's because I was not in the good mood.	Well, didn't water them, overwatered them. Then not enough fertilizer, and then too much fertilizer. Also cat ate some of my succulents.	Japanese beetle eat the leaves on my plants; I have to use poison to kill it. The beetles are very nice-looking though.
	What do you find most frustrating about owning plants?	Plant growth and reaction to growth. No growth after many efforts. Repot them when they grow too fast.	Since we grow them for food, the raising process is very time consuming	When something randomly happens and I have no idea why it did because I'm not a plant expert. It's frustating to ask around for information.	Being consistent about taking care of them. Taking care of the bugs, if they are not producing fruits or vegetables, can be dissapointing	Responsibility for not forgetting to water them. Can't leave them home alone for a long time.	Not understanding what the problem is.	Having to protect them against pests.
	Have you ever had trouble keeping your houseplants healthy?	Yes	yes, by forgetting to water them	Not really, not with my plants but my mom's plants always keep dying. tHey day in the roots but not the part outside. It's weird, cause you don't even know they're dead until later on.	Yeah definitely. Most time I would just google what I have to do, a lot of times it's troublesome because it's a lot of research to keep track of all their needs.	Yes, like I previously said.	Yes.	Nope, they either live for a long time or die.
	Do houseplants die on you often? Why?	No, consistent routine.	Sometimes the plants are kept outside thus bad weather can ruin them	No.	Not often, but it can happen. Some are just seasonal, so they come back. Whenever you transplant, you don't know if they will grow. Watering too much or not enough can lead to that	No, generally they don't die.	No, because I manage to save them everytime.	Not really. If they die, they die - they dont't belong to my lifestyle.
Understanding your environment	Where are your plants situated?	Most on the second floor mainly in front of windows, direct source of sunlight.	In and out of the house	By the window. In my appartment at sherbrooke and house in montreal.	Livingroom and balcony all of them	In the living room.	In my studio - its one big room.	Outside.
	How much free time do you have daily to take care of your plants?	Not much daily time, however every other day I spend 2 hours, and then I dedicate 6 hour on a specific day. Total 12 hours per week.	I tend to them 2-3 times a week	A few minutes a week.	As little as possible, including research can take up 2 hours/week, can depend on season	15 minutes a day.	Depends on what you have to do (if healthy - 10 minutes per week, if not healthy - maybe 10 or 20 more minutes)	Once a week.
	What is your plant care routine(s)?	Mist, check soil texture and moisture, check if plants need repotting (if needed, plant does not get watering), water as needed. Trim/clean-up dead leaves, dust larger leaves. Repotting procedure: take plants that need repotting, carefully remove from the nursery pot, remove dirt arounds roots slightly, add new soil to the new pot, make a small hole in dirt, place roots into hole, add more soil around the top and pat gently, finally water the soil thoroughly.	just watering them	Tap the soil to see if it's dry and if it's dry, then water it accordingly. Check if the leafs are dead and remove them (the ones on the floor too) if they are so that they don't kill the other leafs.	Look at plant to see if its dry, look at leaves for bugs, if leaves are getting yellow then need to figure out if lack of nutrients or water is the issue. Scanning all of them and watering/tending to the ones that need it.	I look at them and I think that it's time to water my plants, but I forget. So then, the next day the situation repeats.	I wish i had one - I dont.	Water. Use poison once a season and cut some leaves one time per two weeks.
	What tools do you use to help yourself take care of your plants?	Misting bottle, sheers, watering can, moisture meter, pots and plates. I once had an app to help remind me, but now I just remember on my own.	Just a regular pail	A cup, water from the sink	Watering can, my eyes and fingers.	Hands	Anything I can find.	Scissors, sprayer.

Analyst's inputs on the customer problem	It's hard to keep our houseplants healthy because we don't have exact data, is this a problem you relate to?	Yes, it would be good to have the data.	Not really	Yes, having it would help a lot. Without it, it's just guessing and things can go wrong. Although even with data, some problems won't be resolvable easily.	Yeah definitely, with all the googling I have to do, it's exactly what I'm missing	Generally I can see if something wrong by how they look; however I cant always say what is wrong exactly.	Yes, as mentioned above. If I would know exact time when to water them, I would have less trouble.	No, I would no need data, I can schedule watering myself.
Recap for understanding								
Assessing the opportunity	What kind of features would you like to see in the solution?	Taking picture of plant and have info on it, real-plant identifier, current market solution are not accurate (don't identify correct plant).	perhaps a feature to measure pH of soil	Temperature, if it needs water, see if there infestations (bugs, bacteria, fungas, spiders, etc), texture of the soil, humidity levels, is my plant getting enough sun, is the plant sick, is it growing	As a technology enthusiast, I would like my plants to be cyberplants, so they could figure things out on their own and all I would have to do is reap the benefits from it. If they flourish and produce fruits and vegetables and I don't have anything to do it would be nice.	The most important thing is the quantity of water (too much or not enough). Also would be nice to see if there are health problems with plant.	Every plant needs different amount of humidity/temp/light. Thus I want a database of all plants so I can link it easily. It has to be specific for that plant, and I just want to have notifications on what to do, before bad things happen.	I would not need such a solution; however, I would like to know when the temperature starts going below 10 deg Celcius though.
	What price would you pay for a product that has these features?	30$ one time fee. 5$ per plant for specialized devices.	If I were to put a price tag on it, perhaps 20 to 25 dollars	60$ per pot, with all of these features. If it has the basic (temparature, water, sun exposure), I would pay 20-30$.	Under 10$ per plant, it also depends on the plant, size matters. It also matters if the plant is valuable and hard to take care of.	20-30, but under 50$.	I'd love to see different sensors (size) and maybe bulk sell? At unit price, 3.50 and less if you buy more. Would 30-50$ subscription fee for app, but sensors ceiling price gotta be 10$.	None.
Other requirements	Do you see any environmental or legal issues that may arise from using our solution?	No, as long as it's a long lasting solution, don't want to have to rebuy them and dispose of broken units (warranty would be nice).	None	If your address is inputed in the application, there could be legal issues in terms of fraud. You're only allowed 4 cannabis plants as most (and they have to be dry cannabis plants) per residence, therefore it could be an issue if people were to start using our product to grow their canabis. Leave a backdoor for the police to be able to find these growers.	Unless it's depositing things in the earth or it's really bad for the environment, I don't see why It would. I could be totally wrong.	No.	If sensor is not rechargeable then its bad. Also, you guys should take broken sensors back for recycling.	No.
Wrap-up	Any other questions I should be asking you?	I think we covered everything.	None	None.	No, I think we covered.	No.	Is the market competitive? If it is how are you standing out from everyone else? Whats the lifespan of sensor? You should offer different models.	This solution can be useful for gentle or exotic plants only; I prefer plants that grow in my climate.
	May I give you a call if I have follow-up	Yes, absolutely.	Sure	Yeah<3	For sure!	Yes.	Yeah sure, im ready to collab on insta	Yes.
	Thank							
DATE		9 Oct, 20:00	10 Oct, 14:40	1 Oct, 21:30	10 Oct, 14:30	10 Oct, 16:30	11 Oct, 13:00	10 Oct, 16:00

9.2 Interview Outcomes

	Takeaways							
		Interview 1	Interview 2	Interview 3	Interview 4	Interview 5	Interview 6	Interview 7
Vicentiu-Cristian Badea	Takeaway 1	Plants can have serious emotional consequences on a person and keeping them healthy is not necessarily a hobby related task, but can also be about keeping ones mind healthy as well	Raising the plants can feel like a burden when done for production plants	Using the state of the plants health for comfort would mean that it is important to keep them healthy	Can be both emotionally attached and use them for production as well. Health of the plant matters equally in both cases	Forgetting to water plants is a common issue shared amongst many users	Can fill up loneliness, perhaps people who don't currently have plants because it's too difficult to maintain may get them if the tool is helpful	Protecting the plants against bugs is an important part of plant care
	Takeaway 2	Repotting is more involved than anticipated, and an important step to caring for your plants	Routine for plant caring can be limiting to watering, perhaps as a result of not being informed enough	The death of the plant may not always be visible to the naked eye, as it can originate from the roots - a tool would help notify the user before it's too late	Bug problems are significant and can really affect the plant's life	Sometimes, there can be something wrong with the plant, and am unsure of what's wrong with it	Most frustrating thing is not understand where the problem is.	Isn't interested in reminders as he is capable of scheduling plant watering on his own
	Takeaway 3	Identifying plants is not easy and a tool for self identification can be useful in case you lost its ID	Configurable notifications is important to the user	Updating every 3 hours is important to this potential user, notifications should maybe be modifyable	Only ready to spend up to 10$ for the product, but can change according to size and value of plant	Don't really care about data, just need proper alarms.	No specific plant routine	This solution would be more interesting for plants that are more vulnerable and susceptible to damage if not taken care of minutely
Daniel Savin	Takeaway 1	User want notifications every other day.	Main problem is watering on time.	User is very emotionally attached to plants (anthropomorp hism).	User experiences underwatering and overwatering of plants	User puts a lot of importance on emotional state of the owner when taking care of plants.	User thinks that if one has a lot of plants, the value of product should be under 10$.	Insects are a threat to plants that grow outside.
	Takeaway 2	User is ready to pay ~5$ per device.	Exact data is not important.	If something goes wrong, the user is not sure what is exactly wrong.	User is a tech enthusiast and is more inclined to buy our product.	User forgets to water plants often, but does not care about the exact numbers for soil moisture.	User is not sure whats wrong with plants when things go wrong.	User thinks that dedication and planning is enough to take care for plants, and high tec solutions with notifications won't solve the laziness.
	Takeaway 3	User is owner of a large pool of plants, and spends a lot of time on them.	User doesn't own as many plants as the previous interviewee, and is ready to pay more money.	User had trouble with overwatering the plants (roots rotting).	User thinks that the product is suited for valuable plants.	User would like to know what is exactly wrong with their plants, and what to do in that case.	User thinks that there should be different types of product for different purposes.	User prefers to grow plants that are living in his environemntal area, since they are adapted to it.
Karl Noory	Takeaway 1	The more plant the user has, the better prepared they are to take care of them.	Plants are used to provide food.	Seems to be affected by how plants are doing, very emotional relationship.	His plants offer emotional support and food.	Very grounded with nature, plants provide mental health support.	Has many plants and lots of room for them.	Seems to not be interested in our solution.
	Takeaway 2	Plants play a big role on mental health.	Caring for plants feels like a chore.	Is ready to pay alot for a good solution.	Doesn't have much time to care for plants.	Forgets to water plants, would benefit from notifications as needed.	Feels like it lightens up the atmosphere in her appartment.	Has insect problems.
	Takeaway 3	Solution should be cost effective and reliable.	Needs reminders to water the plants.	Doesn't alway have info on plant available when something unexpected happens.	Likes the idea of plants taking care of themselves.	Is ready to pay up to 50$.	Environment conscious. Sensors need to be rechargeble. Would like for us to recycle broken sensors.	Only cares about temperature for plants.

Thomas Tran	Takeaway 1	Some people have a lot of plants and are willing to spend the needed amount of time to take care of them.	The main issue with plants is forgetting to water them	An emotial relationship with her plants which can really affect her mood. Legitimate love for them and feels responsible for their well being.	Taking care of plants can at time feel like a burden due to all the care it needs. However, they are good for food and decoration. Plants that aren't providing (produce fruits) are disapointing.	It's annoying that she can't leave home for long periods because she has to take care of watering them. Even when she's present, she forgets to water them sometimes.	Often, she doesn't know how much water/fertilizer is needed, specific numbers would be useful.	He feels like he knows how much water his plants needs. Only data that he wants is the temparature.
	Takeaway 2	There can be an emotial relationship with the plants where the human assumes the "parent" role to the plant. Feeling proud of its growth and guilty when it's not going well	The process of taking care of plants used for food can be very time consuming as they get used often.	The process of changing the pot of a plant can be difficult and affect its health.	It happens to water too much or completely forget. Bugs are also a concerning issue.	Plants provide a relaxing atmosphere	The cat can eat succulents.	Bugs and pest are the main issue when taking care of plants.
	Takeaway 3	Some visual analytic identifier that doesn't requiere additional maintenance would be useful for this person	Some of the plants are outside and the weather can ruin them, our systems maybe could also be installed for outdoor plants.	It's frustrating to have no idea of why plants aren't going well. It's even hard to make your own research cause you don't know where to start.	A lot of the time wasted on taking care of plants are spent on research of what the issue actually is.	She doesn't care of numbers, just wants to get notified when an action is needed to prevent the plant from dying	A database with all the information to take care of any kind of plants could be useful.	He doesn't care if the plants die. He can simply get a better plant that can survive this environment.
Jun Young Kim	Takeaway 1	Solution (hardware) should have long shelf life	Sometimes plants are taken outside, and not JUST stored indoors	Actually naming your plants	Alot of googling to understand the specifications of plants and their specific needs	Spending 15 min a day to take care of plants	Plants have strong effect on mood and atmosphere	Bugs eating plants. Needing to utilize pesticide
	Takeaway 2	Very strong emotional connection to plants	Being able to configure the phone notification from the app	Plants strongly affect mood (leaf falling causes sadness, etc)	Having plants for both functional and emotional purposes	Plant caring routine is less rigorous and more "doing things by ear"	Has accidentaly given too much/not enough water/fertalizer.	Plants situated outside
	Takeaway 3	Very thorough plant care routine	When raising for food, it can be easy to get impatient	Feature to also check for bug infestation, fungus, etc	Wants cyberplants (i.e. plants being able to take care of itself to a certain extent)	Notifications sent to phone doesn't have to be very detailed. Just send a notification when things get very bad	No standard plant care routine	isn't all that interested in the plant monitor solution.

9.3 Team Minutes

Team Meeting

07 October 2020 / 19:00 / Discord Server

Attendees

Daniel, Thomas, Jun, Karl, Vily

Agenda

1. Define milestone 2.
2. Prepare the interview script.
3. Find who to interview.
4. Get date/time for next meeting.

Notes

- Keep your interview questions open-ended, so the person answering would not be socially pressured to answer you.
- At least ten interviews (2/teammate).
- Project: app does notifications when moisture levels are too low and when there is not enough sunlight. Also, give fertilizer/repotting notification.

Action Items

1. [ALL] Interview at least 2 persons.
2. [Daniel] Complete Team Blog (meeting duration = 1.5 hrs).

Next Meeting Agenda

Next meeting: 10 October 2020, 09:30, Discord.

1. Collect and analyze interview results.
2. Product Backlog.
3. Computer Simulation.
4. Ethical dimensions.

Team Meeting

10 October 2020 / 09:30 / Discord Server

Attendees

Daniel, Thomas, Jun, Karl, Vily

Agenda

1. Collect and analyze interview results.
2. Product Backlog.
3. Computer Simulation.
4. Ethical dimensions.

Notes

- Epics > stories.
- Bluetooth or WiFi?
- Meeting with Bipin scheduled for Oct 20, 11:00 (Zoom).

Action Items

1. [ALL] Produce an ethical dimensions document based on AI 1.
2. [Daniel] Schedule Sprint 1 with Bipin.
3. [Daniel] Finish blog.
4. [Thomas] Stories.
5. [Karl, Vily] Write on how-to simulate stuff.
6. [Jun] Ethical Dimensions.
7. [Daniel] Analyze interviews.

Next Meeting Agenda

Next meeting: 11 October 2020, 19:30-20:30, Discord.

1. Go over all the points.
2. Polish the Milestone 2.
3. Submit the Milestone 2 (Due Oct 13).

Team Meeting

12 October 2020 / 20:00 / Discord Server

Attendees

Daniel, Thomas, Jun, Karl, Vily

Agenda

1. Go over all the points.
2. Polish the Milestone 2.
3. Submit the Milestone 2 (Due Oct 13).

Notes

- Integrate one sensor (moisture) properly, and then do other sensors.
- Due to interview outcome and the price of Bluetooth, look into the possibility of either:
    - Making cheaper sensors.
    - Making a more specialized tool.

Action Items

1. [ALL] Polish product backlog.
2. [ALL] Make interview outcomes.
3. [ALL] Polish document and submit it.

Next Meeting Agenda

Next meeting: TBD on FB chat.

9.3 Product Backlog

Story ID	Story Title	Card	Story Points	Sprint	Status	Conversation	Confirmation
ELEC-1	Power source	As a plant owner, I want to turn on or off the measuring system, so that I can choose when to use its battery	3	Sprint 1	Planned	To save power when the system is not needed, the user should have control on the system's state. For safety, the user should also turn the system off when working with the pot.	1. Can the user easily access a switch that turns on and off the system. 2. Can the user see the on/off state of the system visually
ENGR-1	Read moisture	As a plant owner, I want to read data from the plant's environment moisture levels, so that I can keep track of my plants health	8	Sprint 1	Planned	Moisture in the soil can indicate the levels of water the plant is receiving. This information is a vital variable to control for a healthy plant.	1. Can the user read the real-time moisture levels of the soil through the android app 2. Can the user read the log of all previous moisutre levels measured.
ENGR-3	Read light	As a plant owner, I want to read data from the plant's environment light levels, so that I can keep track of my plants health	3	Sprint 2	Planned	Sunlight and articial light are also a vital variable that needs to be controlled for a healthy plant.	1. Can the user read the real-time light levels of the soil through the android app 2. Can the user read the log of all previous light levels measured.
ENGR-4	Read temperature	As a plant owner, I want to read data from the plant's ambient temperature levels, so I can keep track of my plants health	3	Sprint 2	Planned	The room temperature in which the plant is located in can affect its health too. Being able to read it will be helpful to keep it healthy. Plus it is a measurement that is easy to take.	1. Can the user read the real-time temperature levels of the soil through the android app 2. Can the user read the log of all previous temperature levels measured.
SOFT-1	Recommendations	As a plant owner, I want to receive recommendations on healthier practices for the plant, in order to maintain the plants health	3	Sprint 3	Planned	The user often doesn't know what he/she is doing wrong. Receiving personalized recommendations based on the measured data for better practices would improve the plants' health.	1. Can the user read a list of recommendations of healther practices on his/her android application 2. Can the user get more information by being redirected detailed links
SOFT-2	Water notifications	As a plant owner, I want to receive notifications and alerts, so that I can be reminded to water my plant	5	Sprint 1	Planned	Plant care takers often forget to water their plants due to lack of habit. A daily or weekly reminder based on their type of plant would help them not forget. The amount of water their giving the plant should also be specified.	1. Can the user receive notifications to remind himself/herself to water his plants
SOFT-3	Light notifications	As a plant owner, I want to receive notifications and alerts, so that I can be reminded to keep my plant in a healthy ambient light environment	3	Sprint 2	Planned	The emplacement of a plant (such as near window) may give out too much or not enough light to a plant and will also change with seasons. Therefore, the plant owner should be notified when the location isn't adequate anymore.	1. Can the user receive notifications to let him/her know that the plant is not receiving enough light at its current location
SOFT-4	Temperature notifications	As a plant owner, I want to receive notifications and alerts, so that I can be reminded to keep my plant at a healthy temperature level	3	Sprint 2	Planned	Temperature levels can also change from a season to another and the user should be aware that these changes will affect his/her plants health. Whenever the temperatures reach unhealthy levels, the plant owner should be notified so he/she can turn up/down the thermostat	1. Can the user receive notifications to let him/her know that the room temperature is too low or high for the plant's health sake.
SOFT-8	Monitor growth	As a plant owner, I want to monitor the growth of my plant, so that I can know when to change its pot	3	Future	Planned	Many plant owners have this parenthood relationship with their plants and want to be able to monitor and log its growth. Plus, when a plant is too big for its pot, it should be switched into a bigger one. This monitoring can be done with a simple camera or even the android camera.	1. Can the user see a history of the plant's size 2. Can the user receive an alert when the plant's size has exceeded its pot size
SOFT-9	Identify plant	As a plant owner, I want to identify my plant and view information about it with a picture, so that I can understand it better	34	Future	Planned	Most of plant owners don't know the type of plant they own and therefore can't get the right information on its needs of sunlight, water, temperature, fertilizer, etc. With a plan identifier system, the right information can be updated and synced with the temperature, moisture and light levels recommended.	1. Can the user take a picture of the plant and know what type of plant they own. 2. Can the user associate that type to their profile and personalize the variables to this specific type of plant

ELEC-5	Durable case	As a plant owner, I want my product to be durable and low maintenance, so that I can use it for a long time	13	Sprint 3	Planned	Plant owners find it a hassle to take care of their plants and this product helps them with that. However, the system shouldn't add new problems with maintenance problems with the electronics. Plus, because the system is expensive, it should last for a long time. To solve these issues, the case should protect the system very well.	1. Can the user leave the pot unattended without the risk of breaking it with minimal force (such as a cat bumping it)
ELEC-6	PH check	As a plant owner, I want to verify the PH level of my plant, so that I can know if it is in a healthy environment	8	Future	Planned	The pH level is one of the most important factors in living organisms health. The soil should be at a healthy pH and well fertilized for a healthy plant. For data that helps in improving the plant's health, it will be important	1. Can the user read the real-time pH levels of the soil through the android app 2. Can the user read the log of all previous pH levels measured.
SOFT-10	Notification changes	As a plant owner, I want to be able to configure my notifications, so that I can change how often I am reminded to cater to my plant	3	Sprint 1	Planned	Plant owners have very varying and different preferences in notification frequency for information about their plants. Therefore, the android app should let them configure the frequency and what feature notification they want	1. The user can configure and choose what notifications to receive 2. The user receives notifications through the android system for the configuration chosen
SOFT-11	Add fertilizer	As a plant owner, I want to be reminded when to use fertilizer, so that I can keep the earth in my pot rich in nutrients for my plant	3	Future	Planned	Adding fertilizers doesn't have a fixed periodicity and therefore gets delayed or even forgotten often even though it is essential for the plant to get its nutriments. A scheduled reminder or using measurements should be used to notify the user to fertilize the soil.	1. The user can set an alarm for the future to remind himself/herself to fertilize the soil
SOFT-12	Database for plants	As a plant owner, I want access to a database of plants so that I can link mine and get specific information on how to cater to my plant	8	Future	Planned	The information about all the plants is very spread out through google and having one that is centralized in the app would be useful for the plant owner. If the type of plant is determined, the specific information of how to take care of that type of plant should be displayed.	1. The user can search on good practices for a specific type of plant through the android app
SOFT-13	Reminder for poison	As a plant owner, I want to be reminded to use poison when needed, so that bugs don't destroy my plants	5	Future	Planned	Often times, the users plants can have a bug infestation that eats at the leaves and roots of the plant. In order to avoid further damage to the plant, a reminder to apply poison to the plant would be necessary	1. Is the user reminded that they need to apply poison to the plant 2. Is the interval catered to the plant they own
SOFT-14	Reminder for leaves	As a plant owner, I want to be reminded to cut the leaves, so that my plant can remain proper and not affect their surroundings	3	Sprint 3	Planned	The leaves on plants grow as the plant grows and can cause a list of issues with the health of the plant, such is hiding sunlight exposure to the other leaves and causing them to dry off and die. Reminding the user to cut the leaves according to the profile of their plant will ensure that they don't forget cater to that aspect of their plant	1. Is the user reminded to cut the plants leaves 2. Is the interval at which the user cuts the leaves catered to the plant they own
ELEC-7	Pot minimalism	As a plant owner, I want the pot and sensors to occupy no more room than a normal pot would have taken.	13	Sprint 3	Planned	Space occupancy of a plant is sometimes an issue with plant owners, as they may purchase them for esthetic reasons. If the system occupies too much space, it may be a deal breaker	1. Do the pot and sensors occupy an equal amount of space or less than a normal pot
ELEC-8	Weather resistant	As a plant owner, I want to install the system in an outdoors environment and have the measuring system still functional.	5	Sprint 3	Planned	Many users seem to also grow their plants outdoors and use them for material use, such as growing vegetables or fruits. In order to cater to these plants as well, they should be able to have functional systems despite the harsher conditions	1. Can the system work outdoors
SOFT-15	Plant profile	As a plant owner, I want to enter the type of plant I own and have it saved onto my phone (to receive the adequate information about it if there's a database of plants).	5	Sprint 1	Planned	In order to have specific information on how to cater to the plant, there must be a database with preset information already available. From this database, important recommended intervals of watering the plant, as well as recommend light and temperature exposure should be suggested to the user by inputing the name of the plant into the system	1. Can the user receive catered recommendations on treating the plant given it's own unique requirements

9.4 Sprint 1

Story ID	Task ID	Task Title	Task Description	Ideal Hours	Status	Comments
ELEC-1	ELEC-1.1	Connect power source	*Connect a power source for arduino and sensors*	1	Planned	
	ELEC-1.2	Wire a switch	*Wire a switch that controls on/off state of system*	1	Planned	
	ELEC-1.3	Connect a bulb	*Connect a bulb that indicates whether or not the system is powered on/off*	1	Planned	
ENGR-1	ENGR-1.1	Real-time moisture data	*Display real-time data of the plant's environment moisture levels*	5	Planned	
	ENGR-1.2	Log moisture data	*Display a log of data of the plant's environment moisture levels*	5	Planned	
	ENGR-1.3	Graph moisture data	*Display a graphical visualization of the plant's history of environment moisture levels*	10	Planned	
	ENGR-1.4	Connect moisture sensor	*Wire and connect hardware moisture sensors to the arduino*	3	Planned	
SOFT-2	SOFT-2.1	Verify moisture data	*Monitor incoming data from moisture sensor and verify for low values*	3	Planned	
	SOFT-2.2	Low moisture notification	*Send notification to user when value is too low*	1	Planned	
SOFT-10	SOFT-10.1	Moisture notify interval	*Create input time interval to change how often the notification is sent*	3	Planned	
SOFT-15	SOFT-15.1	Moisture data plant profile	*Create plant profile with plant name and retrieve plant data from database - database can be empty with fixed columns (recommendations on watering interval, light exposure and temperature)*	10	Planned	
	SOFT-15.2	Recommended moisture notify	*Compare input data from moisture sensor to retrieved plant recommendation and send notification if > chosen time past since last notification*	5	Planned	