Appendices

APPENDIX 1: Interview script

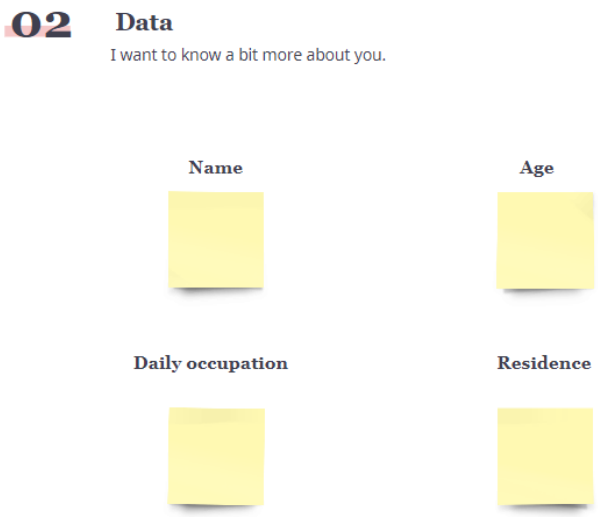
INTRODUCTORY SCRIPT

We are very happy and thankful to have you here! I will first explain why we are doing this interview.

SUBTOPIC 1 | Icebreaker

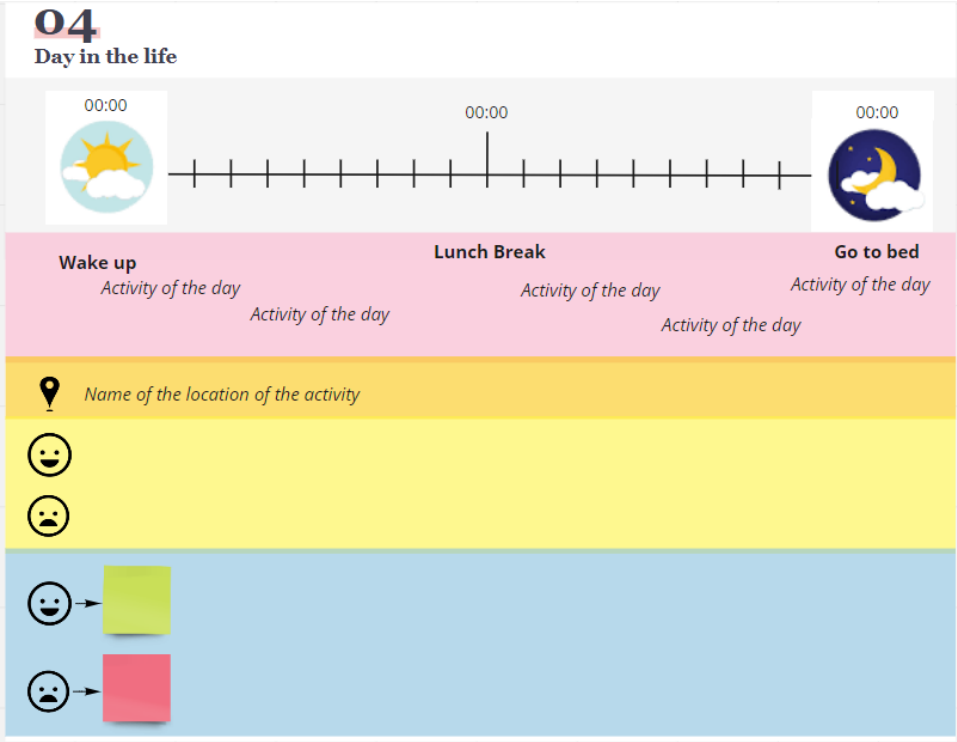
Introduce myself and themselves.

- *Could you please introduce yourself (name, age, daily occupation)*



SUBTOPIC 2 | Day in the life

An activity to ask them about their daily routine and see how that makes them feel. If they feel like talking we can also ask about the weekly activities.



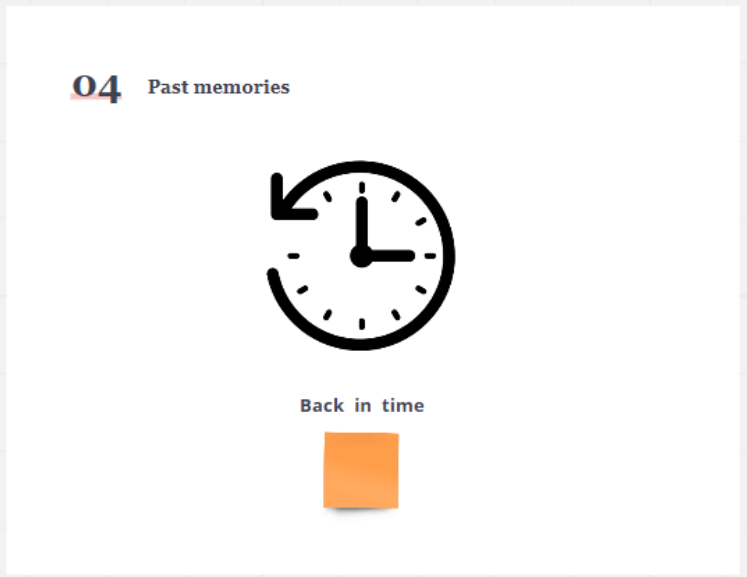
SUBTOPIC 3 | Mercado Barangay, Hagonoy

- *How long have you lived in Mercado?*
- *Does your family live also in Mercado?*
- *Would you like to continue living here?*
- *Which spots, places or associations are important to you in Mercado and why?*
- *How often do the fiestas happen?*
- *Which are your favourite spots, places in the neighbourhood?*
- *What are the problems you run in your community?*
- *Do you suffer from floods or natural disasters? How does this affect your daily life?*

SUBTOPIC 4 | PAST MEMORIES

Start asking them about their memories to understand what they remember positively and what do they miss from the current one.

- *Has the neighbourhood changed a lot?*
- *What do you remember from your childhood?*



SUBTOPIC 5 | Future desires

Now they have seen the problem, explore the past good memories let them see what they are looking for in the future.

- *What would like to see happening in the community (public areas)?*
- *What is missing?*

Perhaps related it to their memories elements

- *If you could you choose, what will you like to have next to your house?*
- ***"what do you want around you/ your house?",***
- *What would like to have far from your house?*

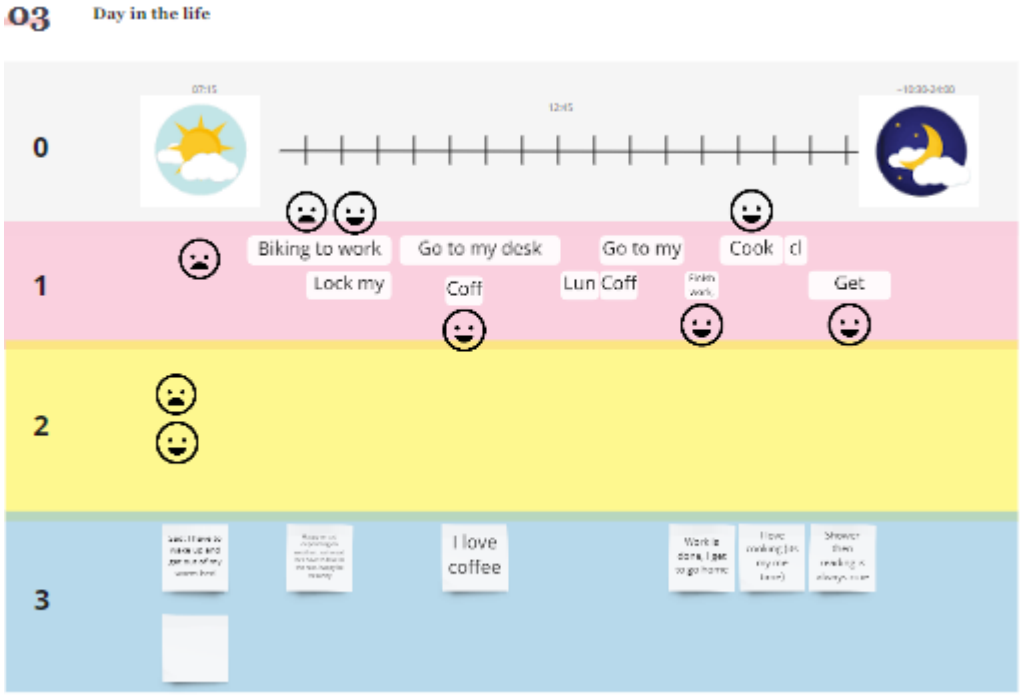
SUBTOPIC 6 | Generative session

I have taken some notes while you were telling me about your wishes regarding the distribution of the neighbourhood and put them into context. In this little drawing you see it's your neighbourhood, from here you can go to the city…..

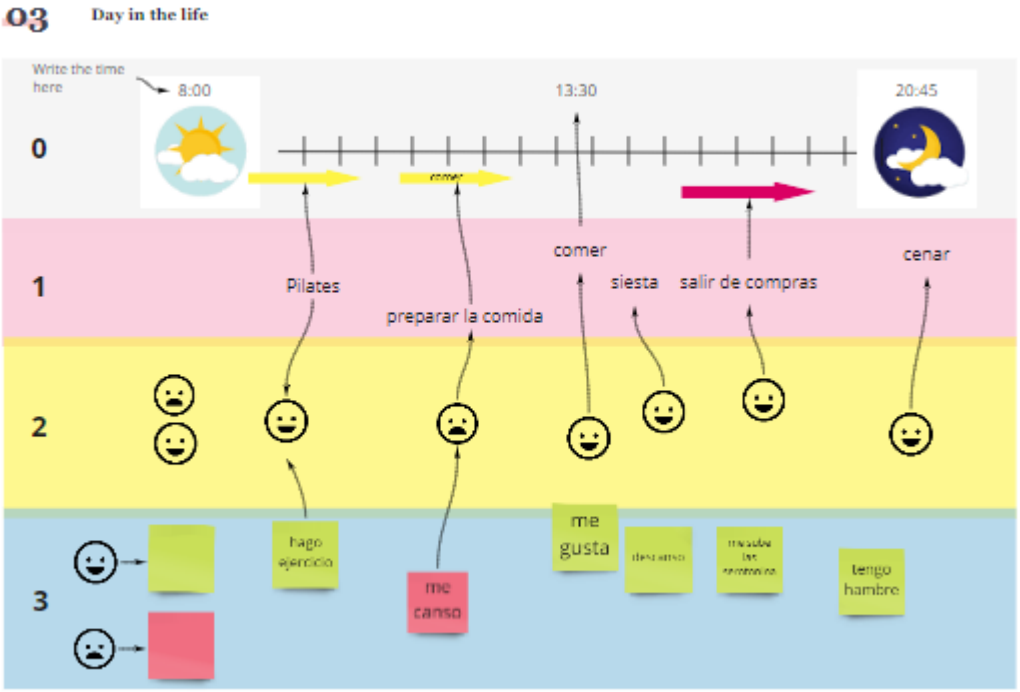
- *Could you tell me why did you place X in this position?*
- *Would you like to add more to the map?*

APPENDIX 2: Evolution of the user test

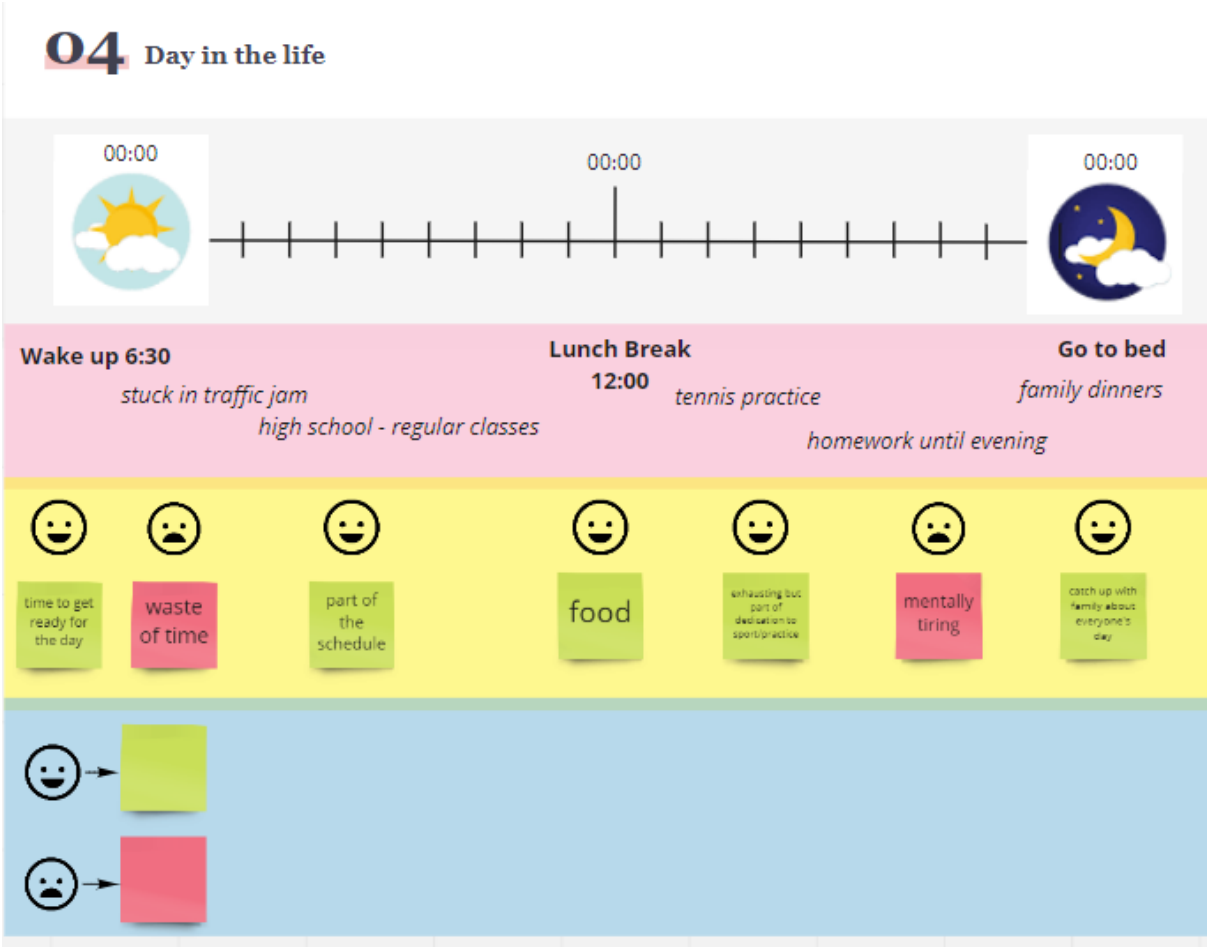
Day in the life evolution



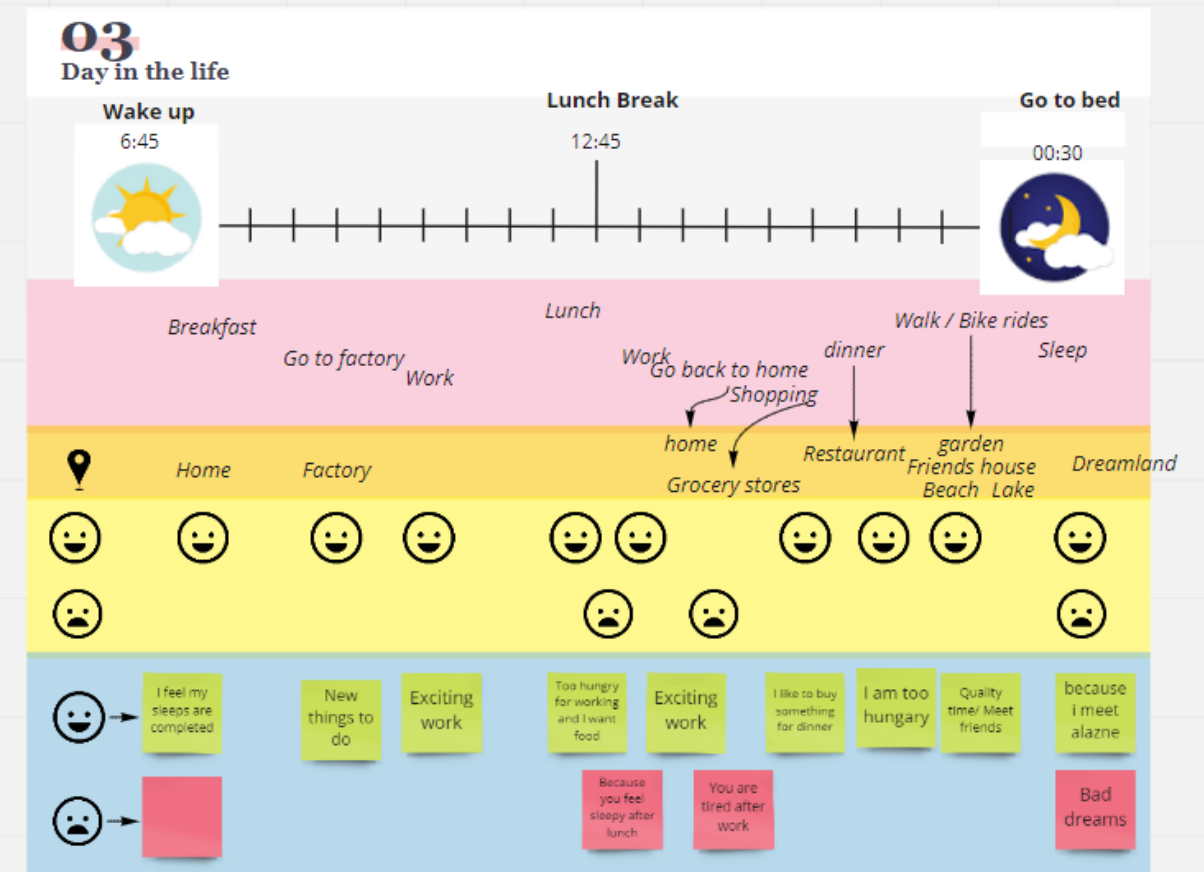
The activity names took too much space so it wasn't possible to read the name of the activity.



Colour code to identify the positive and sad moments of the day. This user wanted to relate vertically the events.



Adding the fill in space for the daily activities.



Moving of the main actions of the day (wake up, go to bed….) and addition of the location.

Generative session evolution

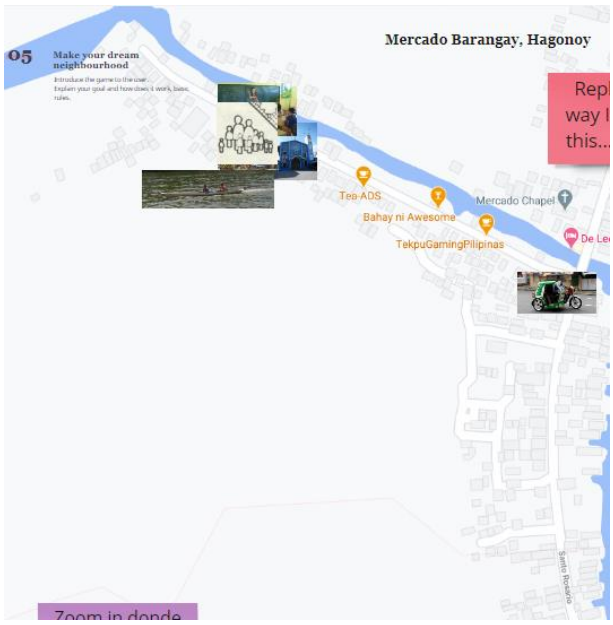


Figure 1- Pieter Ham

The user is not aware of the spatial space that each element requires therefore all the elements are grouped in one spot. Also, the introduction to the map was not clear, some more introduction to the context is needed.

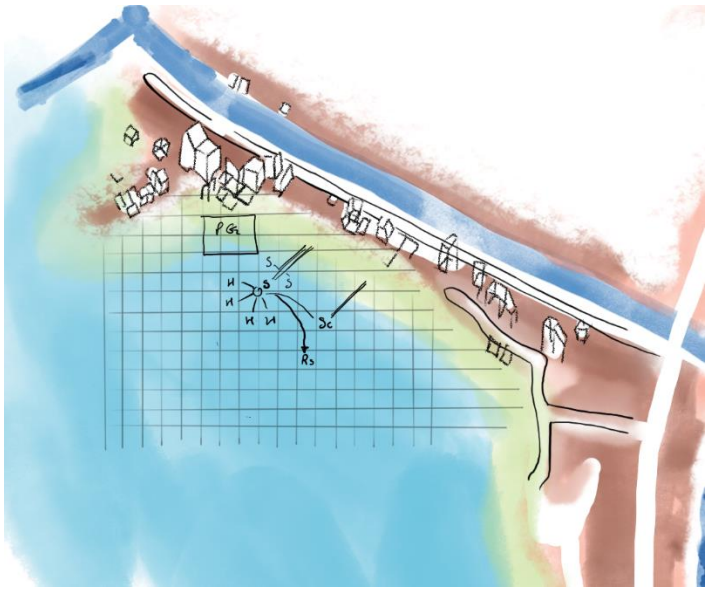
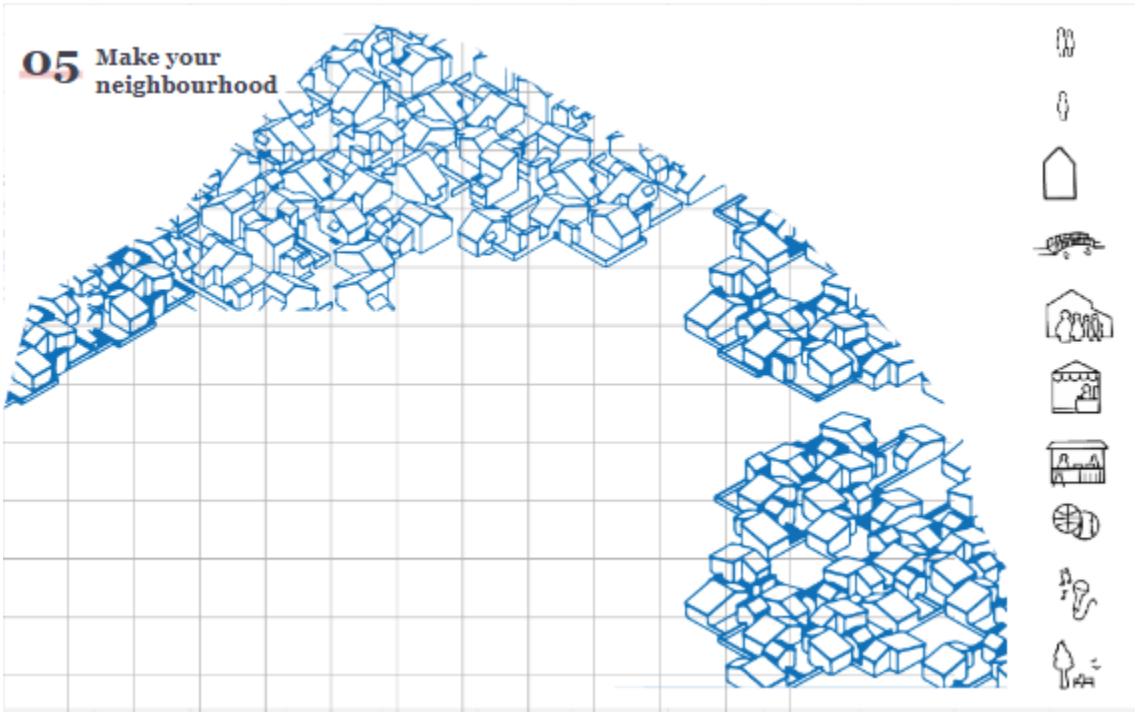


Figure 2- Parshva Mehta

The way to introduce the game was confusing, therefore the feedback given by the user is to start asking **"what do you want around you/ your house?",** once they have described few elements, I can show the map I have been making myself.

Considering the feedback given by Parshva (user number 6) I have created a new lay out for the game



The result of the user interview

The interview set up has suffered several iterations since the first interview to the last one. The main changes have been on the board 03 and 05 which are the exercise and the generative session. Modifications:

03. Addition of an extra row to add the locations of the activities to trace the movements around the neighbourhood.

05. New elements have been added under the request of the participants. When this happened a little post-it is added next to the icon. At the end when discussing the outcome with the participants the employment of squares and circles to cluster.

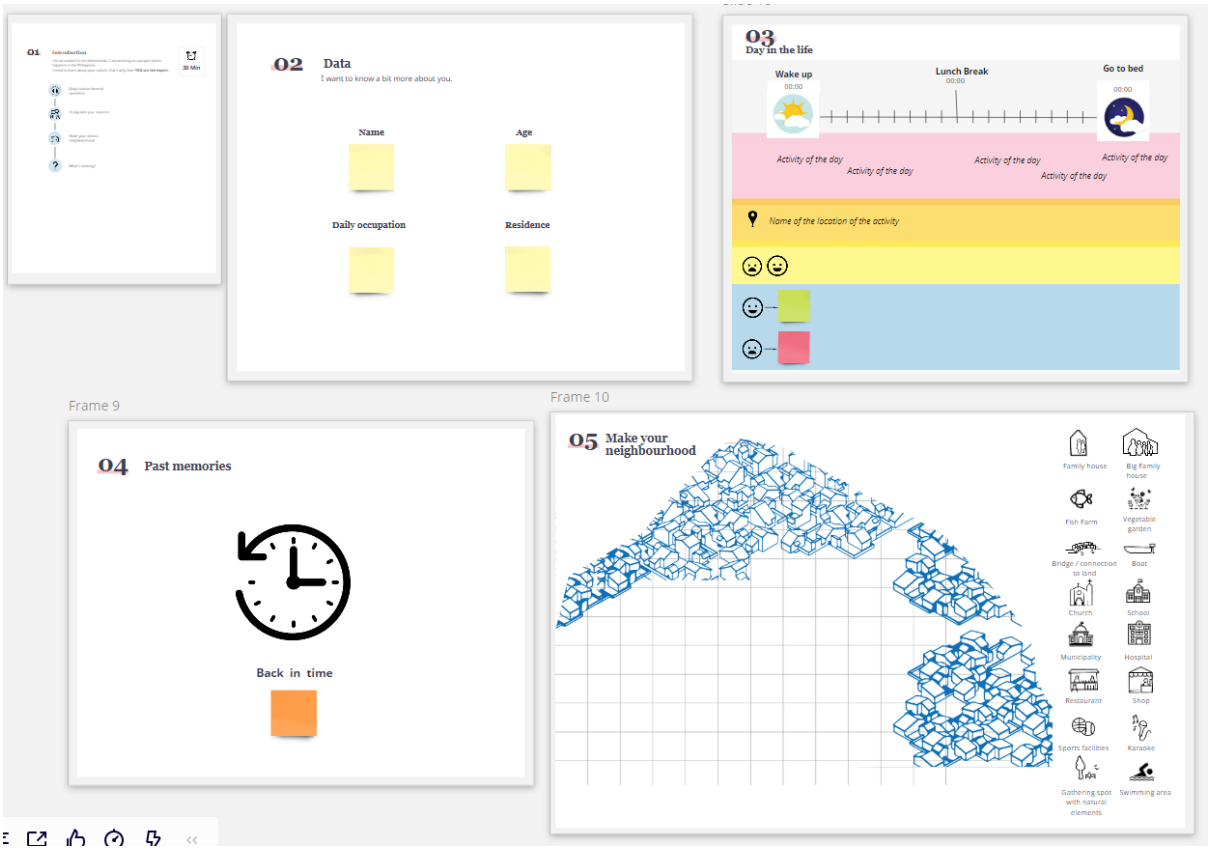


Figure 3- Final interview set up board.

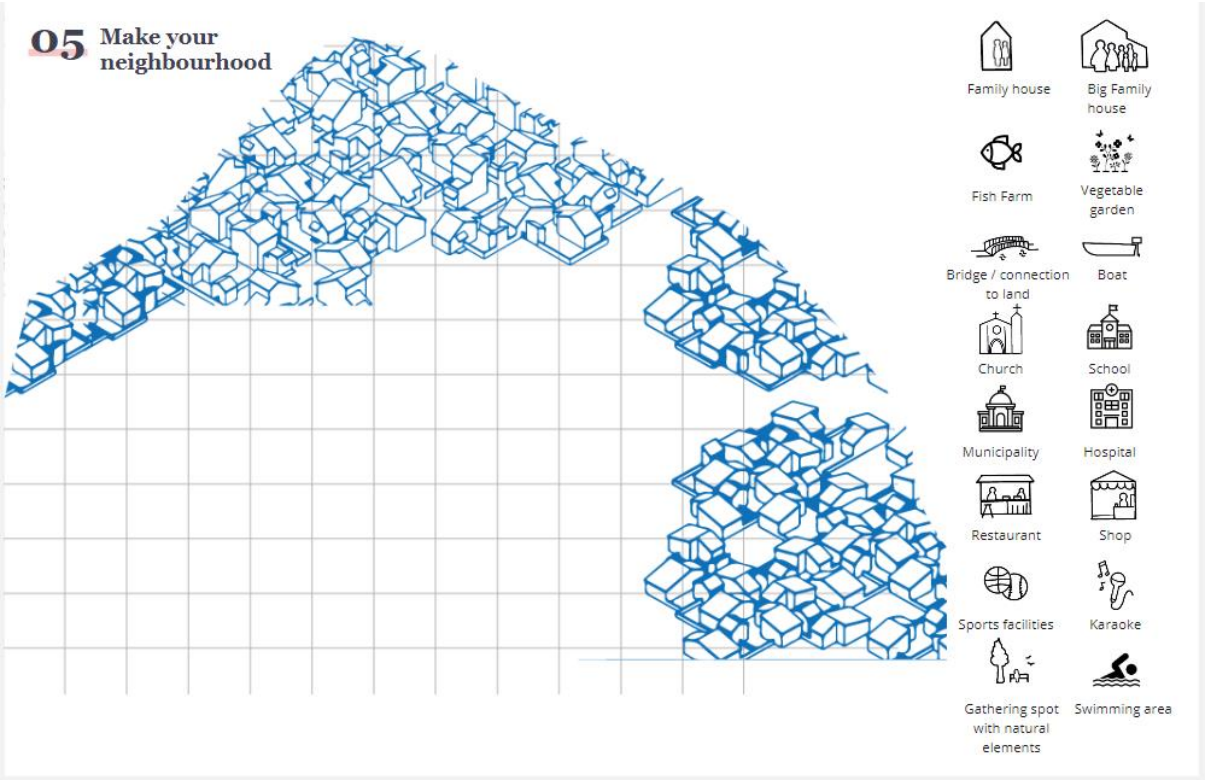


Figure 4- Zooming in the board 5.

Takeaways

- Some elements might repeat more often than others, for instance bridges.
- The icon means differently for different participants.
- The exercise of a day in life was harder than expected. Not all participants were patient enough to tell the activities of the day. I should have guided them better.

APPENDIX 3: Documentation of the user test

Introduction

The user test consists of several questions and two main exercises: daily activities (board 3) and neighbourhood creation (board 5). The user test will be done through an interview session. This interview is a Generative Session(Sanders & Jan Stappers, 2018) that uses the core idea of 'Play the city' (Tan, 2014) as a toolkit to help users express themselves.

The toolkit is created especially for the occasion and elements of the context are shown to make it easier for them to relate with their current life.

To make sure the designed to set up work several pilot tests are done before performing it with the target users. Among the selected participants the addition of non-locals is made to contrast the outcomes between the locals and internationals.

Methodology

Why are we doing this game/generative session?

"To grips, the complexity of the city urban designers need to distinct the rules driving the city and use them strategically to facilitate interaction between stakeholders" ((Tan, 2014)

The goal of the generative session is to give them the power to generate a space they desire, a place where they want to live, therefore, we need to identify their wishes, needs and habits. The generative session will help the design team to understand the housing clustering in the Barangay's of the Philippines and discover the knowledge local inhabitants can bring into urban planning.

Study how the user's place themselves on the map and to what they want to be connected to (positioning of dwellings). Identify the essential elements in their neighbourhood. What do they want close? What do they want far?

Why a game?

The game is a way of communication between the designer and the user/inhabitant. Gaming is the oldest learning method of the human being (Huizinga, 1938), in this particular case the designer is learning from the local inhabitants and their tacit and latent knowledge (Sanders & Jan Stappers, 2018).

The game is a strategy to test the acceptance of the locals to broaden the limits of the city towards the water.

Question

1. Which are the elements the participants consider essential in their neighbourhood?
2. How would they distribute the identified elements in the newly available space?
3. What are they missing in their community?

Hypotheses of the generative session

- They will place themselves next to their family members creating little family clusters.

- They are missing gathering space in front of their houses. Connection points.
- By relating to their memories of the past they will identify elements they want the future neighbourhood to look like.

The Game requirements

Following the guideline of other interactive games developed by students(Sluiter, 2019), the game must follow the following criteria:

- Engaging, the aesthetics and the interface of the game should be engaging for the users.
- Easy, any user no matter their background must be able to play the game under the guidelines of the designers.
- Empowering, they should feel in charge of their decisions and be aware of the importance of their opinion
- Local, they should be able to relate to their context

Rules of the game

Every game needs basic rules to play well. The rules of the game are the following ones:

- One card per available spot
- You must place connections to the land
- Speak out your thoughts while you play
- If more than one people are playing take turns.

Interview design

When doing the interview an scrip was done before hand (Appendix 1).

- Board 1: Introduction to the session and explain the upcoming steps
- Board 2: General information and ice breakers
- Board 3: A day in the life to understand the daily activities of local person.
- Board 4: Ask the main difference between past and present. Elemens they used to love from their childhood. This board in the connection from the present (board 3) to the past memories (board 4) with the wishes and desires of the future (board 5)
- Board 5: Which are the essential elements of the dreamneighbourhood? What do they want close and what do they want nearby?

Interview set up

Participants

Ref.	Gender	Occupation	Residence	Reason of interview
1	Masculine	Teacher	Hagonoy, Philippines	Direct target user
2	Masculine	Municipality worker		
3	Masculine	Teacher		
4	Feminine	Municipality worker and business owner		
5	Feminine	Architect	Manila, Philippines	Architectural knowledge with local and international experience.
6	Masculine	Architect	The netherlands	Previous work related to the floating structures.
7	Masculine	Civil Engineer		Project owner.
8	Masculine	Mechanical Engineer	Mumbay, India	Living in a tropical area, suffering from the same naural hazards.
9	Feminine	Economist	Manila	Gain cultural knowledge

Visual outcome of the session

The interview set up has suffered several iterations since the first interview to the last one. The main changes have been on the board 03 and 05 (Figure 5) which are the exercise and the generative session.

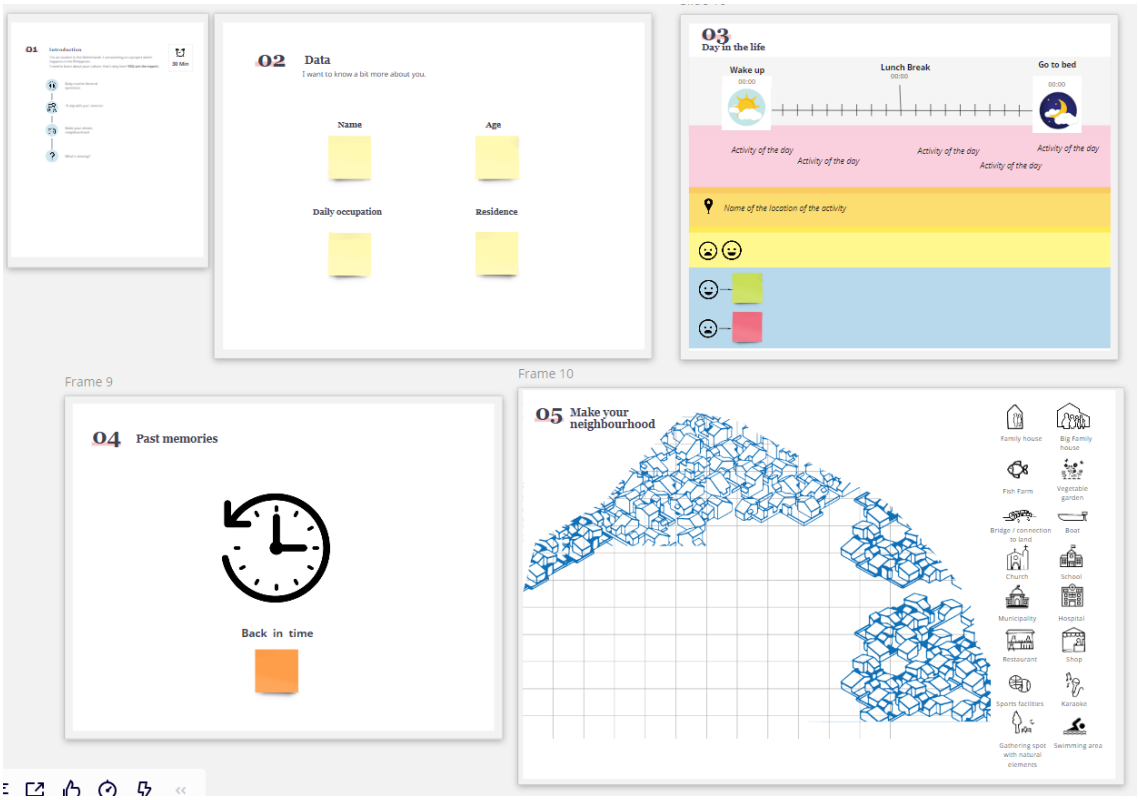


Figure 5- Final interview set up board.

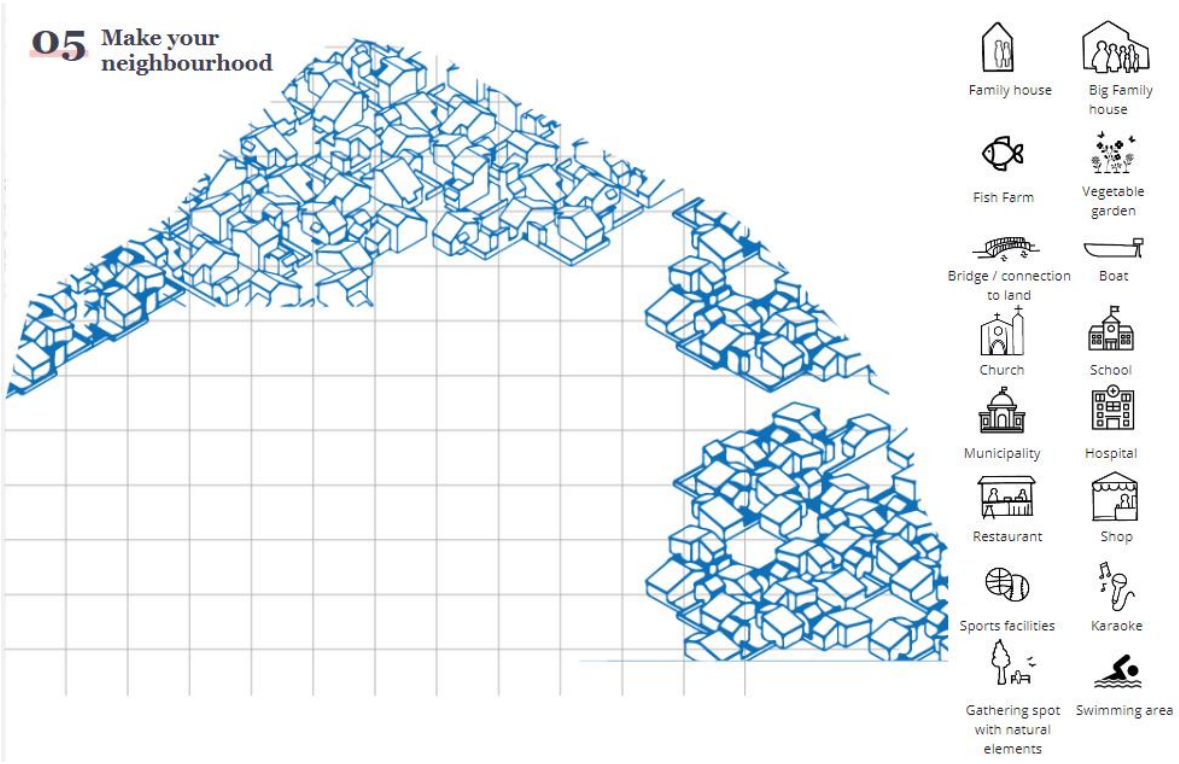


Figure 6- Zooming in the board 5.

Results and Conclusions

The outcome of the questionnaire

- Natural Connection: The favourite places of their current neighbourhood are the ones surrounded by nature: fishponds, plants around the church, gardens, etc. They love the water view from their house. A favourite place where they can see the sunset from.

"The backyard was the place where the garden meets the water."

- Dependence on the water.

"Majority of those community rely on water "

- Community feeling and closeness

"Just around the neighbourhood. Some, somebody said, someone celebrating a birthday. They put, they put some video of some chicken " .

"So our zone is pretty much like a big family. "

The outcome of the Interview Exercises

A day in the life

Scenario 1: Weekday

A worker that works for another organisation/business. The typical day will be working, being with the family and then socialising again. This scenario is more common for men than for women.

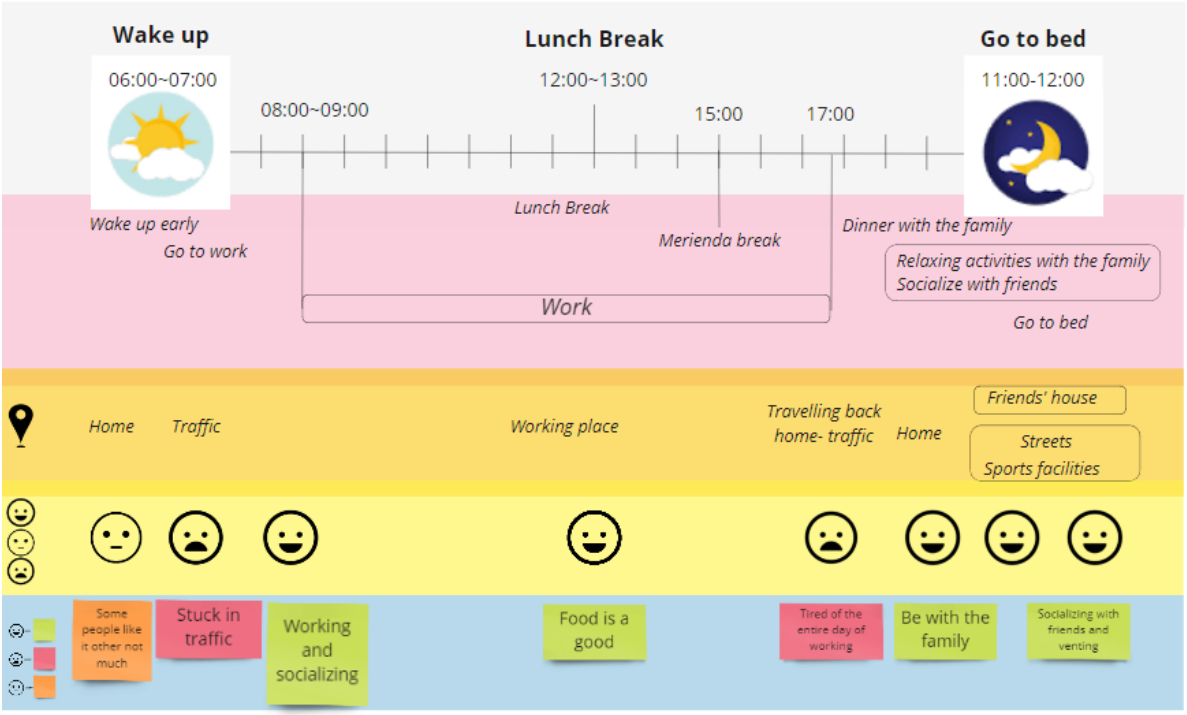


Figure 7- A typical day in the life of a Haguñoeño

Scenario 2: Weekend (Sunday)

During the weekend the main activities are going to the church and be with the family. Everyweend they have family gatherings after the mess where they eat, they sing and they are together.

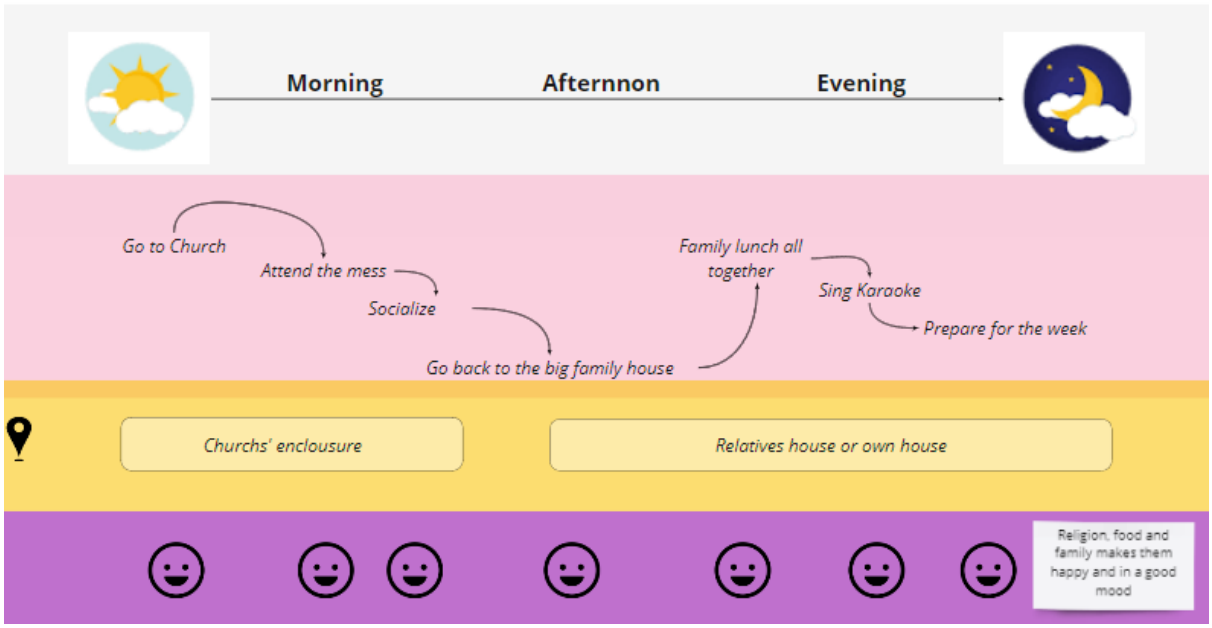


Figure 8- Weekend day

The main difference between social classes and gender is the place of socialising. The higher class socialised inside the gated community, which they usually share with family and relatives. And if they want to socialise with friends they rotate houses on each occasion.

While gender-wise men socialise more during the week and outdoors while women stay home with the family and socialise more on the weekends.

Make your dream neighbourhood

When doing the second exercise the fragmentation of the society became clear. The 'dream' neighbourhood of the participants was highly influenced by their economical status, for example, in the figure below (Figure 9) the gated communities can be seen by the clustering of the family dwellings. While the working class was more oriented to make a profit from fishing (Figure 10) to afford the house they are living in.

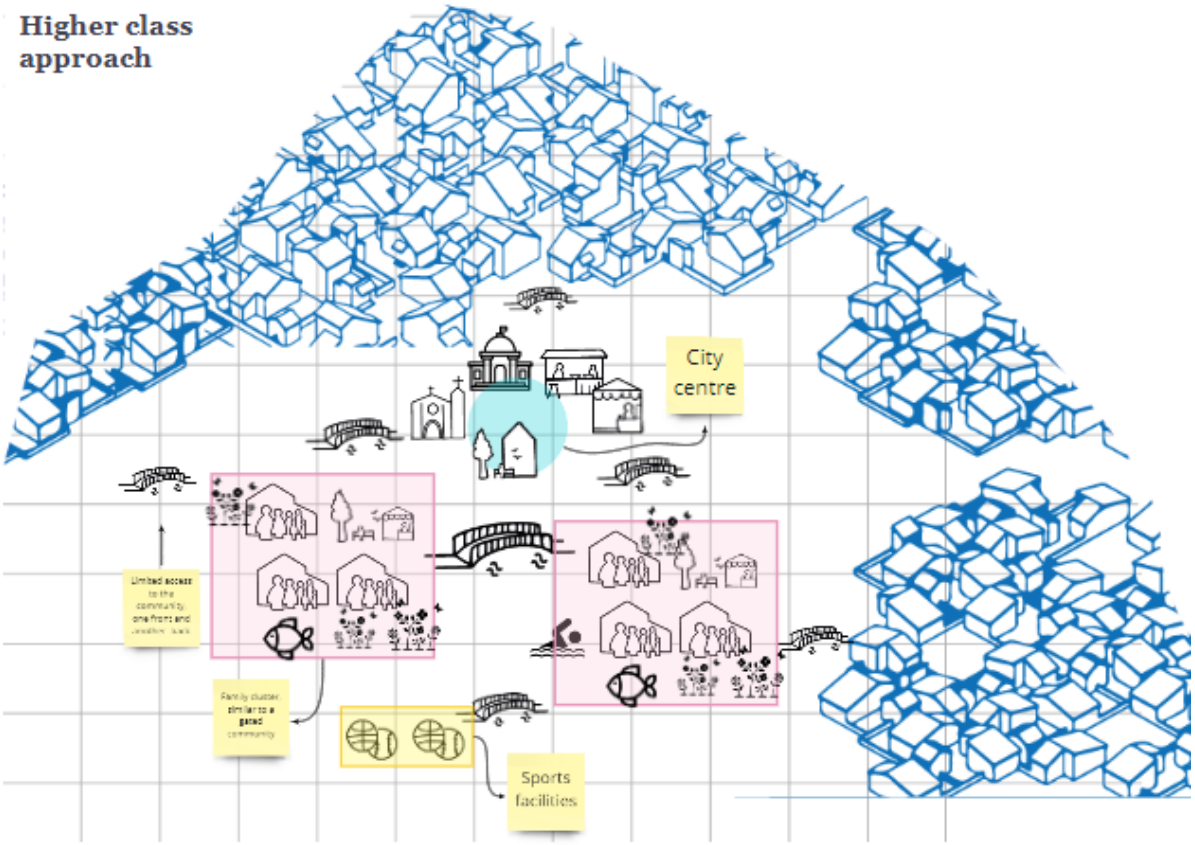


Figure 9- Higher class approach

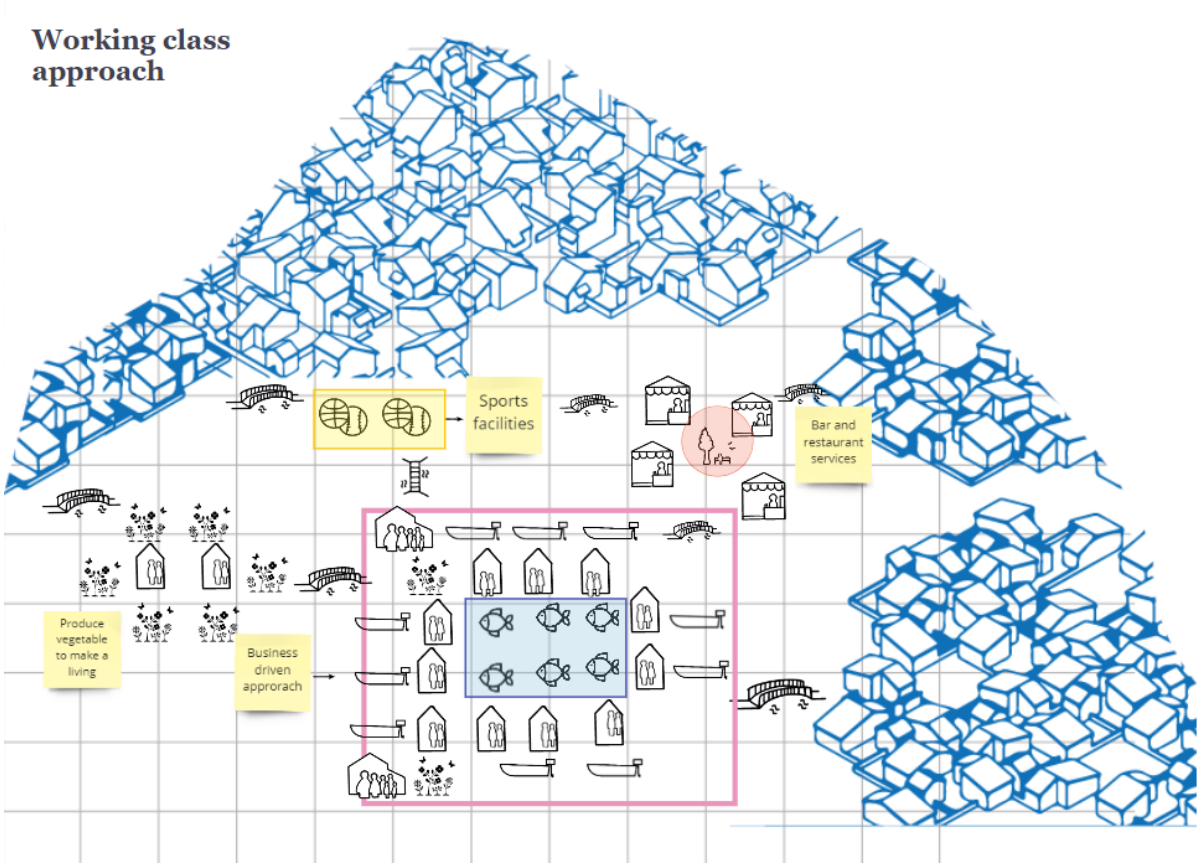


Figure 10- Working class approach

Takeaways

Insights for the project

- The main socialising activities are happening in the evening after the family dinner.
- The main difference between gender is the way of socialising, men go outside, women stay nearby the home.
- Missing elements from their childhood are nature and space to go around and play. Kids nowadays do not have a socialising space.
- Water is part of daily problems, they just deal with them the best they can.
    - Floods: the mobility around the city is hindered, destroys their houses, etc. (problems we already knew about it).
    - Pollution: can't swim anymore
- Social class has a direct effect on the outcome. Both extremes are missing what the other pole considers essential. A midpoint between the two extremes could be reached to please them (Figure 9–Figure 10). Elements mentioned by the entire society.

- The connection to the natural elements is good, reminds them of their childhood. They like being surrounded by them. Identification of the Basic Elements for a dwelling.

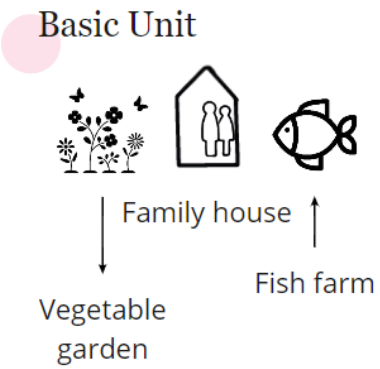


Figure 11- Basic unit

- The isolation of the houses is not attractive for them, they are very family-oriented which is why no matter the class they all wanted to be surrounded by them.

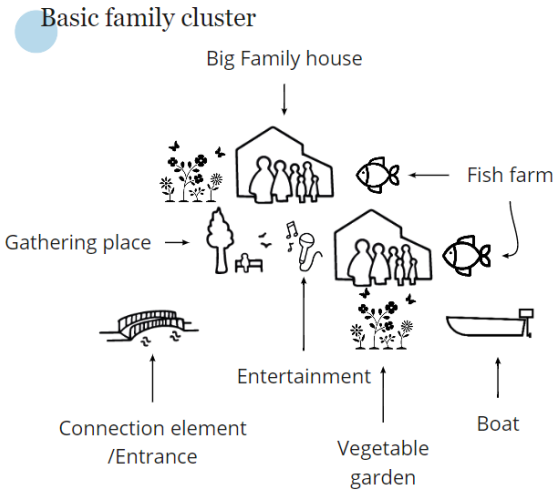


Figure 12- Basic Family cluster

What does a neighbourhood need?

- Accessibility
  - Bridges to connect to the mainland.
  - Walking around
- Livelihood/ community
  - Learning centres
  - The church was to gathers
- Fish and vegetable production- basic supply
  - Per dwelling
- Family
  - Give the locals space of their own to feel more like a family.

1.1. Personal learnings & reflection

- The generative session helped the communicate with the participants and helped them express their desires. In the beginning, the participants could only come up with things they know however when proposing additions they accept or rejected them, always giving a reason for it.
- Do not show them from scratch as it is hard to picture what is this for. Make them talk about their desires and then show what they have been talking about.

APPENDIX 4: Interview notes

Appendix 4.A

NOTES

REASON OF INTERVIEW

Local inhabitant of Hagonoy. Interview set up following script v.2.

He is a teacher with some prior knowledge to floating houses.

HIGHLIGHTS OF THE MEETING

- Quotes

  "we have two households, one built by owned by a parent and one owned by my grandfather. And we split the family into two, so we're not congested in one."

  "Yeah, a socialised whenever there's, there's gathering. So maybe for a week I do socialisation drinks with friend. I do, we, we have a rotation, we have a patient who's whose house will be the drinking the drinking house. So, so just it's like that. And it says it's a small neighbourhood we have here we call it porac (neighbourhood area) zone. So our zone is pretty much like a big family."

  "The biggest thing, which our batch are generation dead, and this current generation cannot do anymore, is swim in the river. Before we swim, we jump off the bridge and swim. That's how we that's how we we've been taught on how to swim."

  "Because the initial the first thing that comes to my mind when you say a floating house, they feel somehow that imagine it as an ***isolated house inside****, inside if inset in the centre, centre of water. I want I still want a neighbour."*

- Interesting points of the conversation

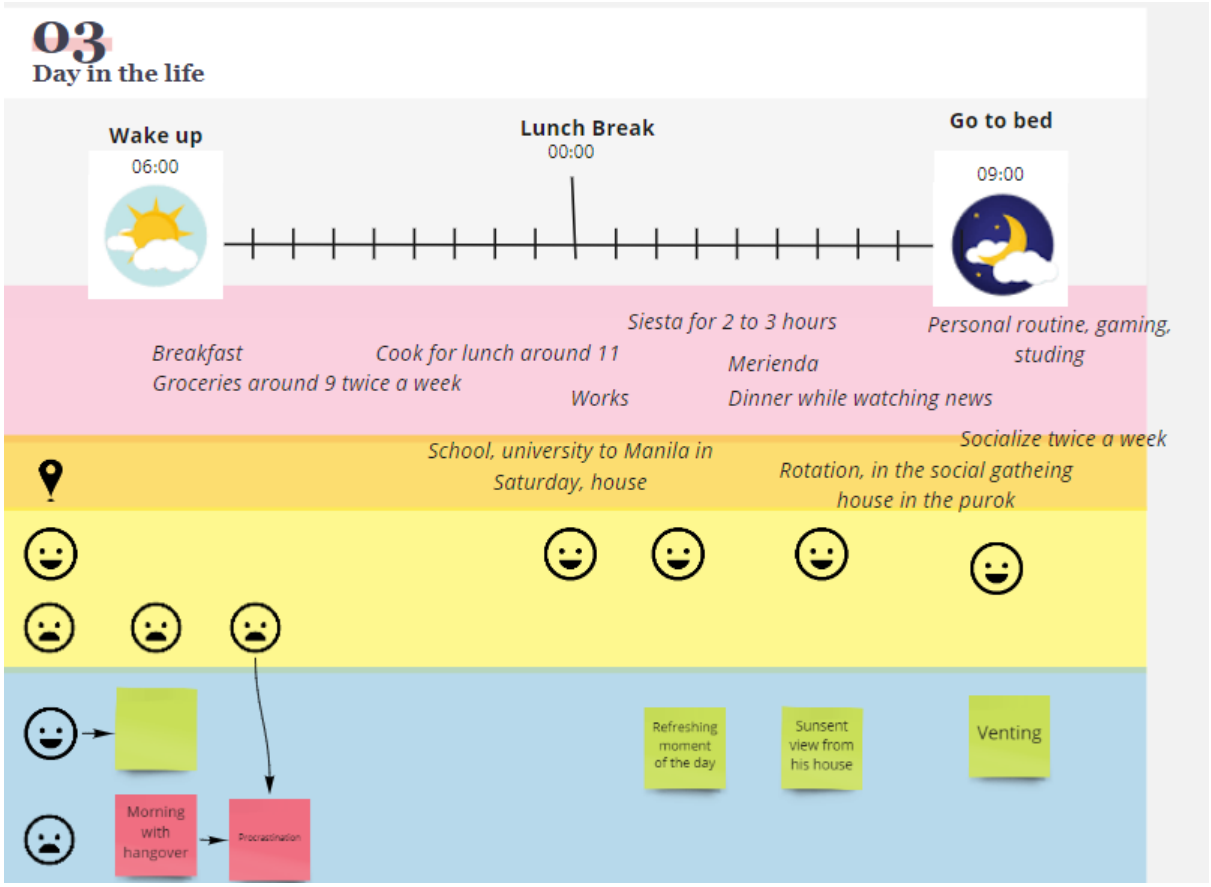
  The presence of Chinese people in the Philippines is also seen as (according to his opinion) an "invasion" of the local area.

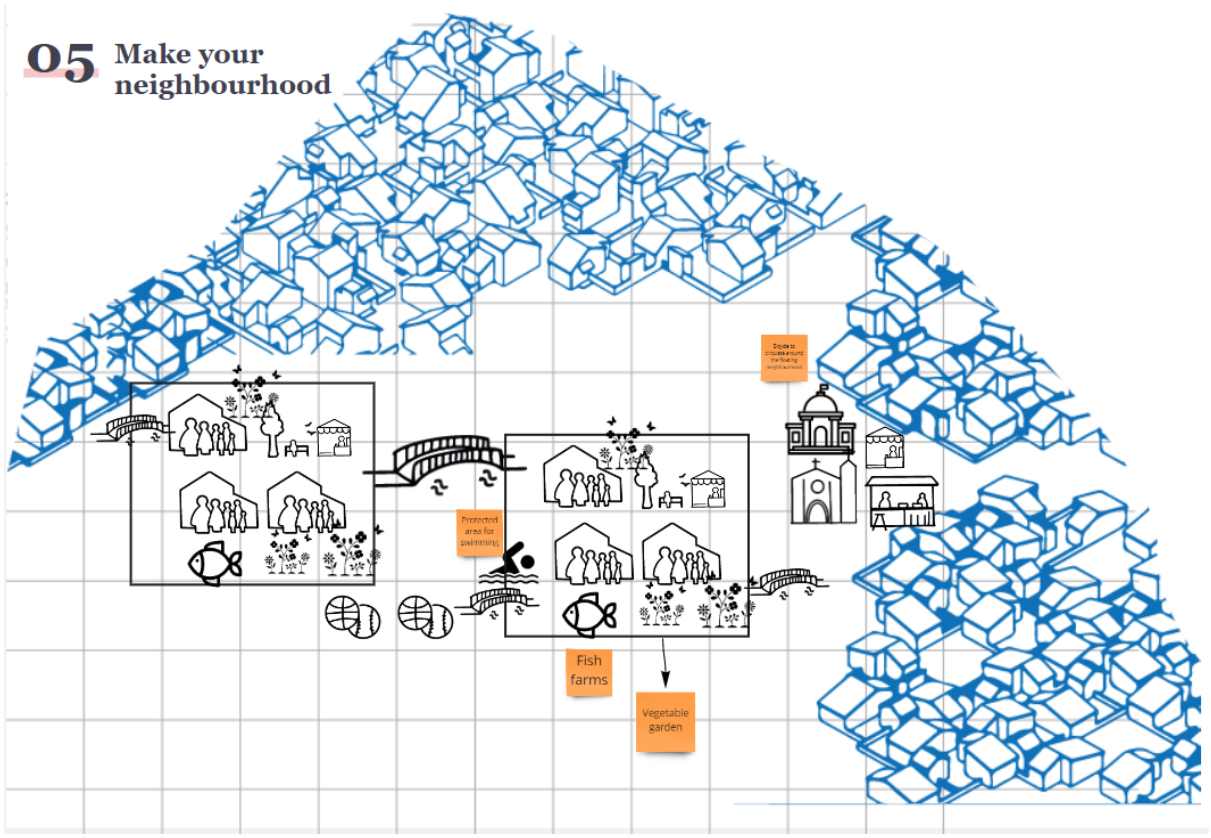
  He misses the presence of the traditional houses that now have been replaced by the big buildings.

  He wants his kids to socialise more in the street, now they just play videogames.

  Big emphasis on the closeness to the family members.

OUTCOME OF THE SESSION





Composition of the cluster:

- Family houses with a patio to create an open space for the gathering.
- Flowers and vegetables around the house.
- Fish farms
- Clean swimming area for the kids
- Two bridges one to enter and another to exist.
- Traditional composition of the purok. This should be close to the church, market and municipality.
- Clusters connected between them.
- The church is the centre of the community.
- The garden and natural plants give a contact point to the land. A way of feeling connected to it.

Appendix 4.B

NOTES

REASON OF INTERVIEW

Francisco has big knowledge in the floating homes because he used to have an NGO. However, due to the political structure in the Philippines he couldn't carry it forward.

A man with perspective and awareness with the current situation of the landsubsidience.

HIGHLIGHTS OF THE MEETING

- Governmental structure of the Philippines

"the rich people handling everything in our day".

They are hiring locals to work for them but without really giving them a choice to do anything else.

- Social structure and clusters

  Four types of **class of people** in the town: the capitalist the ones related to fish related business (selling and buying), the financing of the fishing boat or fishpond. The number three are the ones working outside of the town and the number four, which is 60% of the people are the workers for the group number one and two.

  "Majority of those community rely on water"

- Society

  People get married very young, then the family grows and they need to build more houses.

- Celebrations

Plenty of celebration and fiesta even for each neighbourhood. Why? The centre is too far for them, it's expensive to move so no chance of enjoying the centre leisure time. There is always music, dancing and family and friends.

The fiestas are expensive for the locals, analysing it from a socio-economical factors however is essential to survive they daily routine.

Karaoke is a must in their culture!

"Just around the neighbourhood. Some, somebody said, someone celebrating birthday. They put, they put some video of some chicken".

- Education

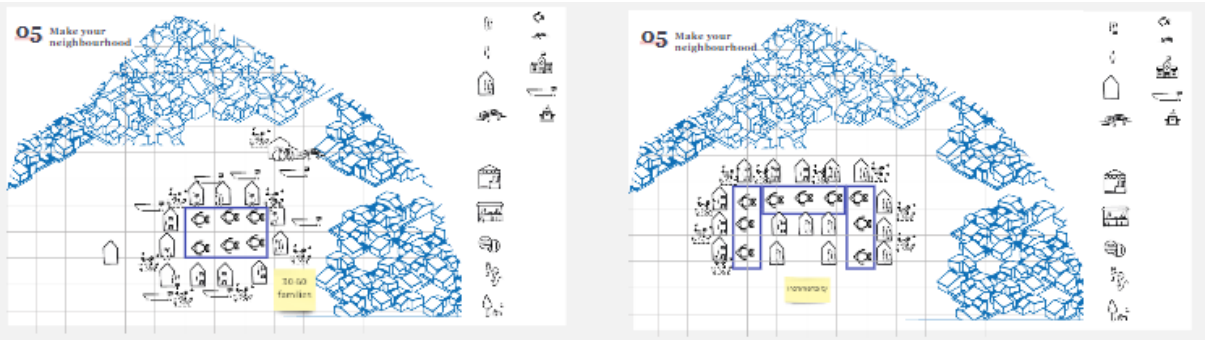
The key goes out of these situation. He has the emphasis in these conditions.

- The Wetlands

They are not public lands; they belong to the private sector.

Fish net as barriers for the fishes between the hectares.

"we put fishnet in a rectangular shape around the hectare and house around the rectangular shape.



"We put the fishnet, around, one hectare. In a rectangular shape. With every side of has houses. The rectangular side, those rectangular houses around the middle of that open area. Okay, so that we can see those people living on the surrounding one has the owner. owner or co-owner of those leaving in that in that space. Okay, for example, maybe 30, to 60, families."

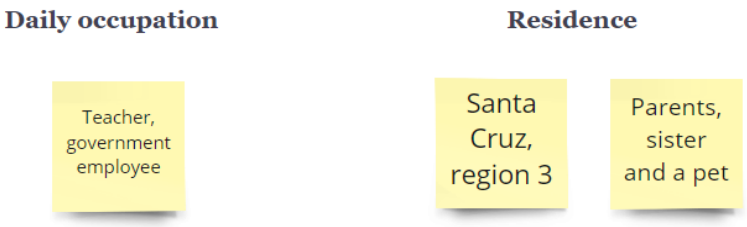
CONCLUSIONS

Very interesting meeting. He knows a lot, hard for me to see what he wants to communicate but his distribution of the houses is very interesting indeed.

Appendix 4.C
NOTES

REASON OF INTERVIEW

He is local teacher in Hagonoy.

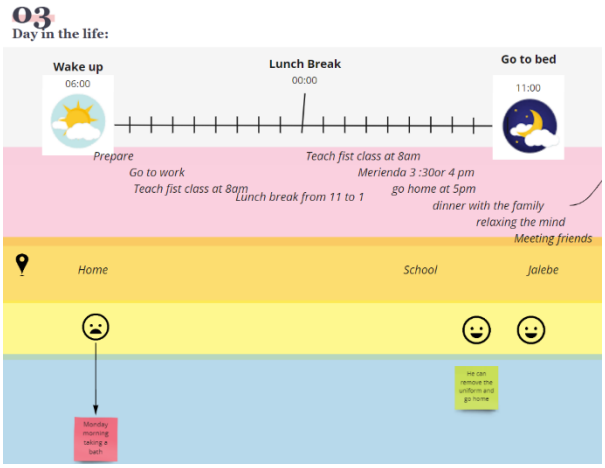


HIGHLIGHTS OF THE MEETING

- Information of Hagonoy

  The people living in Hagonoy are known as Hagonoeño. Local people are Fishermen. The Hagonoeños are very charitable and known for their hospitality. The love the nature and they even have words to refer to the plant lovers (plantito and plantita)

  Flood area huge problem in the community and affects their daily live.
- A day in his life. This person lives with his parents and sister. He is not independent he only cares to go to work and come back home to help with the chores. Lazy person who rushes everywhere (his words)



- Present and memories

Things have c**hanged** since he was a kid. The flood- situation has worsened although he arguments that local people are resilient and knows how to adjust to the new situation.

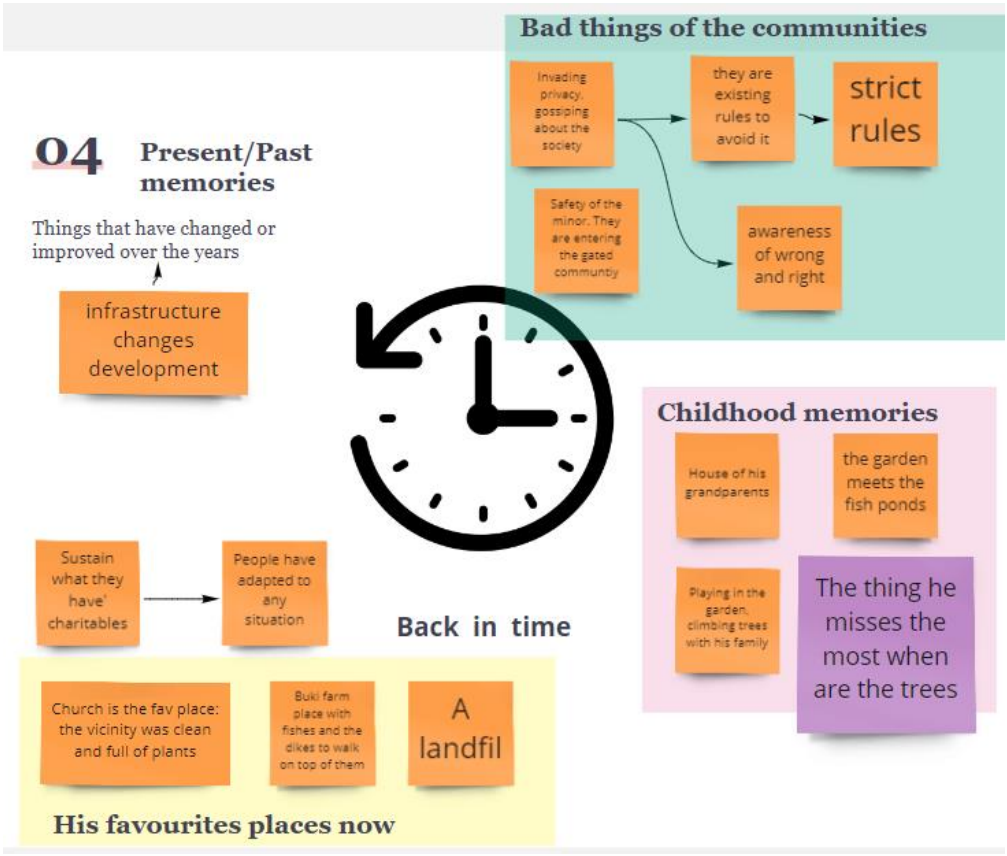
His **favourite** place of the barangay are the ones related to nature. The fish farms, where he goes to walk and the landfills. His favourite place is also the church, not only because of the religion but also because of the plants.

Complains about the safety feeling in the neighbourhood, kids will break into other peoples' houses, through trash into them··· Also, about the behaviour of the people in the street, manners.

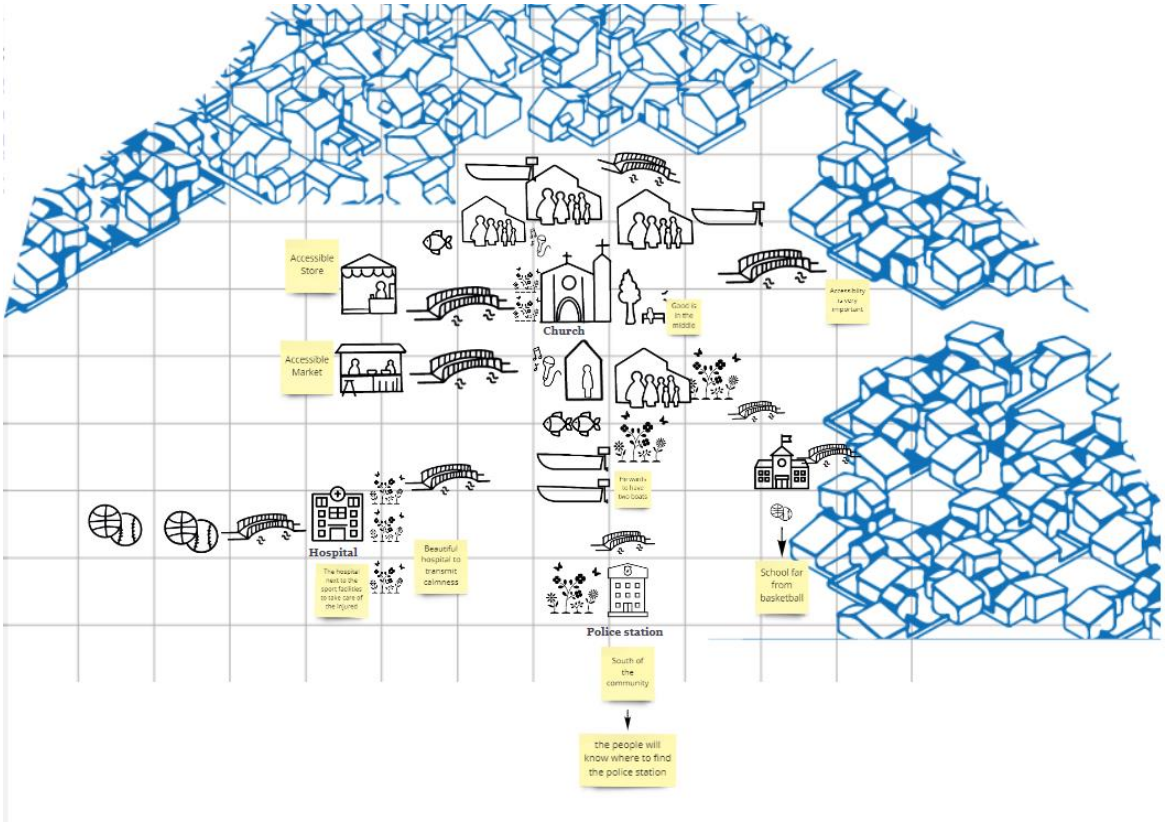
The thing he **misses** the most from his childhood are the tries that his grandparents used to have. He will climb it and play with his cousins.

"The backyard, was the place where the garden meets the water." - JP

He would like to have more trees in the current neighbourhood and also demands for more strict rules regarding the streets.



- Make his neighbourhood.



- Use of plants as dikes.
- Bridges to have access.
- Addition of new elements, such as hospital and police station.
- The sport centre far from the school as this can cause distractions.
- Every house must have karaoke, plants, and family nearby. All the houses, even currently, have a Bantilan a bamboo structure.

CONCLUSIONS

This participants prioritises, safety, religion, and beauty in his neighbourhood. The connection to nature has two purposes isolation and showing off in front of others.

Appendix 4.D

**Do to facebook messenger the interview could not be recorder neither transcribed.*

NOTES

Appendix 4.E

**Do to facebook messenger the interview could not be recorder neither transcribed.*

NOTES

**Do to facebook messenger the interview could not be recorder neither transcribed.*

REASON OF INTERVIEW

She works for the municipality and she is a businesswoman. She works in direct contact with the local people, she knows the needs and desires of them.

HIGHLIGHTS OF THE MEETING

- Her work: she is very passionate about her work. He loves working with and for the people. She has developed several education programs related to solid waste management and awareness in the locality.
    - Education (women and kids)
    - Awareness
    - Environmental impact reduction
    - Gathering point
- Her favourite part of her place is the view of the sunset and the fishponds.
    - Benefit of the location.
- Culture:
    - Food
    - Religion
    - Fiestas, happening one or twice per year per Barangay. Makes the locals very happy.

- Local people:
  50% fishermen
  25% Tricycle drivers
  Woman
  Most of them domestic workers
  Others own a little sary-sary store
  And the wives of the fishermen sell the fish in the market.

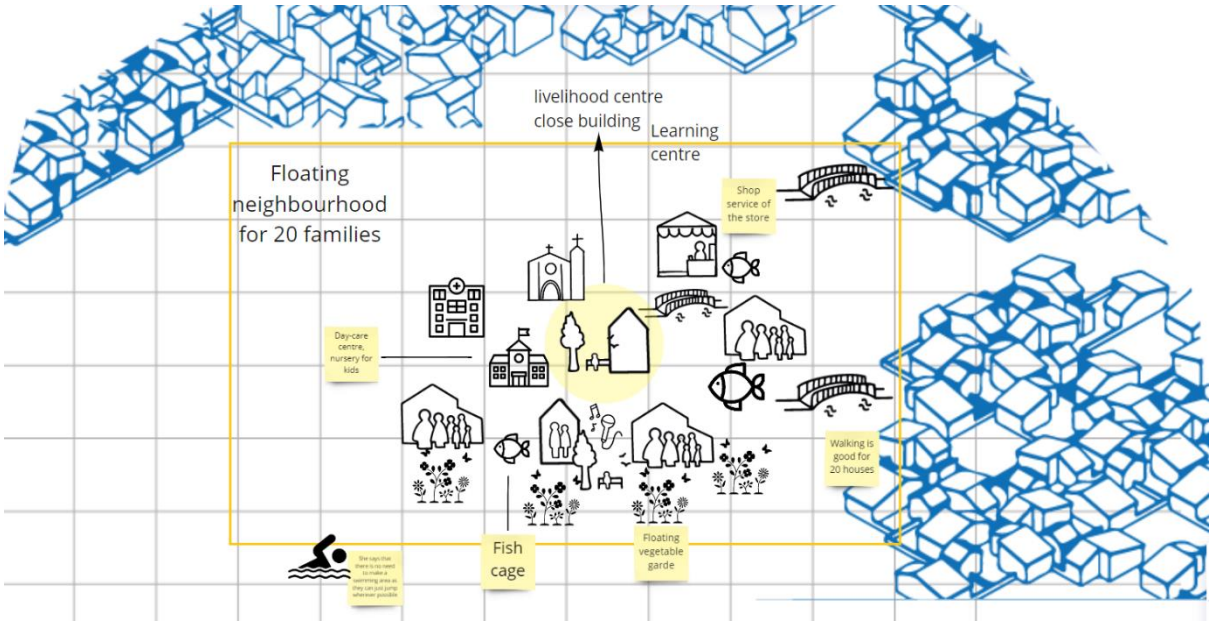
- Floods affect housing and working of the locals. Housing, because most of the houses in mercado are 1 floor only, therefore living when the city is flooded is not easy. Then secondly the water paralyses the job of most of the people. Why? No moving around the city or hardly to move around, therefore no tricycle drives and no fishermen because the fishponds are flooded.

- The Barangay, the one she lives in is formed of 8 Puroks. She oversees vising one of every Wednesday to talk to the locals. The barangay is still underdevelopment, because there is still a lot of improvement it can be done.

- From her childhood she misses climbing and swimming. Now due to the pollution she can’t do it anymore. When she was a kid she will climb trees to grab the food.

- They are trying to plant more mangroves to clean water and become the nursery of the fishes.

- **What does a neighbourhood need?**
  - Accessibility
    - Bridges to connect to the mainland.
    - Walking around
  - Livelihood/ community
    - She proposed the creation of a centre where the learning/education centre is placed. This one is surrounded by the church and the day-care centre for kids.
  - Fish and vegetable production- basic supply
    - Per dwelling
  - Family
    - Give the locals space of their own to feel more like a family.



CONCLUSIONS

All her answers are based on the daily experience. It was hard to express future desires.

She identifies the need of a floating neighbourhood in her area. She said:

"Families could feel more like a family by giving them a house. "

It' s an opportunity to make room

Appendix 4.F
NOTES

TOPIC OF THE MEETING

Interview her to get to know the culture, livelihood of the neighbourhood, traditions, urban development, incrementality within the city and the basic units.

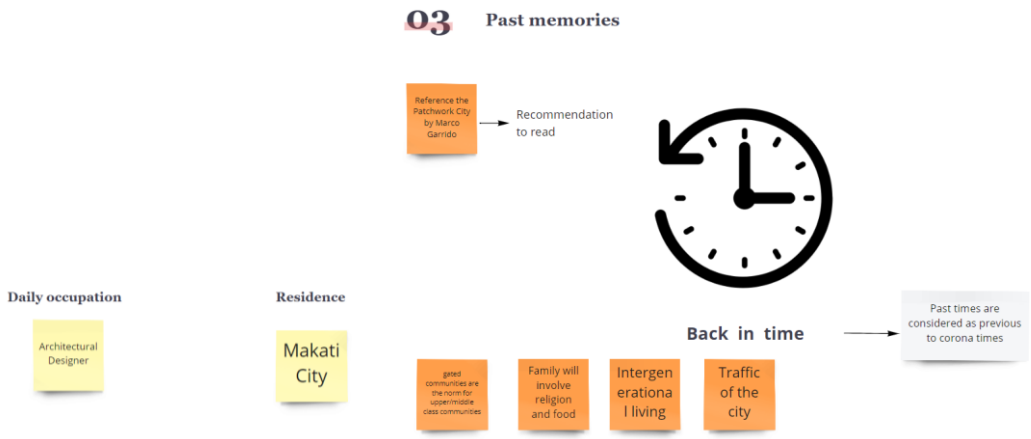
HIGHLIGHTS OF THE MEETING

At the beginning she was stressing the COVID situation in the country. It is affecting a lot of the country habits and dynamics, also in a political level.

Initial part of the game

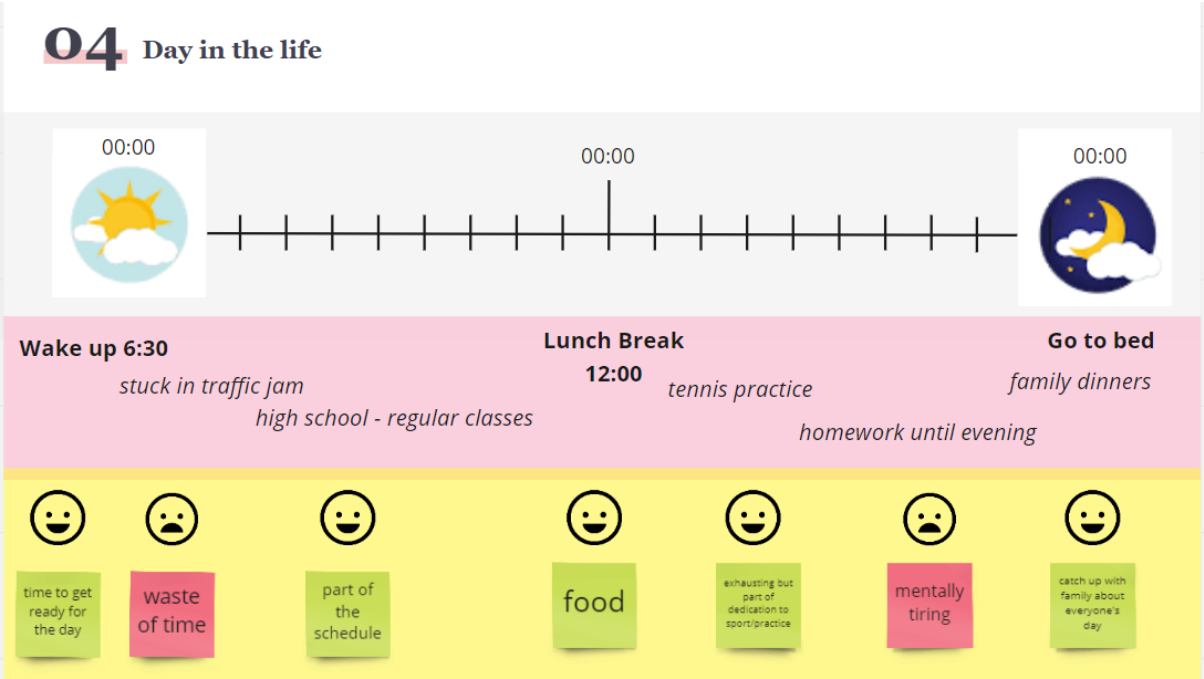
The entering of the game was not as easy as I thought. Then VPN could be an issue in the country.

Outcome of the game



The second one did not come very naturally to write on the Miro board, it is way more natural to talk them out.

- She grew up in a gated community, very common in the Philippines, in the centre of Manila. The gated community as an introduction of the American colonial times and the architectural style follows the colonial typology. The importance of the family is deeply rooted into the Filipino culture and the **intergenerational living is a coming practice in the country, growing up with your grandparents**. The intergenerational living is worsening the COVID restrictions.
- Religion tells you to take care of your family, responsibility for the elders, this could be a reason for the deep family relations.
- Catholicism is rooted in the country; they follow the calendar. Holidays the will go to the mess (misa en castellano) and then have lunch together. A lot of gathering for religious reasons or festivals.



This is the representation of her normal day when she was going to high school (17 years old).

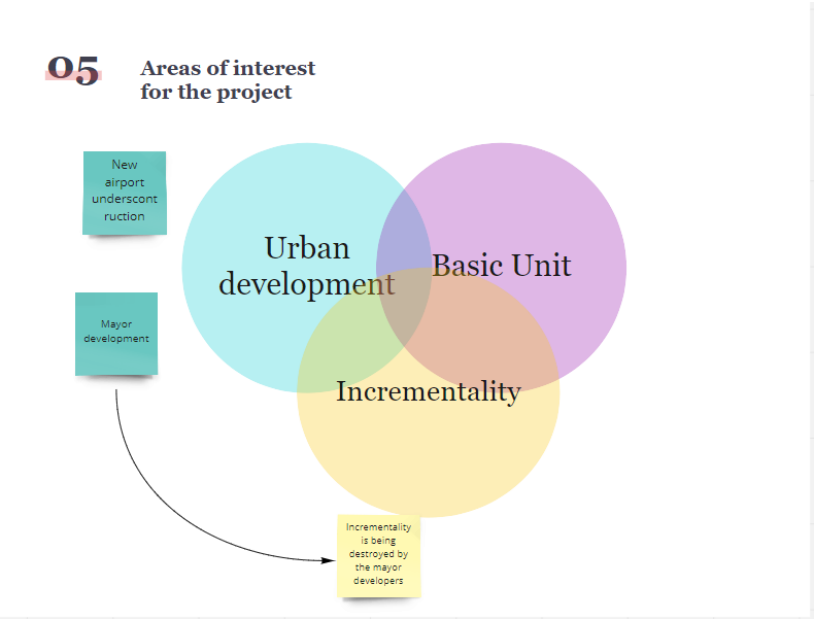
Traffic is a part of her live she deals with it, but it is a part of her day. She highlights that this is a problem for many people. The traffic is way worse now than 10 years ago. → this **highlights the issue of the urban infrastructure in the country,** they did not do a good job. Traffic is seen as a waste of time something they have to deal with it but they can't change anything about it.

Dinner is always with the family.

"It is very rare that you eat alone".

The rest of the daily routine are happy moments because they are things that you are supposed to do.

Added question from my side: The moving routine was in school, no social gathering after it. she will go to school, practice tennis inside the school and then come back to her family.



- Big developers and the airport development. This is done by private corporations (Dutch companies involve). The small communities around manila are being threated.
- The isolation and segregation of the cities and the slums is huge.
- Class relations and urban core. The slums community is perceived as a not community. Spatial segregations is being on the rise in Manila. Casual urban fragmentation, not socialising with other people. There are physical boundaries such as fences, gates to forbid the way to outsiders. Gating was a reaction to the presence of crime, slums and on cliff in the outskirts of the city in Manila.
- The government never developed proper social housing.
- The city of Manila is growing as much because all the employment opportunities are in the city centre. This affects directly to the traffic of the people due to the daily commuters.
- Private entities feel that the government is not doing enough so many big private entities are responsible for the development of basic systems, such as the water systems, electricity and so on. Therefore, the responsibility shifted form public to private, emphasises the profit base culture.
- The big projects cause displacement due to the landgrab made by the big developers. Specially for people living in informal communities is causing displacement.
- Incrementality, is a good thing according to her. However, as it is not done under proper development it can be developed easily.

- Water problems also affect the higher income class. People will be stuck in their houses. She mentions that the rapid urbanisation could be reason of engraving of floods.
- **Common spaces and gatherings**
  She mentions that in her gated community they didn't have such a space. Informal settlements the Sary Sary stores are the gathering places. The gathering places revolve around food and religion. She mentions that the barangay hall is a place to hold events. Lastly, the **Malls it has become the public space.** The new public arena. The mall is not so much about the shopping is more for the gathering and the air conditioning.

CONCLUSIONS

The most important outcome are the ones of the incrementality, the fragmentation of the cities and the gathering places.

The influence of the big private entities and the growing middle class is affecting the country from the development point of view.

Appendix 4.G
NOTES

TOPIC OF THE MEETING

Wietse is a student that has been working on the project before I started. He designed a floating school. Considering his architectural background and his experience in the project he is a the perfect candidate for the generative interview session.

On the first part I asked him to tell me a normal day of a Filipino person he was in contact with, in order to gain more insights about the daily routine of the Filipinos. And in the second part of the meeting, I asked him to create the neighbourhoods with me.

OUTCOME OF THE MEETING

- **Daily activities**

He made it very clear that Filipinos dedicate a good time of the day to socialise and being in the streets. This can be seen at the end of their day.

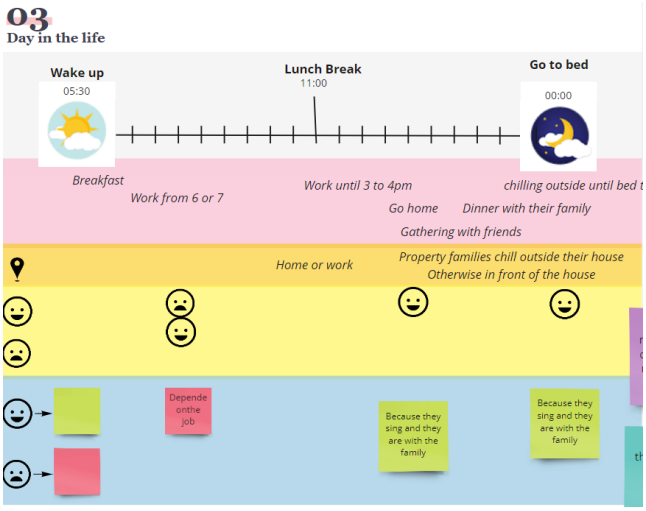
"everybody goes home or back to the place and like all of them are like kind of chilling outside, like, you're sitting together to discuss how the day was how it's going" – Wietse

"It's not every day, but what I've seen is that they all come together like after work, they have one central point and then some guy has some rice query with the rice ready and some other stuff. Somebody brings a fish that you caught or freezing" – Wietse

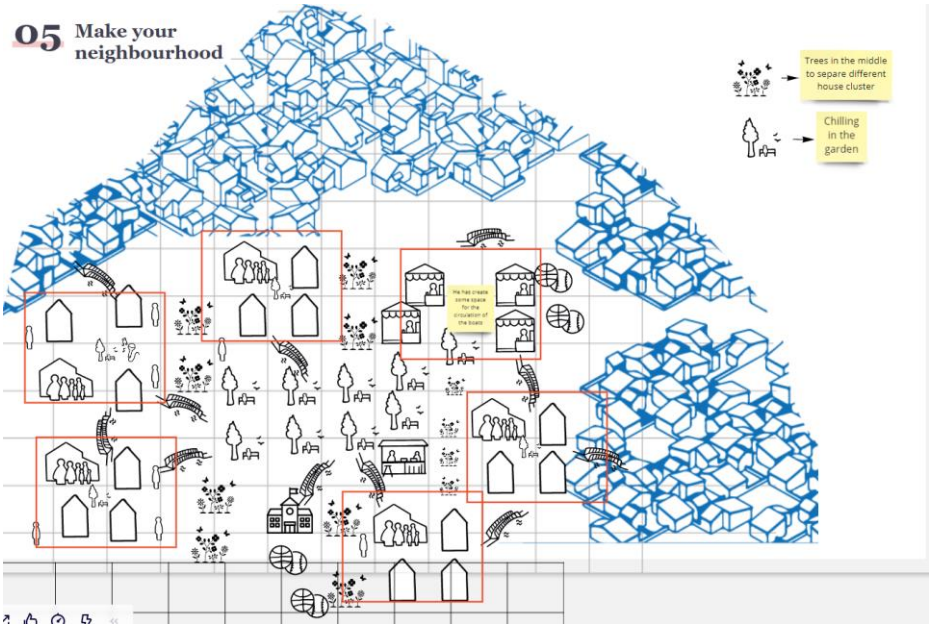
The gathering place depends on the economical income of the family and the so-called gated communities.

“I think it depends a bit on which class you're looking at. So they just had their own property on where they can sit and chill.”

“But from local people I've seen like in the in the centre of Macabebe you had some guff face or something, so they'd have chairs in front of the cafe you see a lot of you see just people sitting like embedded circles and just chilling and young people actually, they hang out a lot with each other. They were just chilling on the bicycles and just playing around. Also, in front of the church, like a big row of tries to cross posting to getting all these older guys just talking”.



- **Creation of the neighbourhood**



By the outcome of the game, we can clearly see that he has experience in the context and knowledge about urban development.

He has created a courtyard per house cluster, then bigger trees between these houses to create a green wall that isolates a bit each family. In the central areas he proposes a gathering square with natural elements. Around the square he allocates several shops. The school is close to the square but not right in the middle because of the sound. Two main sports areas are located: next to the school and next to the shops. He created a cluster for the shops.

CONCLUSIONS

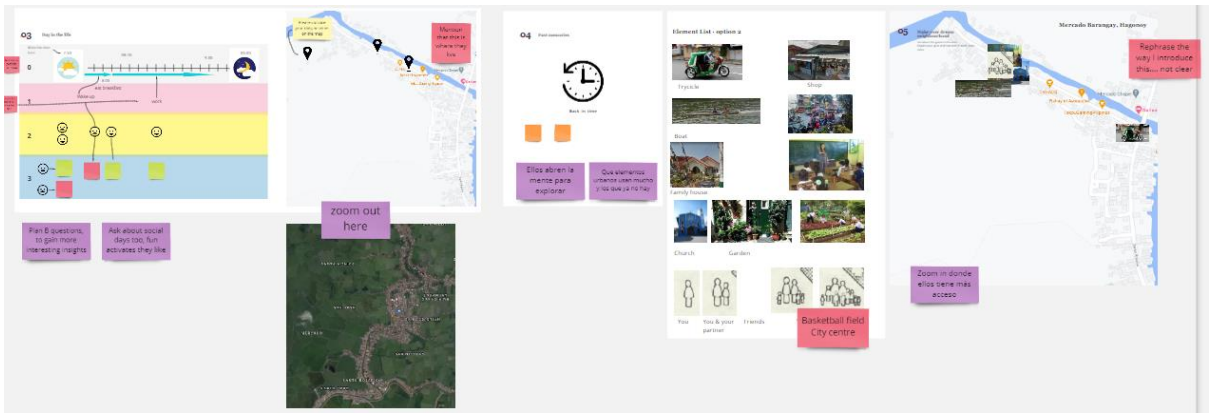
The view to the sea it is an important selling point for him, and he strongly believes for the locals too.

After the interview it is clear to my that the gathering and social interaction between Filipinos are very important, they dedicate a lot of time to be outdoors.

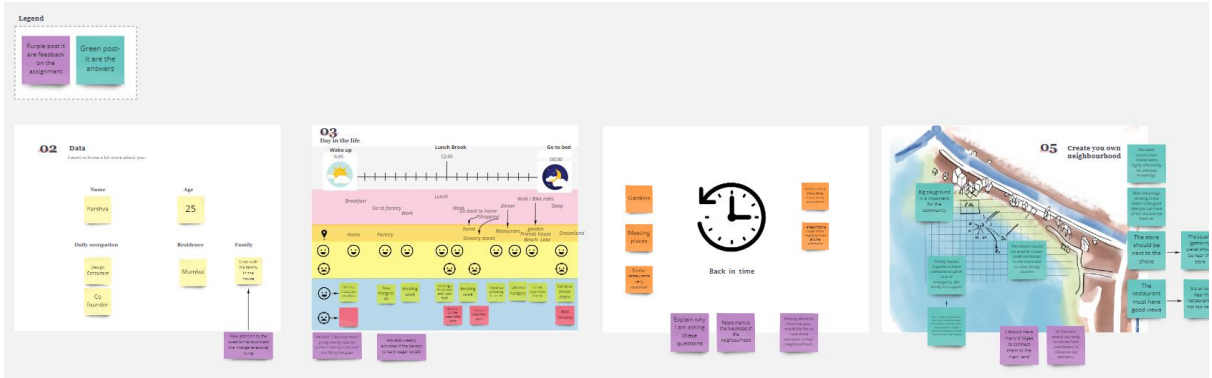
Questions that might be interesting to wonder are:

- Do they want to live with their family?
- The cluster how many houses should have? How many family blocks?

Appendix 4. H
Pilot test



Appendix 4. I
TESTING GAME OUTCOME



Appendix 4. J
NOTES

TOPIC OF THE MEETING

Discuss and converse about the Philippines. Her experience when she was a kid. The flow of the interview was natural as the main goal was to get a better understanding of the culture.

HIGHLIGHTS OF THE MEETING

- Society
    - The Philippines is big class division between higher and lower income population. This can be seen in big cities particularly (skyscrapers vs little houses). Society is very segmented.
    - Filipinos are becoming prouder of their culture and heritage.
    - Overseas workers it's a big thing in the country.
    - God is something which is close to the Filipino's heart.
    - Religion, family, and food. Not so much National or county on the top 3 priority.
    - The history focuses on the war eras. People love the 'national hero', Jose Risal.
    - Educated society, younger generations are getting office jobs
- Psychology
    - People are becoming desensitised as this happens very often.
    - American influence is positive, because they went to the Philippines with an excuse. They are the liberators. Spanish influence is connected/ linked to a negative memory.
- Traditions:
    - Same holidays as the catholic people.
    - Muslim population is growing.
    - Sunday is the church day, no matter where you are. Properly dressed.
    - Food culture, they get together and they eat.

- Family:
    - The grandparents are a big authority inside the family.
    - Your last name matters A LOT. You remember you last names.
    - Very close between the family member. Sometimes the houses are connected to reach the family member's house.
    - Dinner is always with the family.
    - Meals: you don't have an individual plate. You eat from the middle and you share.

- Women rights
    - No right to get divorced
    - Women are tasked to do domestic jobs
    - Relationship among women are very important. They support each other, especially domestic workers they ended up creating a family between each other.
- House
    - Fit the extended family (extended Filipino family). Example: Grandfather's 7 siblings and their respective families.
      * Interesting fact: sometimes they wear t-shirt which are colour coded to identify the different families.

    - People are related to each other and they tend to live next to each other.
    - Connected house
    - Younger generations feel that they won't be able to buy a house of their own.

- Street life
    - A lot of street vendors
    - Querenderia(?), people will open part of their house to sell food from a pot. Not an official restaurant but people will go there to have lunch.
    - Food street vendors with sticks on their bags

- American influence
    - Basketball is the favourite sport of the country. Huge social event. It generates rivalries between different parts of the city.
    - KFC (fried chicken) is a must
    - English is something that gives you status.
    - Overseas workers will send packages with American eatables to their families as a present. Baling baya (the American boxes), the mentality of if they send me this it has value it's worthy.
    - Foreign chocolates are fancy.

- Water
    - In the city people are afraid of the water mainly for two reasons: They do not know how to swim, and natural disasters come from the sea.

    - Essential part of live but not related to fun.
    - The floods affect even the big cities. The river floods and blocks the roads. The garbage adds up to the flooded water. The nature helps to stop the natural disasters.
- Economy
    - The American helped to the integration of the Filipino economy into the global economy
    - Trading with big countries since ages (prior to Spanish colonialisation)
    - Business processing outsourcing
- Politics
    - People are in fear
    - Depending in your class, politics affect a lot or not.

CONCLUSIONS

People who belong to the upper class of the society see things with perspective. She is very aware and able to compare the influence of the Americans' in the Filipino society. Same happens with the awareness of the family relationships. The culture is extremely oriented towards the family interactions and they all want to life close to each other. This has a **direct impact on the city and neighbourhood's distribution.**

In the cities, the street life is important for the lower class. Rich kids do not go much outside or they stay inside the family compound or gated communities (Lorenzo, 2016).

APPENDIX 5: Timeline

Why did I decide to create a timeline?

The goal of doing historical and architectural research was to understand how the different historic periods have affected the creation of the settlements that we can see nowadays in the country (rural and urban areas). Moreover, the development history can share insights about the successful or unsuccessful attempts over time.

The study of the past and the trends of the current society can help to predict the future needs of the country in terms of development, trends, problems, etc.

How did I create the timeline?

The timeline is the result of literature research. The timeline has four main horizontal axes: the first one represents the chronological time until today, the second one is the historical facts, the third the settlements or neighbourhood shape or organisation and lastly the architectural history in the country. Vertically we can find the historical eras of the country from ancient history to the current republic era. The division between the eras is important events that started the transition between eras.

Lastly, based on the history and the trends of the society a future prevision is added to the timeline. The last column is not only applied to the Philippines but the globe. Why? We can see patterns between highly populated cities.

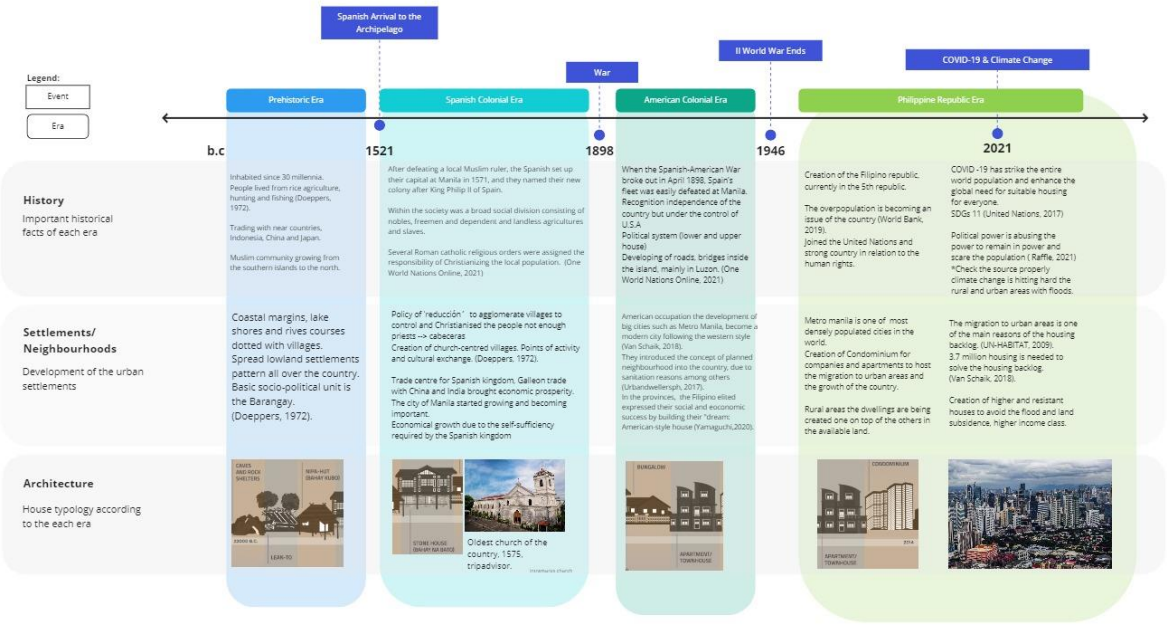
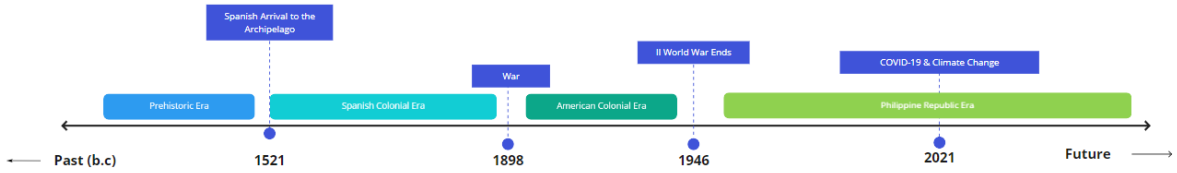


Figure 13- Timeline

The Timeline

*explain the timeline in two paragraphs



Spanish people brought their catholic religion to the country back in 1521 and up until now is still the dominant religion in the country. This influences their holiday, their daily activities (ex: take a nap) and the names of the places (Barangay Santa Rosario) among many other examples. Spanish colonialist tried to gather villages and create bigger settlements around the church (Doeppers, 1972), they can be considered the starters of the bigger cities.

Major examples of urban transportation, water systems, public edifices and education facilities from the American period are still in service today. However, Americans did not think of the Philippines as their permanent home. Instead of socialising with Filipinos and settling down in the Philippines, Americans created new semi-public yet exclusive private facilities. These facilities can be seen also in the villages or rural areas where the higher income houses seek privacy by fencing the house (Yamaguchi, 2006).

Along with the creation of the Philippines republic era, the identity of the country was being restored as well as the economic growth.

Key takeaways of the timeline

Which are the outcomes of the timeline?

When creating the timeline, the relation and the influence between the axes became apparent. Each colonial era is reflected in the society, the architectural buildings and the streets (Yamaguchi, 2006). Some changes have been adopted by the culture and they are still standing(Doeppers, 1972) in the cities and villages, this innovation can be defined as successful as the culture is still using them (Lorenzo, 2016). One of this successful importation into the country is the American influence. This influence can be seen in the architecture, urban planning, the language and their admiration of the society for anything that comes from the USA (Kendall, 1976; Lorenzo, 2016; van Schaik, 2016; Yamaguchi, 2006).

"Filipinos have enriched the fabric of their culture with fibres that are both of local and foreign origin. The natives have mastered the ability to adopt and adapt, use fibres of foreign origin so that, through the years, such fibres no longer remain foreign but have become part of the local fibres that are interwoven with new fibres introduced from foreign lands " (Fernandez, 1995).

However, there have been changes that were not welcomed by the local inhabitants or were partly accepted (Doeppers, 1972). For instance, the attempt of the Spanish people to gather all the villages around and create one. The Filipinos wanted to stay where they were.

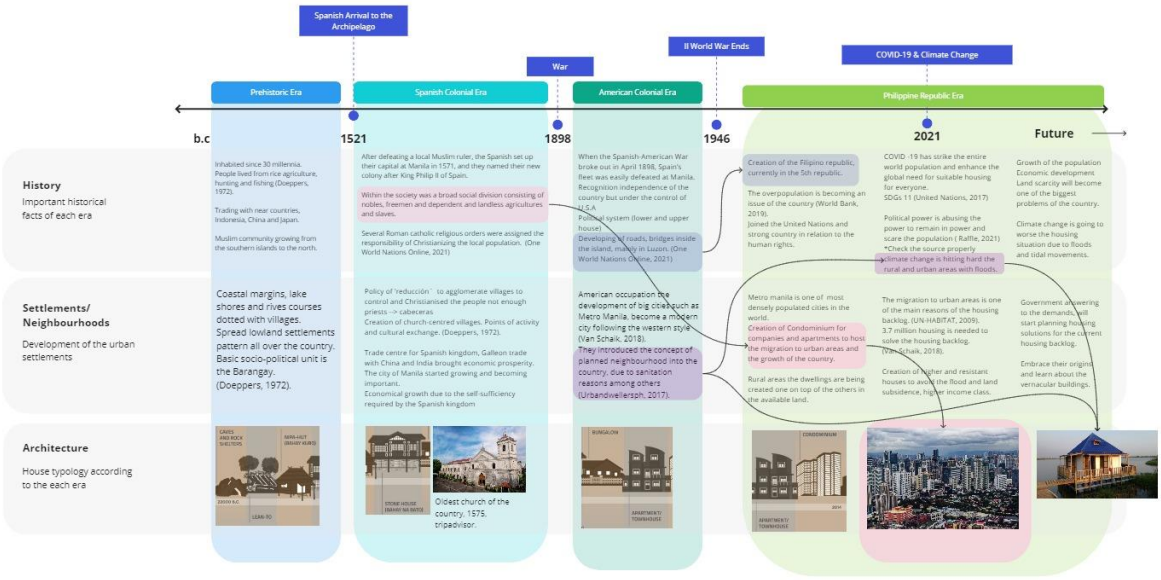


Figure 14- Analysis of the timeline creation

The development of the private sector, the heritage of the American era (Lorenzo, 2016; Raffle, 2021; Yamaguchi, 2006), combined with the historical tendency to socially divide ((Doeppers, 1972) lead to the fragmentation of society and the polarisation of the classes between high class and low class. The segmentation is most apparent in big metropolia such as Metro Manila or small villages where billionaires share the street with slums (Appendix 4).

The geolocation of the villages and the country itself has been present since early history with the development of the barangays. The concept of Barangay has persisted over the different colonial eras until it has arrived to become a governmental unit of power, sometimes lead by the families (Kendall, 1976). The distribution of the settlements over the coastal area and the creation of villages along the rivers (Doeppers, 1972) has provided the current settlements with an elongated shape. The roads and streets have followed the shape of the rivers and the coasts, which resulted in a simple arterial grid.

Lastly, although not shown in the timeline the fast-growing population in the country (World Bank, 2019) is having a huge impact on the development of the shape urban areas. In addition to the overpopulation of the country (Ministerio de Asuntos Exteriores, 2020), climate change is forcing the cities to move to the water as can be seen in growing trends in big cities such as Rotterdam or New York (Blue21, 2018; Nandan Mukherjee, 2019; Little Island, 2021).

Conclusions

1. Spanish people tried to modify the shape of the settlement to their convenience and the answer they got from the society we can conclude that the transition from one place to another one must be seen as a necessity by the society not imposed by the municipality or government.
2. The division of the society is something deeply rooted in the society therefore the design proposal should please all the different classes. Make sure I stated that reducing the difference between them is out of my project scope.
3. After being colonised for so long the society is going back to their origins and rescue the Filipino culture to be reflected in their daily life (look for a reference). The project must belong to the local culture, the culture of the designer should not be reflected.
4. The land distribution has a direct effect on the shape of the cities, therefore the context where the project is placed should adjust to the current land available.
5. As seen throughout history the development of socio-economic development are tightly related to the opportunities the urban area offers. Therefore, by incrementing the job opportunities there is a high chance that this will have a positive effect on society.

APPENDIX 6: World floating settlements

Methodology

Why did I study the world neighbourhoods?

[reasoning]

The study starts zooming out by researching other floating neighbourhoods around the world. Historically floating neighbourhoods have always been there, evolving, growing until the point of developing their urban systems. The research aims to gain insights into why and how these settlements were created. What Is More, study they incrementation (grow and change) they have suffered incremented over time.

After having an overall picture of the world neighbourhoods together with the local context are going to be analysed following the principles of a good neighbourhood design theory (Gharai, 1999) and habitat bill of rights (National Committee for Human Settlements, 1976).

How did I create the timeline?

[methodology]

The steps to create this study around the world were:

- Think of the questions I want to answer by studying these neighbourhoods around the world:
    - What am I looking for? Why is this a known neighbourhood? What insights can I gain from this neighbourhood?
    - Why are they living on the water? Which was the reason to move to the water?
    - Which is the existing house typology? The infrastructure of the homes?
    - The livelihood of the neighbourhood (Neighbourhood dynamics)
    - Are the inhabitants struggling with any difficulty? (Are they facing any problem?)

- Select the neighbourhoods I wanted to study. For this I needed to create a list of the existing ones:
    - This selection is based follows the following requirements:
        - More than 100 floating homes
        - Existing of the settlement/neighbourhood for more than 20 years and still has an active community.
        - The variety between countries/continent

- Research the neighbourhoods and answer the questions. While creating a collection of photos that gives a general idea of how the neighbourhood looks like.

- Creation of a table to analyse all the gathered information. The structure of the table is partly based on the theory of the MOOC course of Global Housing Design (DelftX, 2021) and developed criteria when researching.
  The vertical categories (Table 1)are based on the guidelines to achieve sustainable urban environments and inclusive dwelling communities. The key aspects are time, environment, and community. During the world floating neighbourhoods' analysis, these aspects are explored through a specific design approach and displayed in a comparison table.

Table 1- Aspects

Category/ Aspects	
Country	Name of the country
Year	Date, or estimated date, of the creation of the settlement
Reason	Why were these settlements created? Why did they start living there?
Typology	Which are the visible patterns in the neighbourhood/dwelling environment?
Clustering	What methods and strategies can shape the association of dwelling units to create meaningful communities
Circulation	Which are the means of transportation and mobility in and to the neighbourhood.
Incrementality	Have the dwellings environments accommodate growth and change through time?

- Draw preliminary conclusions based on the analysed content. The conclusions are the most interesting points of each neighbourhood. The learnings of this research.

Selection of neighbourhoods

Figure 15- Selected settlements

After searching online (MI News Network, 2019; Romeyn, 2018) for the existing floating villages or settlements, combining with the proposed criteria and considering the variety between them, these are the selected six neighbourhoods (Figure 15).

Study of existing floating settlements

1. Cambodia, Tonle Sap

Tonle Sap is one of the freshwater lakes in Cambodia, the biggest one in Asia, hosts hundreds of floating villages inside the 31000 square kilometres area. Almost 170 floating villages are sitting on towering stilts in the lake(Figure 16). The lake was included in the United Nations' Biosphere list in the year 1997 (MI News Network, 2019).

Figure 16- Dwellings in Tonle Sap

The villages located on the northern shore of Tonle Sap Lake are floating villages of various sizes (up to several hundred houses) adapted to the different water levels. Some houses are connected, forming blocks of houses crossed by wide passages that allow the circulation of boats. Only a few breezeblock houses have a stable anchorage point which is generally used for carrying electric and telephone cables (Lau-Bignon, 2015).

The village was originated between the 11th and 13th century due to the intense rice production and fish farming happening in the lake which brought wealth to the empire. Nowadays, the villages host

many Vietnamese refugees from the war and provide them with a dwelling. On their return in the 1980s, after the Khmer Rouge took power (Lau-Bignon, 2015), the Vietnamese were considered migrants and became stateless (Floramo & Villadiego, 2014).

2. Babahoyo, Ecuador

Figure 17- Dwellings of Las Balsas

During the Spanish colonialism in Ecuador, native people run away to the river and initiated floating settlements. Babahoyo was known for the strategic riverside position in the middle of the trading route (García, 2020). Over history, the intention of the houses has varied from storage place to brothel and currently dwelling. These dwellings are still active and provide affordable house for families.

Nowadays, the houses are made by the owners with the available materials and without prior knowledge to build a house, resulting in unsuitable houses. However, the are some active projects to provide proper housing for the inhabitants (Bamba, 2020) and show Ecuadorian pride through them (Figure 17).

3. Ganvie Lake Village, Benin

Ganvie is a village of 20.000 people and 3.000 buildings that stands on stilts in the middle of Lake Nokoue, Africa. Ganvie is Africa's largest lake village (Ganvie Lake Village, 2011). The villages are located several kilometres away from the nearest shoreline and it is about a 4-hours journey from the capital.

At the beginning of the 17th century, the founders of the village fled there to escape from the Fon warriors. The religion of the Fon forbade them to advance to the water, therefore the lake became the shelter. Since then, Ganvie has developed an intricate and rich culture within the constraints of life on the lake. Nowadays, fishing and tourism are the main industries in Ganvie (WoodCulture, 2012).

The inhabitants of Ganvie travel almost exclusively by boat. Regarding food supplies, they rely on domesticated land animals living in plots of grass and on a complex network of underwater fencing to corral and farm various fish populations.

The village has created their society with different services such as schools, hairdressers, mechanics, and shops to supply the villagers without the need to travel to the mainland.

Figure 18- Dwellings and inhabitants of Ganvie (Excelman Productions, 2021)

4. Ho Long Bay, Vietnam

At the start of the 19th century, two fishing villages were formed. By the early 20th century, Vietnam had many 'floating villages' which included fishers or boatmen. These communities are comprised of 400 households, approximately 1,700 people, who live on boats and floating wooden houses in the core zone of Hạ Long bay. Their main livelihood is fishing and aquaculture (Halong Hub, 2020).

The dwellings are either floating structures built on empty oil drums or pontoon- like materials, or they are built on stilts made of bamboo or cajeput (wood of paperbark trees).

Since 1955 the number of 'floating villages' in Vietnam has decreased. This is mainly because of the reorganisation of rural management, irrigation development, the destruction of riverine resources, and water pollution (Malakova et al., 2017). In June 2014, the villages were resettled on land by the government to preserve the environment from the harm caused by the floating villages.

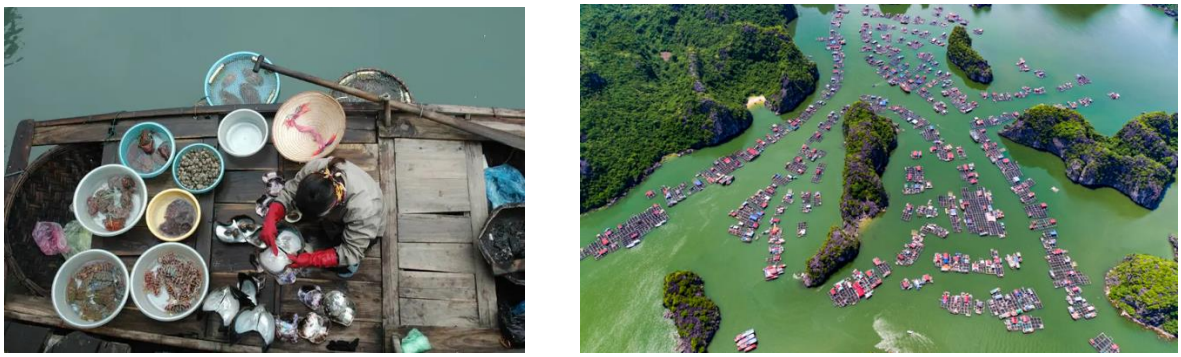


Figure 19- Dwelling distribution and fishing business of a local

5. San Francisco, USA

About 400 floating homes sit in the affluent suburb of San Francisco. The neighbourhood, Sausalito, reflects a proud bohemian history that began well over a century ago. Artists, writers, musicians, beatniks, and hippies gathered here in search of an alternative and economic lifestyle, as a result, an

art scene flourished in the 1940s and 50s (McDonnell, 2019). It became so famous that now the settlement is well known and a touristic stop of the city.

The vibrant neighbourhood, connected to the land with a deck, is composed of heterogeneous dwellings that reflects the personality of the inhabitants (light2tube, 2014). **Over 400 houseboats** in Sausalito's Richardson Bay Marina are home to long-term residents who make up a tight-knit waterside community. The floating home inventory in Sausalito tends to be low and priced starting in the low $300.

The neighbourhood is accessible by land and water (Born, 2019), keeping the inhabitants well connect to the city.

Figure 20- Dwellings of Sausalito

6. Netherlands

As an alternative solution, to the ones using currently by the country, to cope with the rising sea levels the Netherlands has decided to join the floating community movement and build Schoonshcip in the Johan van Hasselt canal in North. By 2020 the neighbourhood is expected to house over 100 residents with 46 households on 30 arks (Schoonship, 2016), all experimenting with sustainable solutions to the unique challenges of on-water living (Opray, 2020).

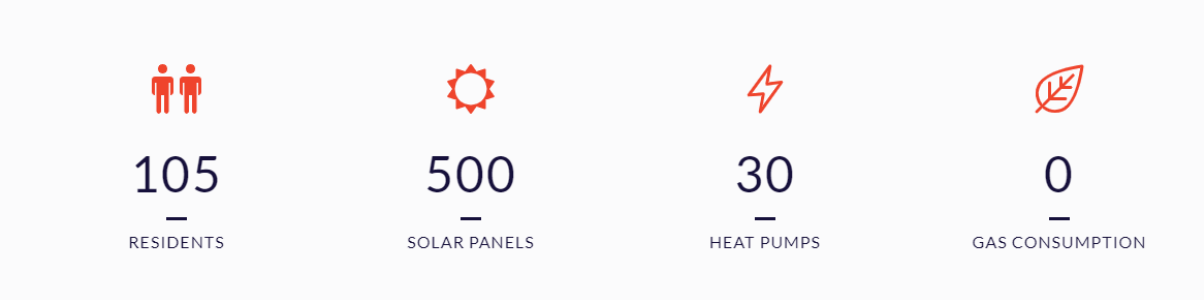


Figure 21- Data of Schoonship

The neighbourhood has a share mobility network on land, all based on renewable energies. The mobility within the neighbourhood is on foot.

With the gather learnings, the community wants to keep on improving. These are some of the ambitions:

The joint purchasing of food, in order to achieve less waste and mobility and to offer organic farmers in the area a sales channel. For this we make contact with care farms in the area.

We have floating gardens, among other things as a breeding ground for birds. We want to experiment further with water-purifying plants there

We want to make our shared mobility accessible to local residents. To this end, we work together with the municipality and the neighborhood, and we even want to help realize several neighborhood hubs.

Our common area is finished. We want to use them for neighborhood activities, meetings, yoga, movie nights, children's parties, and clothing swaps. We have many more great plans, such as a floating market or sustainable film festival.

Helping roll out our Smart Grid. To this end, we work together with our energy partners and various authorities, so that other construction projects can learn from - or even connect to - our smart grid.

Excursions for those interested in sustainable living on the water, in real life and virtually. For more information, see our guided tours page .

Figure 22- Ambitions of the neighbourhood

Figure 23- Two floating communities in the Netherlands

Comparison of the settlements

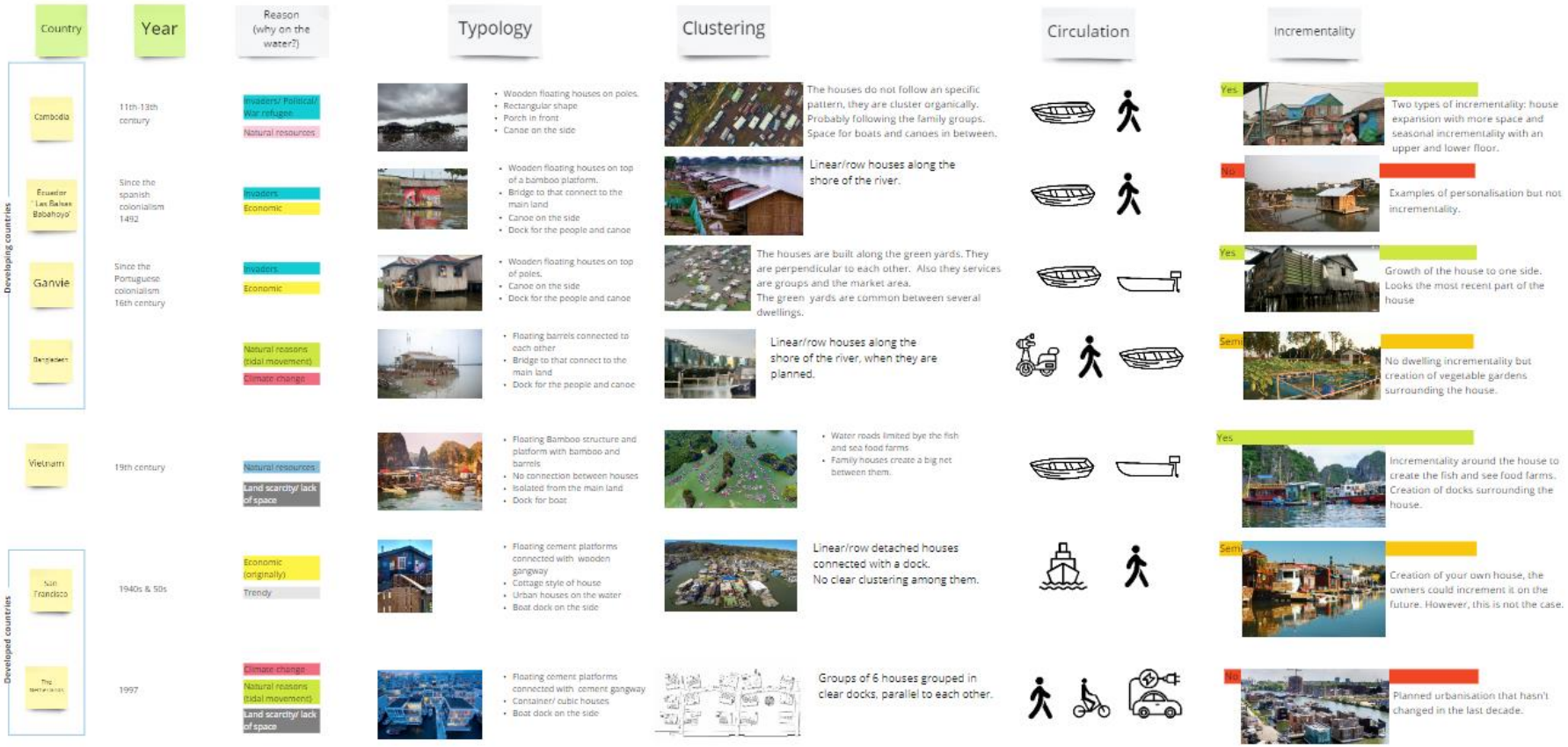


Figure 24- Table of comparison

Table 2- Insights and learnings

Country	Interesting information
Cambodia & Ganvie	• The pollution of the water is very high. There are developing project to improve this situation. • The government is trying to raise awareness, about education and pollution. • They have animals growing on the water (duck and chickens)
Ecuador	• Ongoing projects to improve the housing itself and also projects promote the cultural identity of the dwellings.
Vietnam	• They moved there before any war started. Rich region of resources • Creation of school, police stations, shops and so on. • The government does not allow to live there due to low education and environmental pollution.
San Francisco	• Trendy neighbourhood in the area. • Due to the water location, the weather is better than on the mainland. • Each house became an artistic expression.
The Netherlands	• Importance of the accessibility. There is existing parking for cars and bike outside the neighbourhood. Even more, there is a rental system for the locals, all the electrical vehicles. • Became very popular and now they are planning even more.

To types of floating settlements have been identified; attached to the land or in the middle of the water with no connection to the land (island style). The type of floating settlements has a direct relationship with the livelihood of it, in other words, the easy or difficult access it has forced the inhabitants to develop a community-style. Besides, this distinction can be related to the reason why they decided to live on the water. Two main groups are here, the ones that were scaping or the ones seeking alternative living, due to external conditions such as environment or economic.

On one side, the riverside settlements had a limited incrementality within the community, this occurred mainly in the developed world communities. On the contrary, the 'island neighbourhoods' have grown and expanded over the years. These can be seen in the way of clustering inside the communities. The island neighbourhood, which is also related to the more family-oriented cultures, grows organically around few family houses and those are nearby other family clusters. However, the planned communities follow the inland urban structure and tried to adapt it to the water conditions. No services can be found on the riverside settlements while in the 'island' ones basic services exist (hairdresser, school, police station, boat mechanics…).

The housing typology does not vary much regarding the construction and used materials in developing countries. These are locally available materials that can resist the conditions. The same thing happens in modern neighbourhoods, they use materials that are common in the construction

sites such as concrete platforms. The housing typology and the colours generate an identity of the settlements. In most of the communities, no house is exact to the next one as they are built by the owners who want to represent, directly or indirectly, their personality through the house.

Only the neighbourhoods of the developed world the ones created after the 20th century have pedestrians paths to move around the dwellings and have planned connections to the mainland. The ancient ones are independent dwellings that require boats to move around, which causes the dependency of inhabitants towards the boat.

Lastly, environmental awareness is a recent topic and directly impacts the rising floating communities as these can damage sea life and pollute the water. The latest, Schoonship, is the most respectful one with the habitat due to the local initiative and government regulations.

Key takeaways

Which are the outcomes of the research?

- Accessibility is key, isolation does not benefit the community
- Respect for the environment
- Mobility through the neighbourhood is good for the locals. Mobility through land and water.
- No neighbourhood has a local gathering place
- Self-sufficiency regarding supplies and services. Autonomy of the community.
- Continuous iteration and improvement based on the learnings which require good management.

APPENDIX 7: Theoretical Principles

Table 3- Generic Principles of neighbourhood design

Generic Principles of Neighbourhood Design	
Perceptual Aspects Visual inputs related to the fixed features of the environment compromises the layout.	
1. Differentiation and image of the centre	• Physical characteristics (spaciousness, landmarks, Unity of elements). • Functions (facilities close to each other) • Movement (provide the opportunity for the pedestrian movements) • Social Conditions
2. Identity	• Physical identity (cultural and local representation) • Perceptual identity (preserve meaningful nodes)
3. Variety and Complexity	• Street furniture and vegetation • Fixed structures, vendors…
4. Human scale	• Pedestrian routes and paths • Open public spaces
Functional Aspects Essential functions of a neighbourhood centre	
5. Service and Facilities	• Balance of functions (services, religious and civic buildings…) • Shopping, entertainment, and civic facilities
6. Public life	• General physical characteristics of public spaces (meeting spaces, no isolated spaces, climatic conditions). • General social aspects of public spaces (number of people, encourage friendly rules) • Sports facilities
7. Accessibility	• Pedestrian routes to encourage walking. • Public transport • Accessibility private transport
Operational Aspects The first section has a salient role in meeting the psychological needs of the residents.	

8. Contact with nature and sustainability	• Relationship with nature • Local park • Sustainability in terms of physical, ecological, and social issues.
9. Sustainability and management	• Preserve community sense of the neighbourhood by restricting any disruptive factor. • Good maintenance of greenery features.

Table 4- Principles of Habitat Bill of Rights

Habitat bill of rights
Dwelling
1. The interior and exterior layout of new dwellings should incorporate a contemporary reflection of the cultural values and living patterns of the prospective residents. 2. The size of the dwelling unit should be determined by the total basic requirements for everyone in a family. 3. The territory of the dwelling unit should be distinct from the public. 4. The entrance to the dwelling should have a sense of gateway.
Clustering
1. Dwellings should be planned in clusters related in size to the optimum grouping of residents who can recognise and know their neighbours and whose children play together. The planning of low-income housing areas should provide for the grouping of dwellings into recognisable clusters. 2. The means of access, whether it is a street, a court, pedestrian path is of primary importance in establishing the character, identity, 3. The cluster should not be thought of in isolation, but as an interconnecting element of a larger community. 4. Each cluster should be comprehensible as a group of families within the community whether it is in a low- or high-density neighbourhood. 5. The cluster should be organised to encourage face to face contact and cooperation between the residents and foster a sense of identity and belonging for those who live within the cluster.

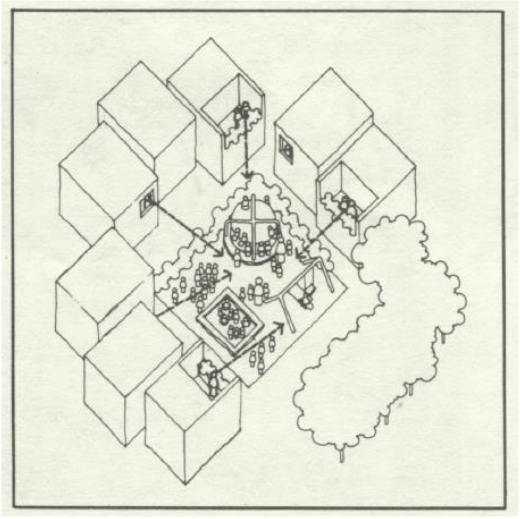


Figure 25- Drawing of the Habitat Bill of rights

Analysis

Here we compare the principles proposed by the experts with the real context we can find in the selected neighbourhoods. The analysis contains two parts the one at a more general neighbourhood level and the other one more focused on the dwelling.

Table 5-Principles of Generic principles of neighbourhood design

	Principles		Neighbourhoods	
			Local scale	**World scale**
Perceptual	**1**	Differentiation and image of the centre	One centre for the city and main square. Barely any opportunity for exclusive pedestrian circulation. The streets are shared between car, cycles, and pedestrians. The street network emphasises the coastal shape, but no the centrality. The focal points of public life happen in bars, shops, and church.	No centre in the floating settlements. Maximum there is an area with services clusters, however, no city structure as such. Only in the modern floating settlement or the 'shore' neighbourhoods allow the movement of the pedestrian. There is no main node in the neighbourhoods, where public life concentrated.

	2	Identity	The physical and perceptual identity is a mesh of the previous historical eras(Doeppers, 1972). The local culture has learned how to adopt and adapt the influence to create one of their own (Lorenzo, 2016)	All the floating settlements have developed their own identity. They make use of the geographical conditions and they design considering the climatic and natural conditions. The perceptual identity cannot be analysed in this context.
	3	Variety and Complexity	The fixed elements can be found in the city centre of the town but not in the rest of the city. Utilise semi-fixed features such as street vendors, kiosk. The buildings have a huge variety between them, regarding levels, colours, shape, and condition.	No fixed elements. The composition of the settlements is mainly dwellings and services integrated into the dwellings. The building styles are like the variety of shape in the ancient neighbourhoods. On the contrary, modern neighbourhoods such as San Francisco, have an extreme variety. The semi-fixed features as street vendors are floating vendors and restaurants.
	4	Human scale	Pedestrian route share space with vehicles.	“shore-side” neighbourhoods have space for pedestrian movement.
Functional	**5**	Service and Facilities	Yes. Service and facilities all over the town. The proximity of those is vital for daily life. Karaoke and basketball is the main entertainment with facilities locally.	The ‘island neighbourhood’ has local services (shop and bar) the other ones no. The island one does not produce everything they need that is why they still must go to the shore to get supplies. In modern neighbourhoods, services and facilities are missing.
	6	Public life	The meeting places are in the street, in front of the church or market. If they live next to the main square they also chill and relax in the nearby shop.	In ancient neighbourhoods (island style) the public life happens in the local bars, market, or houses of the inhabitants. The climatic conditions limit socialising.

			The chilling place is usually in front of the house. The public spaces are full of noise produce by the passing traffic. Public life happens mainly during the evening after the sun goes down. Sports facilities are the gathering point.	In the modern ones, public life is limited to the indoor environment or the communal garden. No playground for kids in any of the existing neighbourhoods.
	7	Accessibility	Everything accessible either on foot or with a vehicle. The pedestrian routes do not encourage walking within the neighbourhood. The public transport is the old jeeps of the American army transformed into buses.	Depending on the formation the accessibility varies. Island formation is hardly accessible while the shore formation is easily accessible (good connection from the land). In the modern ones, they are pedestrian routes that encourage walking. No public transportation, not accessible by car.
Operational	**8**	Contact with nature and sustainability	The love contacts with nature. They are their favourite parts of the city (a reference to the interview with JP). The main elements of the city have natural elements around them.	Ancient neighbourhoods have a stronger relationship with nature, however, modern one takes more care of the environmental pollution and the zero-waste mentality.
	9	Sustainability and management	Bad management of waste and trash, generating pollution, thus affecting health.	Good management and becoming a reference in renewable energies and waste management. The focus of the community to avoid environmental pollution.

Table 6- Analysis with the habitat bill of rights

	Principles		Neighbourhoods	
			Local scale	**World-scale**
Dwelling	1	Reflection of the cultural values and living patterns	The houses do represent the living patterns, but the facades are not a cultural representation in the lower-class case.	Identity earned through time or in the modern ones given by the architect. Anyways, both reflect the culture and living patterns of the context.
	2	Size of the dwelling	No adequate to proportionate the basic requirements.	Due to the incrementation, most of the studied settlements had dwellings adjusted to the needs of the family.
	3	The territory of the dwelling different from the public	Gated communities have a clear distinction between public and private space. Society tends to create fences to feel protected.	Due to the family-oriented clustering of the houses, there is a natural distinction of it.
	4	Clear entrance	Yes, either a gate or a door from the street.	The porch determines the entrance. The deck determines the entrance.
Clustering	1	Planned in clusters related in size	Gated communities yes. Houses in the street no, no clear clustering.	Most of the world neighbourhoods have recognisable clusters which have been developed over time and relations.
	2	Means of access	Easy access from the street.	Need to have private transport to arrive there. No proper means of access.
	3	Not be thought of in isolation	Gated communities are isolated from others. The street houses are part of the street, therefore no isolation.	Island neighbourhoods are very isolated. The shore neighbourhoods are not isolated, easy to access.
	4	Comprehensible as a group of families within the community	Yes.	Yes, in the ancient ones. The modern ones no.
	5	Encourage face to face interaction	Depends on the social class. Gated communities it does the street houses no it does not.	No. Social interaction is not promoted by cluster formation.

Conclusions of the analysis

This section summarises the findings and the faced limitations. One limitation of the implementation is that it is the studies are based on information that can be found online, literature research regarding the world neighbourhood, meaning that this should be verified by doing ethnographic research and user interviews. Contrary to the settlements, the local context research is validated with theory and user interviews.

The results of the analysis confirm that the location (shore/river-side vs in the middle of the lake) and the physical attribute of the settlements has a major effect on the livelihood and development of the community. Which at the same time are affected by historical events, cultural values and living patterns. For instance, the ancient ones, the ones located in the so-called developing worlds, had adapted and adopt the water in their lives and created a society from there.

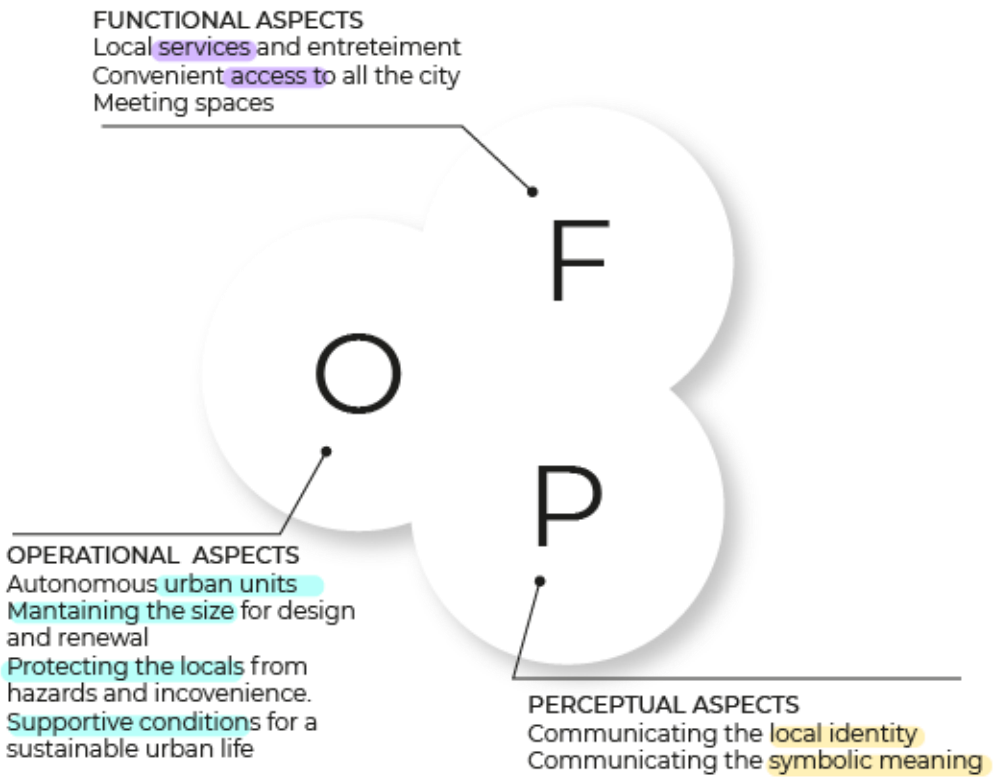


Figure 26- Neighbourhood Dimensions

Perceptual Aspects

- The figure of the **city centre** or town centre node is missing in most of the floating settlements, the focus of the development is on the housing, forgetting about the community creation [design opportunity]. Hagonoy has one city centre, however, is not very accessible for all the inhabitants. Neglecting the principles seen in the perceptual aspects.
- The clustering of spaces is not clear, in simple words, the **definition of locations** and purpose of space within the floating communities is vague. The reason behind

this is because there is no urban development planning behind the ancient ones while the moderns' ones are limited by the management.

No open space, or spaciousness in the smaller scale of the city.

- The world neighbourhoods, particularly the most recent ones, have tried to develop a unique alternative **identity** for the floating community. While the ancient ones, employ the locally available materials and values to develop their identity.
    - Reflection of the culture either through materials, shapes, or colours in the dwellings.
- The local context reflects the history and the current stereotypes which are based on the American culture.
    - Missing their identity. The trend of bringing back the traditional Filipino culture, **[design opportunity].**
- **The variety** of buildings is extreme in the modern floating settlements and semi-homogeneous in the ancient ones. While the local context is extreme as it is linked to the income of the family.
    - Variety in Hagonoy is causing discrimination and social tensions.

Functional Aspects

- The reason behind the creation of floating settlements makes a difference regarding the **accessibility** and mobility within it. Pedestrian paths and routes can be seen in the shore/rise-side settlements but none in the island ones.
    - The lack of accessibility and mobility causes isolation of the community.

In the local context, pedestrians share the road with vehicles. This is not encouraging the pedestrian movement around the city (human scale of the neighbourhood).

The mobility through the floating settlements is done with private boats. And in the local context of Hagonogy is done with private or public vehicles. Everything is by road or boat.

- Traffic impacts their daily lives producing streets, noise pollution and taking space away from the paths. **[design opportunity].**

- The floating settlements are not designed for **gathering points**. Neither the local context, where the gatherings nodes are the religious spaces, outside shops, bars, or sports facilities.
    - Meeting spaces can improve the community feeling, the familiarity and the safety among the residents, considering the climatic conditions **[design opportunity].**

- The link between **services, facilities** and social gatherings is clear after the analysis. Although, the shore neighbourhoods do not tend to have service or facilities, which affects the livelihood of the community or forces them to go to the shore.
    - Important the link between services and social focal points.

Operational Aspects

- Supporting the **sustainability conditions** is more visibility in the modern and planned neighbourhoods. In developing countries, pollution is a big problem affecting the daily life of the inhabitants.
    - Sustainability solutions starting to become a trend in the floating communities **design opportunity].**
- Contact with nature is essential for the floating settlements which developed over the years. Relationship with natural elements around the dwellings. Modern communities do not have that much connection It seems that the water is enough. **[design opportunity].**

	Requirement	**Demand/Wish**
1	The design of the settlement must allow incrementality in different levels (dwelling and community).	Demand
2	Allow planning and clustering of dwellings according to the family unities.	Demands
3	Encourage face to face interview within the community	Wish
4	Allow access to the neighbourhood from several inland parts	Demand
5	Promote the pedestrian movement around the city	Demand
6	Provide a central figure for the settlement	Demand

7	Create gathering spaces in different scales	Wish
8	Reflect the cultural, historical and living patterns of the inhabitants	Demands/Wish
9	Presence of natural elements over the community and dwellings.	Demand
10	Promote the proximity and clustering of services and facilities.	Wish
11	Do not harm the environment by the presence of the floating settlement.	Wish

APPENDIX 8: Neighbourhood design development

The following illustration shows the development of the neighbourhood design iteration after iteration based on the feedback given by the users and the experts.

First draft

Based on the desired social relations and needs among the stakeholders, the first draft is developed. The iterations are listed in the legend and marked with colours in the visualisations. However, the first idea does not consider the existing infrastructure of Mercado; therefore, nothing the floating neighbourhood does not interact with the existing one.

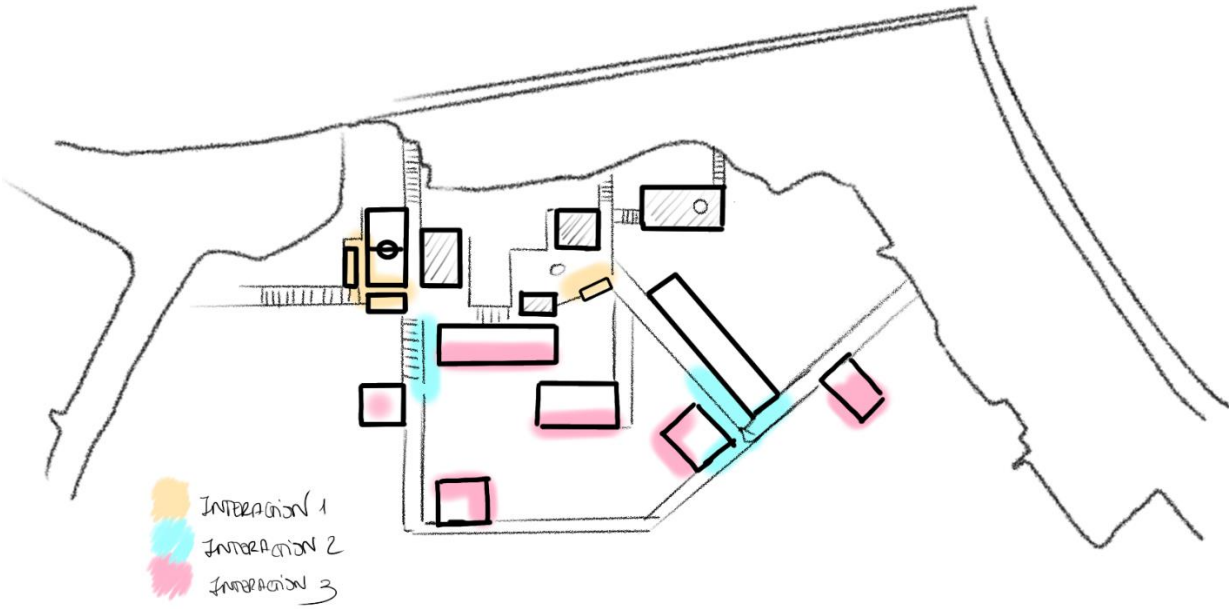


Figure 27- Neighbourhood design first iteration

Second iteration

For the second iteration, the Barangay Mercado is analysed, and the existing infrastructures are studied. The most important ones are marked and highlighted to the reader to understand their location and dimensions. The floating neighbourhood is divided not two attending to the needs of the local community. Pathways are designed to connect the two neighbourhoods and enhance the interaction among them. Many dwellings own a fish farm which can be attached to the house structure.

The neighbourhood still does not represent the reality as it is out of scale, and it blocks the shoreline dwellings view. Furthermore, the second iteration has only two entrances to the neighbourhood, which is unsafe in emergencies.

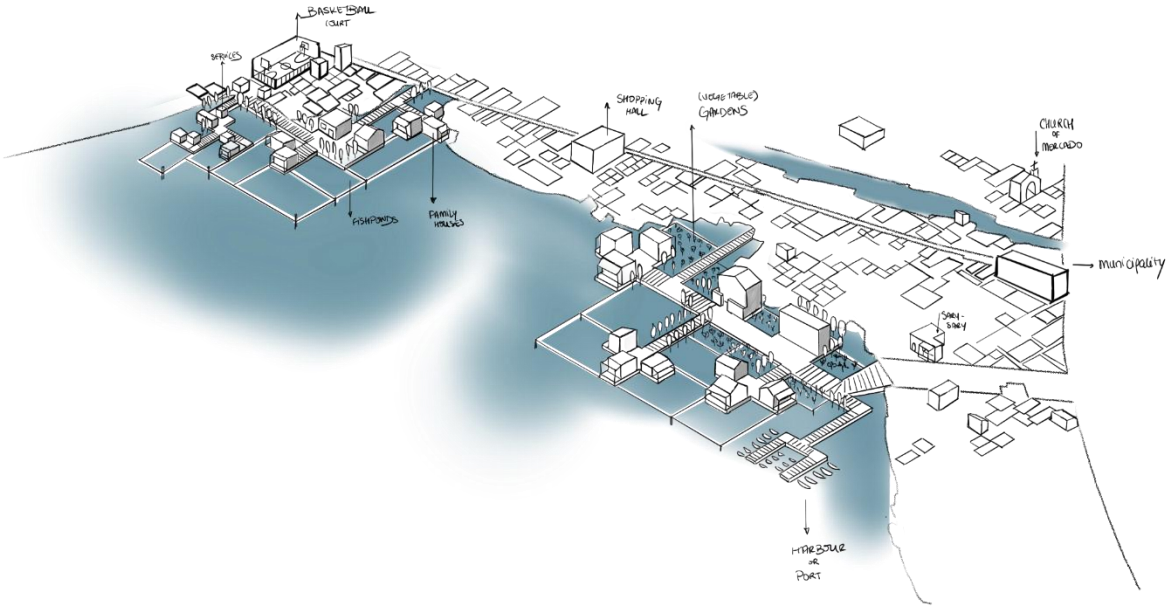


Figure 28- Neighbourhood design second iteration

Third iteration

Firstly, the neighbourhood is scaled down to a realistic size in comparison to the previous draft. A canal is added in between communities to create a circulation line for boats and increase the physical distance. The created space allows both shores to have natural elements (water and plants) around them. Secondly, the neighbourhood's density has been increased by adding more facilities, public spaces, and dwellings. Lastly, an additional access point is inserted in both locations to ensure the safety of the inhabitants and bridge both communities.

Nonetheless, the developed neighbourhood has some flaws. The main worry expressed by the participants and experts is the aesthetical and structural difference between the mainland and the floating community. These differences can generate tension and threaten the safety of newcomers.

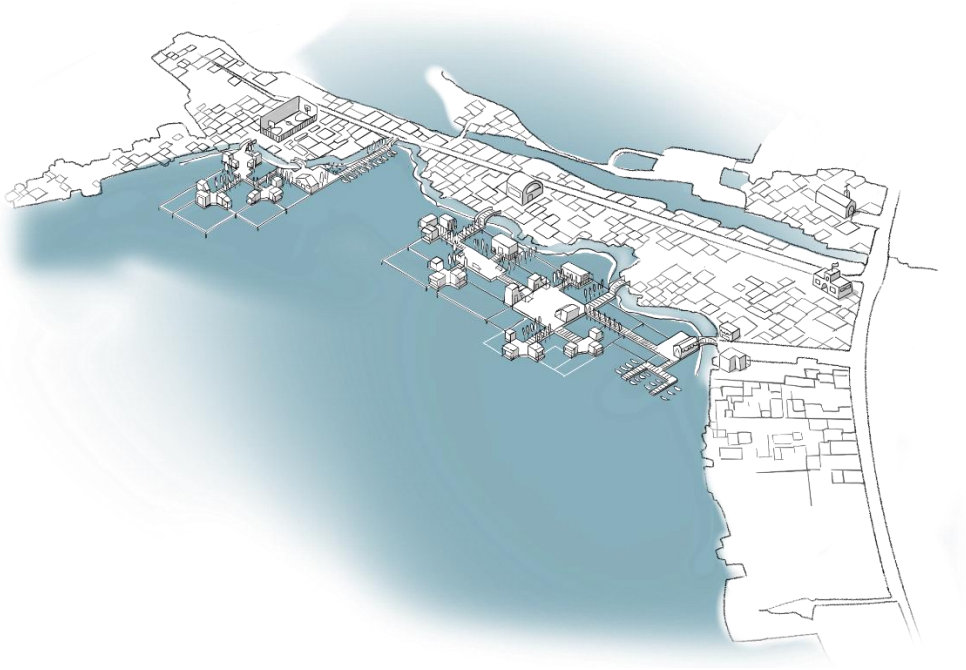


Figure 29- Third iteration of the neighbourhood design

Final iteration

The fourth and final iteration gathers all the feedback gained during the evaluation of the concepts sessions and the feedback given by the experts. Firstly, this neighbourhood design hosts the highest population of all to make it more similar to the existing community and avoid future tensions.

In addition, the location of public spaces is accessible for both settlements to increase the interaction and develop relationships between citizens. New traditional open structures have been added to create a visual distinction of the central nodes within the public spaces. Likewise, due to emergency and logistic reasons, the accessibility to the dwellings and public spaces is maximised from land and water. And finally, the distance between dwelling clusters and pathways is reduced. This decision is taken based on the local lifestyle of Filipino society. During the co-creation session, participants expressed their desire to increment their house to open their own small business, create a garden, fish farm, etcetera. Therefore, the dwelling is now closer to the pathway so the inhabitants can easily expand their homes and use the nearby infrastructure.

Figure 30- Fourth and final iteration of the neighbourhood design

Horizons

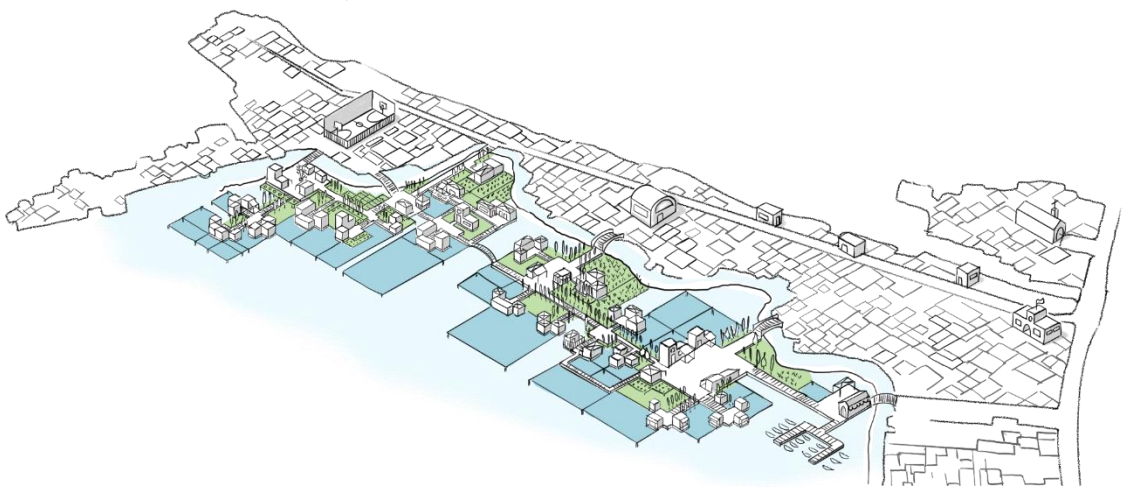


Figure 31- Horizon 2

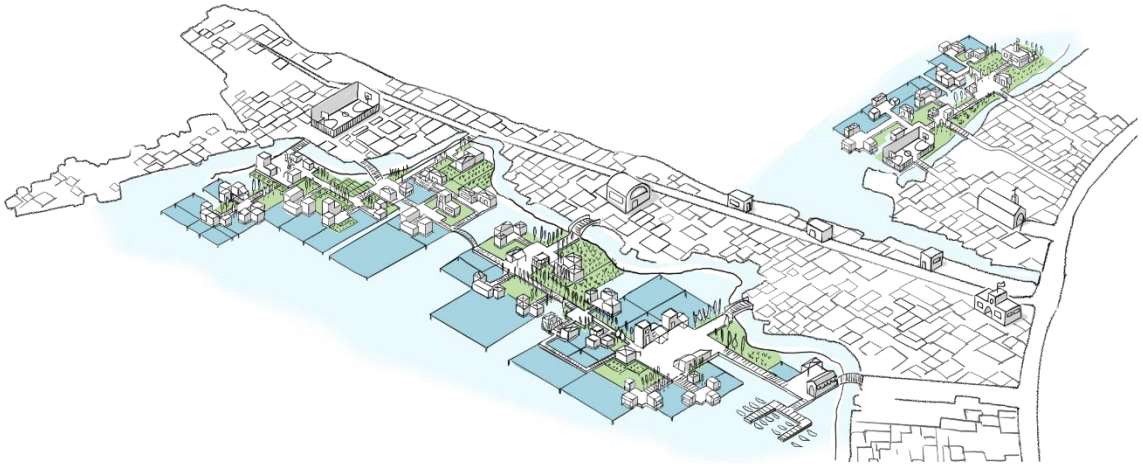


Figure 32- Horizon 3

APPENDIX 9: Platform module design evolution and iterations

Document to explain the modifications made in the module since the first proposal.

Concepts presentation

Development of three possible modules with different drums configurations and different beams creating the inner structure. All of them share the same outer dimensions of 3x1.5 (m). In the end, due to stability and use of material criteria the project continues with the 3rd concept.

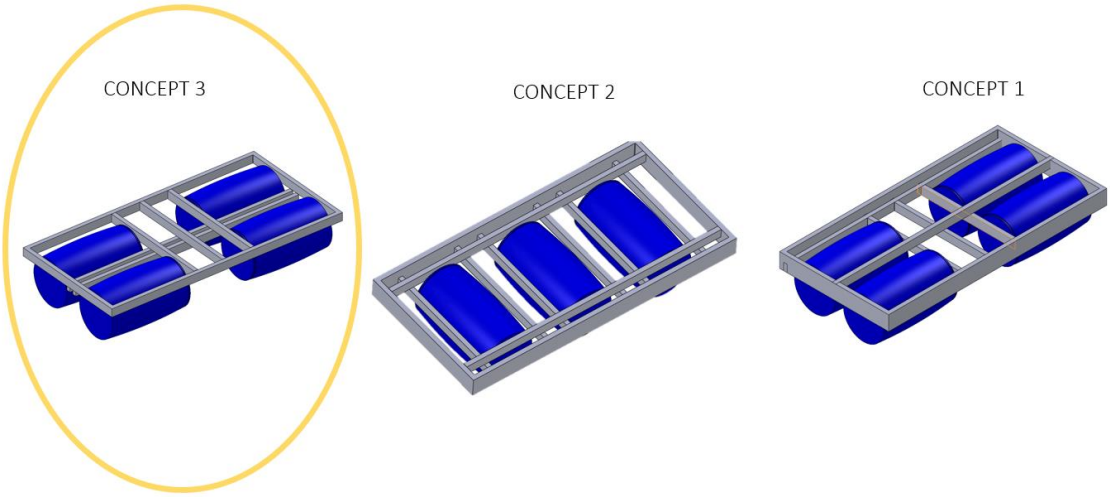


Figure 33- Module ideas presentation

Module Design (v.1)

The requirements of the module were:

Table 7- The requirement the platform should fulfil.

	Platform Requirements	
1	It should stand the weight of 3 people.	Demand
2	The waterline cannot reach the wooden frame structure.	Demand
3	The generated platform design ought to be stable.	Demand
4	The module should be able to attach to the next module.	Demand
5	The module should use as little material as possible.	Wish
6	The module must be replaceable in case of malfunctioning.	Wish
7	The construction and assembly should be done in the Philippines by the locals.	Demand
8	The platform design should be compatible with the current floating homes.	Demand

Therefore the following module design was presented during the greenlight meeting:

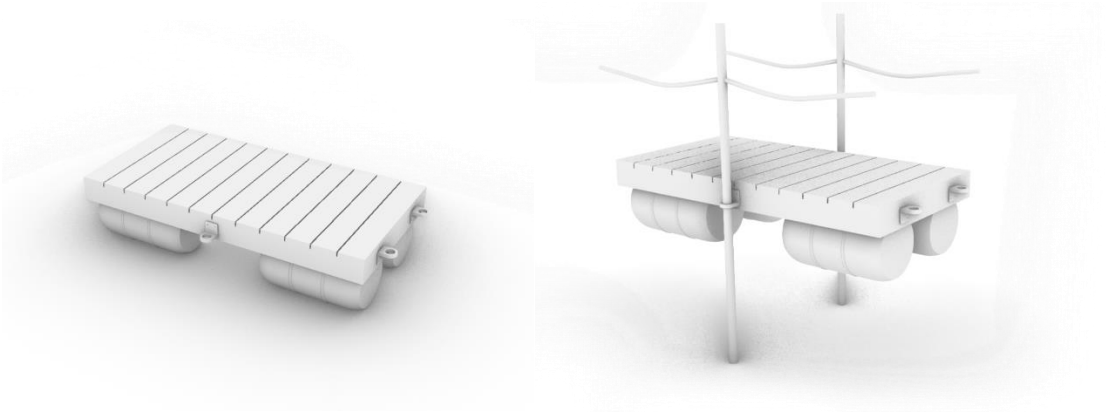


Figure 34- Module Version 1 Design with and without bamboo stilts

Evaluation of the module

After developing the first version of the module (v.1), it became apparent it has some flaws:

1. The gap between the modules is more significant than expected.
2. The attachment between modules is complicated, and it can only happen in one direction.
3. There are missing elements on the assembly of the CAD.
4. Restricted movements in the current platform. More freedom of movement in both directions.

Therefore, the version (v.1) needs to be iterated to fulfil the new requirements (Table 8).

Table 8- New platform requirements

	Requirements for the platform module	**Value**	
1	It should stand the weight of four people per module.	*> 300 kg*	*Demand*
2	The module should have connectors that allow an easy attachment in the X and Y-axis directions.	*0º and 90º*	*Demand*
3	The water line should be at least 20 cm below the wooden frame structure.	*>20 cm*	*Demand*
4	The gap in between modules should not be more than 7cm.	*< 7cm*	*Demand*
5	The generated platform design ought to be stable. Do not have a heeling angle higher than 4º.	*4 º*	*Demand*
6	The module should use as little material as possible.		*Wish*
7	Each module must be replaceable in case of malfunctioning.		*Wish*
8	The construction and assembly should be done in the Philippines by the locals.		*Demand*
9	The platform design should be compatible with the current floating homes.		*Demand*
10	Each module should contain a safety element integrated into the assembly.		*Wish*

Module Design (v.2)

The starting point of the design of the new modules is the attachment and connections between them. After brainstorming and exploring new connection system, the following module is created:

Iterated modules design

After the first iteration, the module design looks as follows (Figure 35):

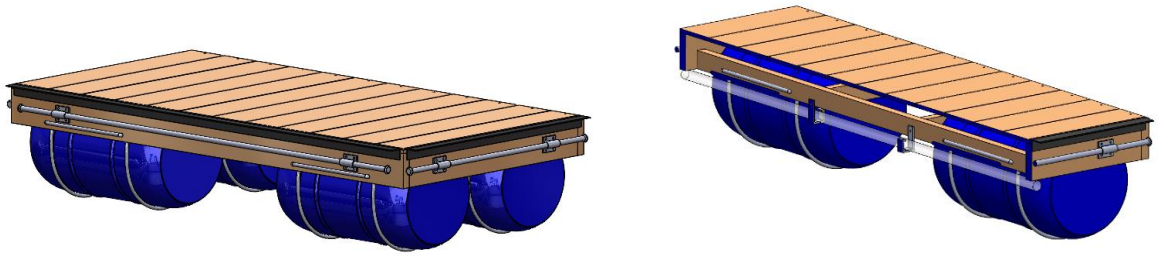


Figure 35- Module Design V2

Two types of greenery modules are designed, one with horizontal drums and one with vertical drums. The second one follows the design proposed by a previous graduate student.

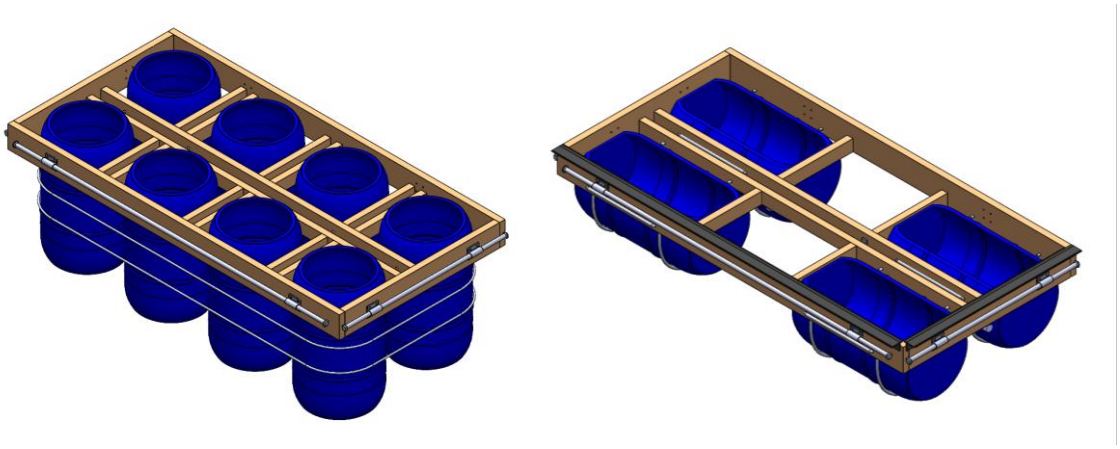


Figure 36- Vertical Greenery module (left) and horizontal greenery module (right)

Description of the modules

With this new design, the gap between modules is wholly covered, thanks to a rubber connector located on the end of the frame (Table 9). It lists two optional elements that they should use when the module creates a pathway that leads to the realm of the dwelling cluster. Firstly, the hooks (nº11) are designed to carry the necessary infrastructure to the house, for example, the sewer or water system. Secondly, the vertical connectors are designed for bamboo stilts located on each side of the connectors. These have a double function: preventing the module from touching the bottom of the fishpond and providing a safety element to the pedestrians walking on it. The elements are marked as optional because the module can be assembled in many different ways, not requiring all the elements from the bill of materials (BOM) simultaneously.

Table 9- BOM

	Element name	**Nº parts**	**Material**
1	Drums	4	PLA
2	The frame (rectangular bodies)	4	Timber Wood

3	Top panels	12	Timber Wood
4	Inner structure	6	Timber Wood
5	T connectors (Long)	1	Rubber
6	T connectors (Short)	1	Rubber
7	External horizontal connectors	8	Metal
8	External Vertical connector (Optional)	2	Metal
9	Cilindrical sliding pin	2	Metal
10	Hooks (optional)	2	Metal/ Wood
11	Screws	80	Metal
12	Rope	4	Manila hemp

Assembly system

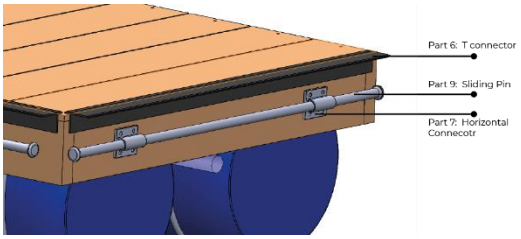


Figure 37- Connection system

The essential elements of the assembly are the sliding pins and the T connectors (Figure 37). This system allows the creation of pathways, small spaces and big spaces. As all the modules use the same connection system, they can all be easily connected (Figure 38). Furthermore, the system allows the assembly to create a playful modules grid in perpendicular and parallel positions (Figure 39).

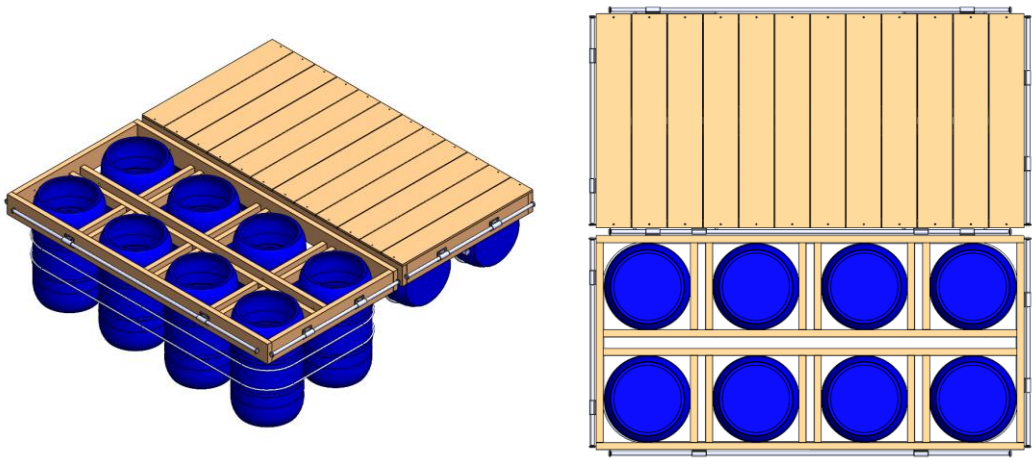


Figure 38- Assembly of greenery and standard module.

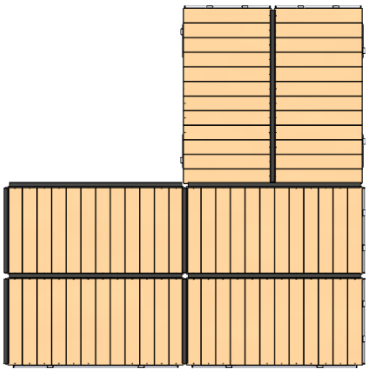


Figure 39- Assembly of modules lineal and perpendicular direction.

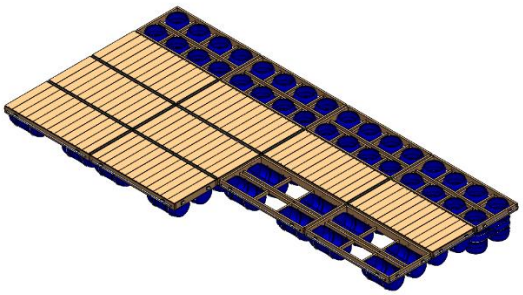


Figure 40- Sample of transition between the public area towards the semi-private space

Feasibility

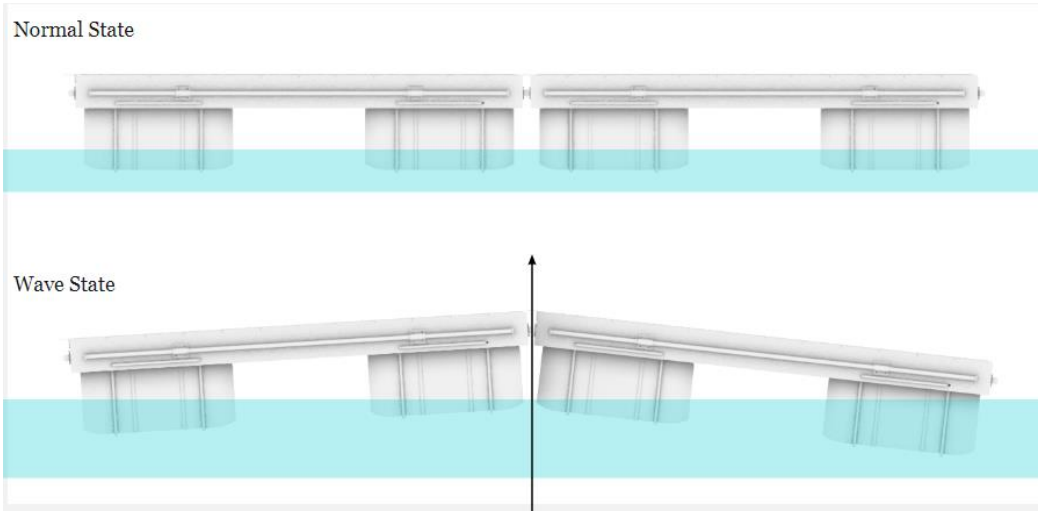


Figure 41- The connection of the two modules in a normal state and a wave scenario.

The connections between the modules happen horizontally through a sliding pin. This connection allows the rotation of the modules and the vertical translation when needed (Figure 41).

Conclusions and evaluation

The last iteration has decreased the generated gap between modules to 5cm, making the transition between modules easy and safe for the end-users. Additionally, for the public spaces, the design of the rubber T connectors covers all the gaps resulting in a flat and united surface.

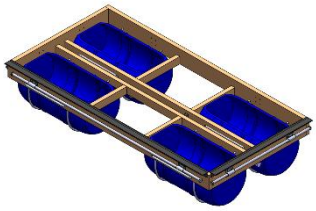
The horizontal connectors make the assembly between modules straightforward and easy to repair when needed. However, the horizontal system improves the assembly; it also requires more elements, which leads to an increase in the costs.

Lastly, the modules that limit the space need an additional vertical connector to add the bamboo stilts. In the first version (v.1), the bamboo stilts could be located per module; however, this increased the gap between the modules. Therefore, a compromise has been reached by changing the connection system and adding the bamboo holder just whenever needed.

APPENDIX 10: Cost estimation

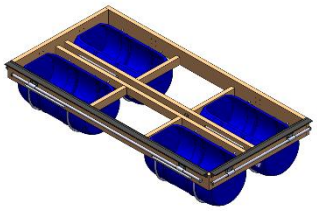
Material cost/ Standard module				
	Element name	**N° parts**	**Material**	**Price (€)**
1	Frame	4	Yellow Meranti	37
2	Inner structure	6	Yellow Meranti	18.6
3	Drums	4	PE	48
4	Top cover panels	12	Yellow Meranti	35
5	External horizontal connectors/ Steel plate	8	Stainless Steel	16
6	Sliding Pin (Short)	1	Stainless Steel	3
7	Sliding Pin (Long)	1	Stainless Steel	3
8	Rope	4	Cotton	6.6
9	T connectors (Short)	1	Natural rubber	2
10	T connectors (Long)	1	Natural rubber	4
11	Wood screws	80	Stainless Steel	4.5

Total Price= 177.7



Material cost/ Horizontal Greenery module				
	Element name	**N° parts**	**Material**	**Price (€)**
1	Frame	4	Yellow Meranti	37
2	Inner structure	8	Yellow Meranti	27.87
3	Drums	4	PE	48
4	External horizontal connectors/ Steel plate	8	Stainless Steel	16
5	Sliding Pin (Short)	1	Stainless Steel	3
6	Sliding Pin (Long)	1	Stainless Steel	3

7	Rope	4	Cotton	6.6
8	Wood screws	56	Stainless Steel	3.36
			Total price=	144.83



Material cost/ Vertical Greenery module				
	Element name	**N° parts**	**Material**	**Price (€)**
1	Frame	4	Yellow Meranti	37
2	Inner structure	6	Yellow Meranti	18.6
3	Drums	8	PE	96
4	External horizontal connectors/ Steel plate	8	Stainless Steel	16
5	Sliding Pin (Short)	1	Stainless Steel	3
6	Sliding Pin (Long)	1	Stainless Steel	3
7	Rope	4	Cotton	6.6
8	Wood screws	56	Stainless Steel	3.36
			Total price=	183.56

Appendix 11: Feasibility studies

Theory

Hydrostatics

During the thesis, the most important force to consider is the buoyancy force Fb (N).

3.2.1 Signs

In this thesis, the following signs are used:

D = Depth
B = width
L = Length
d = Draught

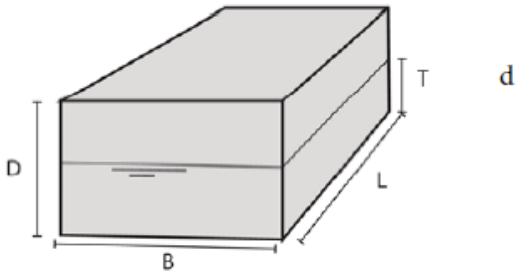


Figure 3.2: Signs

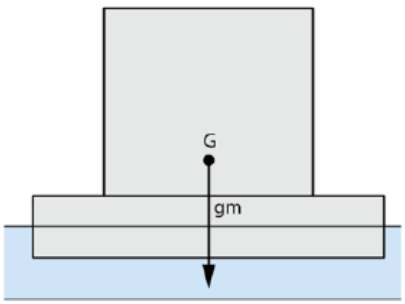


Figure 3.10: gravity force

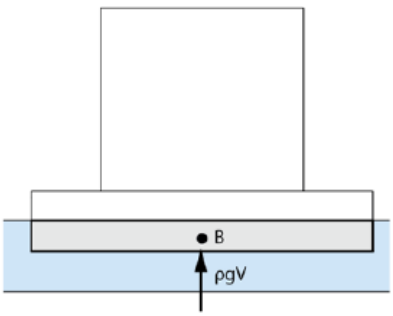


Figure 3.11: buoyancy force

When there is an external force tilting the assembly, and the object goes back to stability, the moment that makes that is the righting moment:

$$M_H = M_r = \rho g \nabla \cdot y = gm \cdot y$$

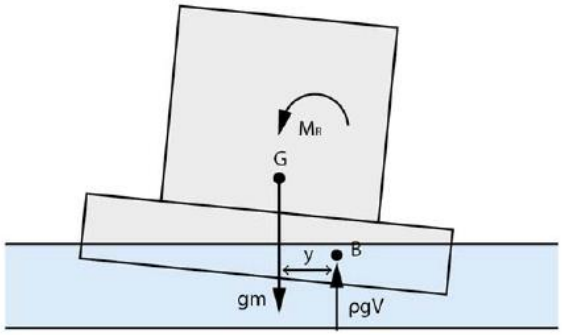


Figure 3.14: righting moment M_r

Location of metacentre

In this paragraph an explanation of how the location of the metacentre can be find is given.

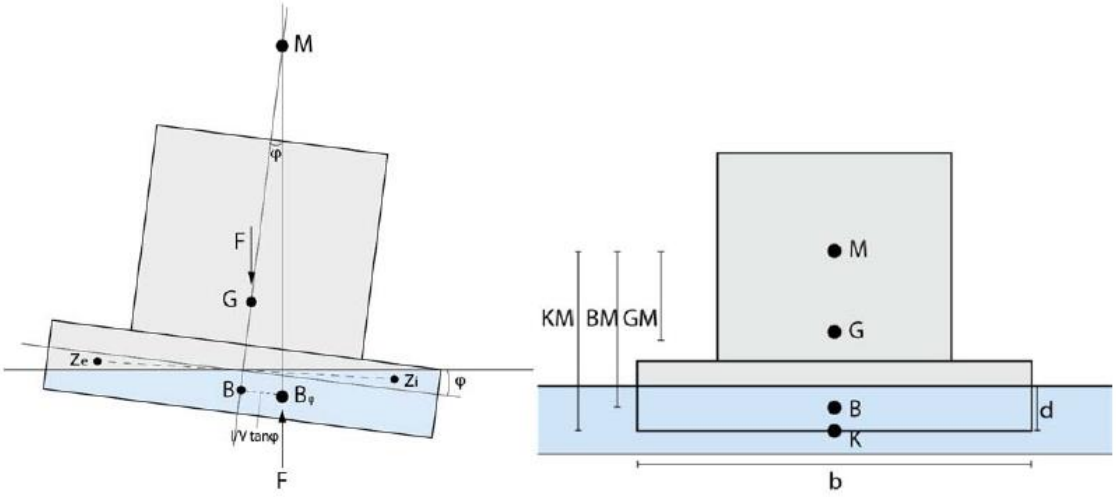


Figure 3.16: location of metacentre

The meta centric height can be calculated with GM:

$$GM = KB + BM - KG$$
$$= KB + I_t/\nabla - KG$$

With

$\nabla = l*b*d$

$I_t = 1/12\ l\ b^3$ (for a floating body with a rectangular shape)

$BM = b^2/12d$

External forces

1. Dead load: the own weight of the platform (150kg).
2. Live load: citizens standing distributed on top of the platform. (3 people per m2).
    a. Maximum upper limit 5 people/m2

3. Live load: people disparate (all in one side)
4. Extreme load: tricycles driving on top. (500kg vehicle plus 4 people)= 775kg. The considered vehicle is a Ural Gear Sahara 750 tricycle.

Module configurations

The main criteria for the modules are modularity and flexibility to adjust to the different configurations required by the scenario. Furthermore, since the platform's modular design, it can be executed as both attached and detached. However, the detached modality is not required in the targeted context; therefore, this report will only mention it.

Lastly, the considered configurations are only the ones the platform by itself can do. Thus, no configuration between the floating home and the platform is considered in this scenario analysis.

From the 3D modelling and material density, the total weight of the design is obtained, 150kg.

Detached

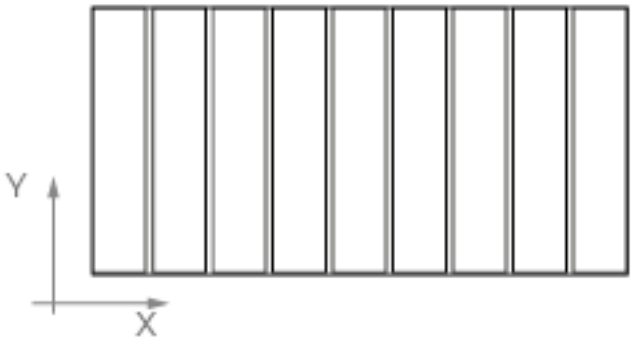


Figure 42- Detached configuration

Attached _Pathway configuration

The extension occurs in one direction only. Therefore, depending on the extension axis, the pathway will be wider or narrower.

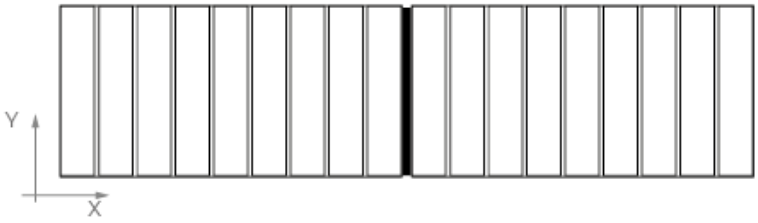


Figure 43- Attached module in X-axis

Structural Analysis

The feasibility analysis determines which are the structural constraints/ limits of the designed platform.

- Which is the maximum tilting of the platform? (degree) 4 degrees
- Which is the maximum sinking height? (distance) The water line should be at a minimum distance of 20cm from the wooden structure. The reasoning is to maintain the status of the timber.

CAD simulations

For the sake of the simulation and to represent the geometries of the body in a more "realistic way' a dummy version of the 3D model has been created.

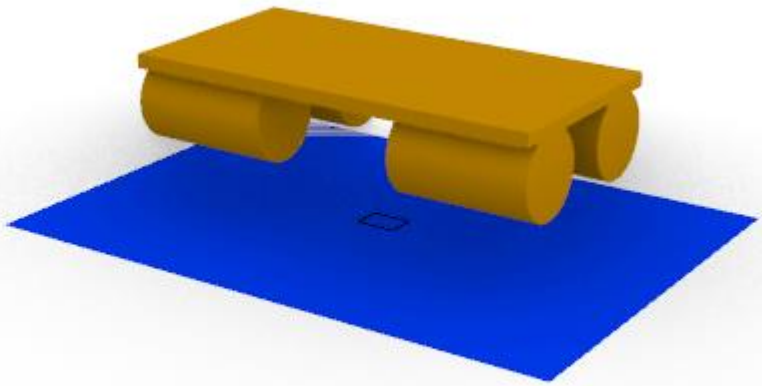


Figure 44- Initial Status of the mode

Blue plane is the water and orange model is the simplify version of the platform design.

1. The first step is to understand which is the waterline level of the model in a dead load scenario.

   The shaded model grey visualizes the floating equilibrium of the platform. The blue line represents the waterline. W=150kg

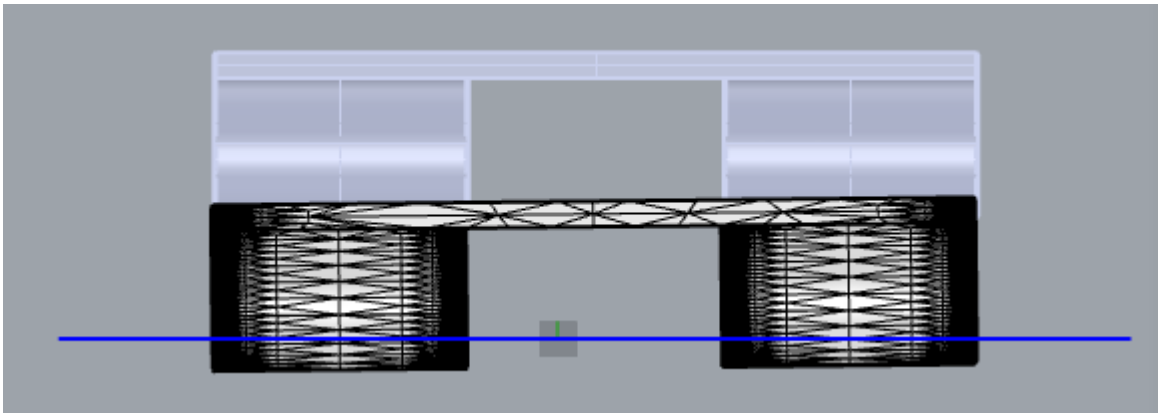
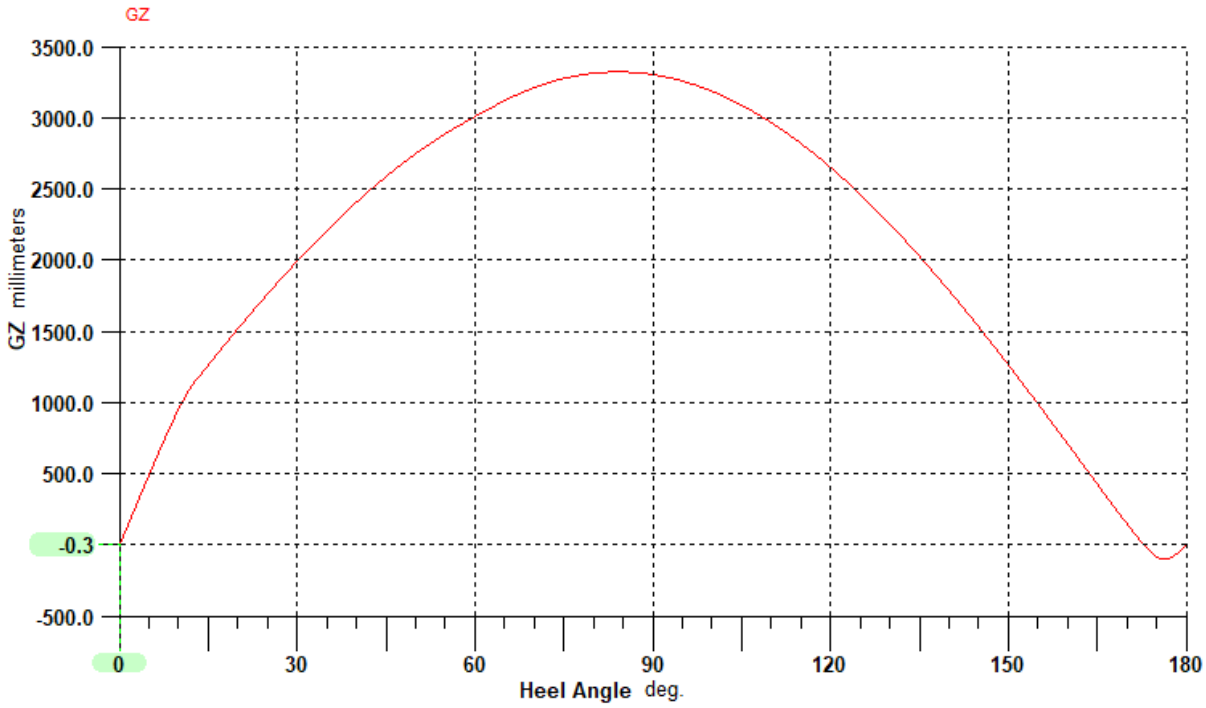


Figure 45- Floating equilibrium

Obtained data:

Draught= 129.322 millimetres
Volume Displacement = 1.50955e+08
Centre of Buoyancy = 2.00582, 113.526, -47.2642
Wetted Surface Area = 2.45431e+06
Waterline Length = 3000.16
Maximum Waterline Beam = 1394.38
Water Plane Area = 1.88308e+06
Center of Floatation = 104.145, 113.506,0



2. 5 people on top of the platform

W=525 kg

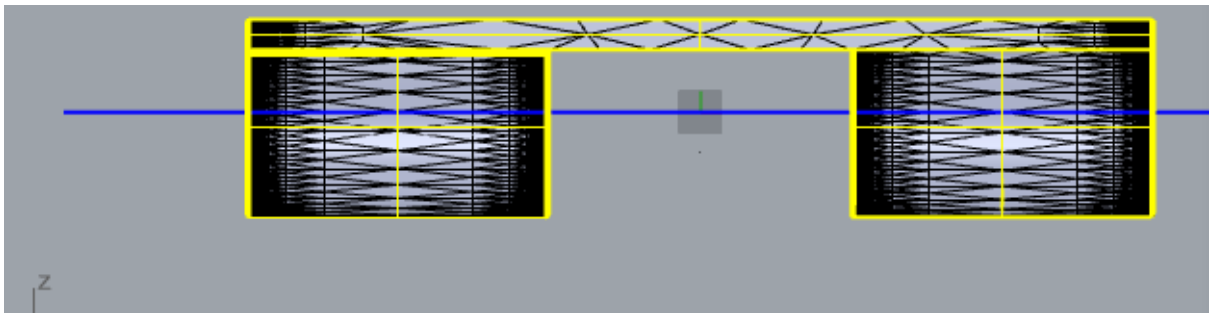


Figure 46- Live load people located on top

Draught= 349.268 millimeters

Volume Displacement = 6.76839e+08

Center of Buoyancy = 0.554603, 0.385259, -149.153

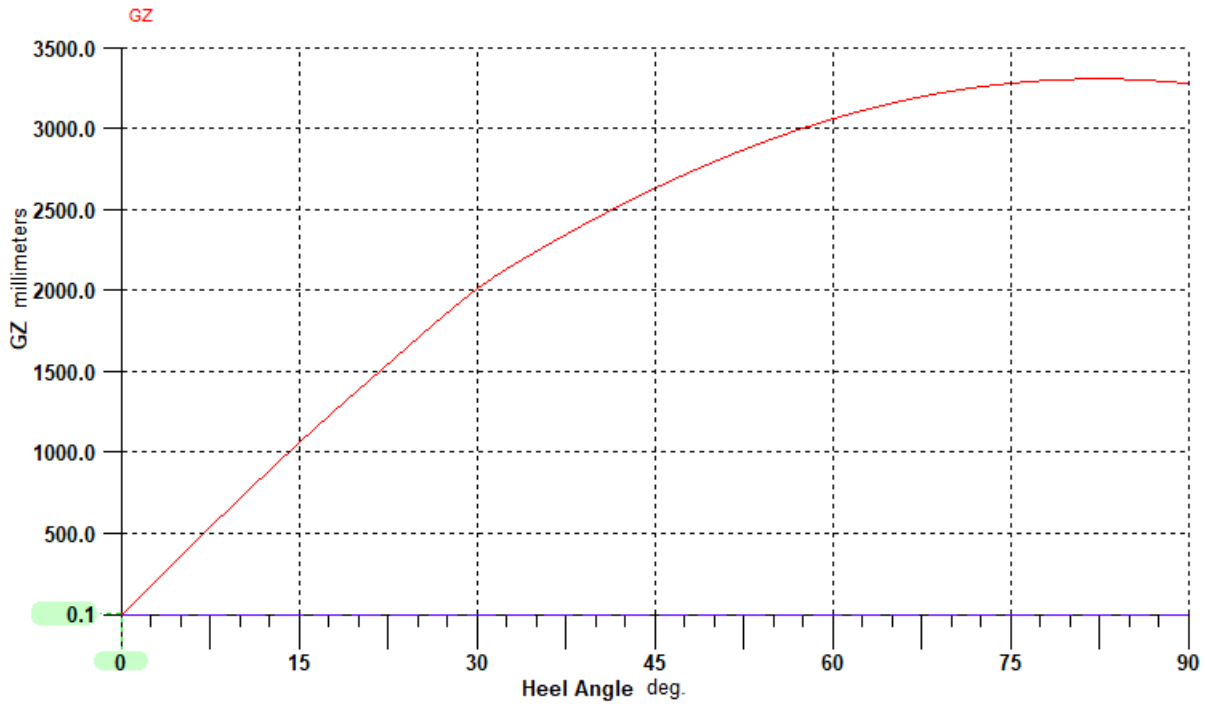
Wetted Surface Area = 5.46733e+06

Waterline Length = 3000

Maximum Waterline Beam = 1492.86

Water Plane Area = 2.3705e+06

Center of Floatation = -0.904768, 0.378821,0



3. Live loads of 7 people located in one half of the platform

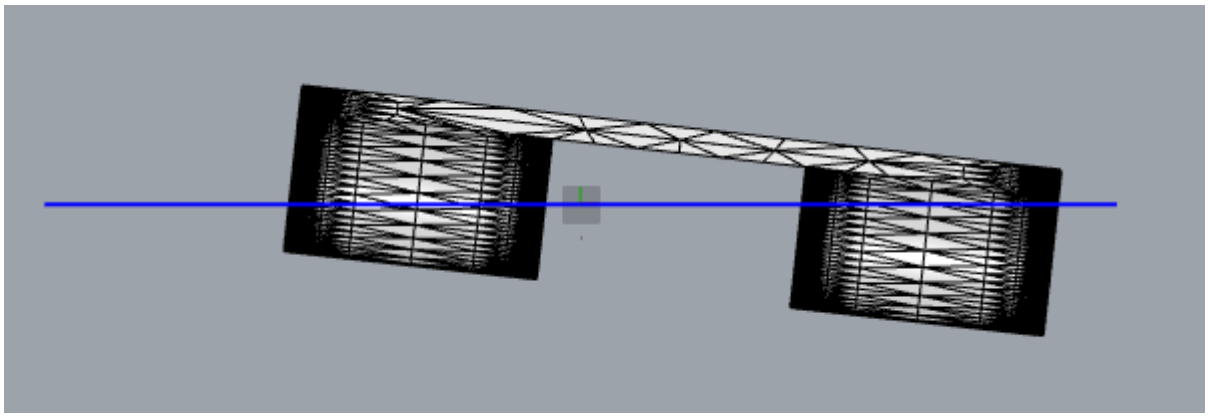
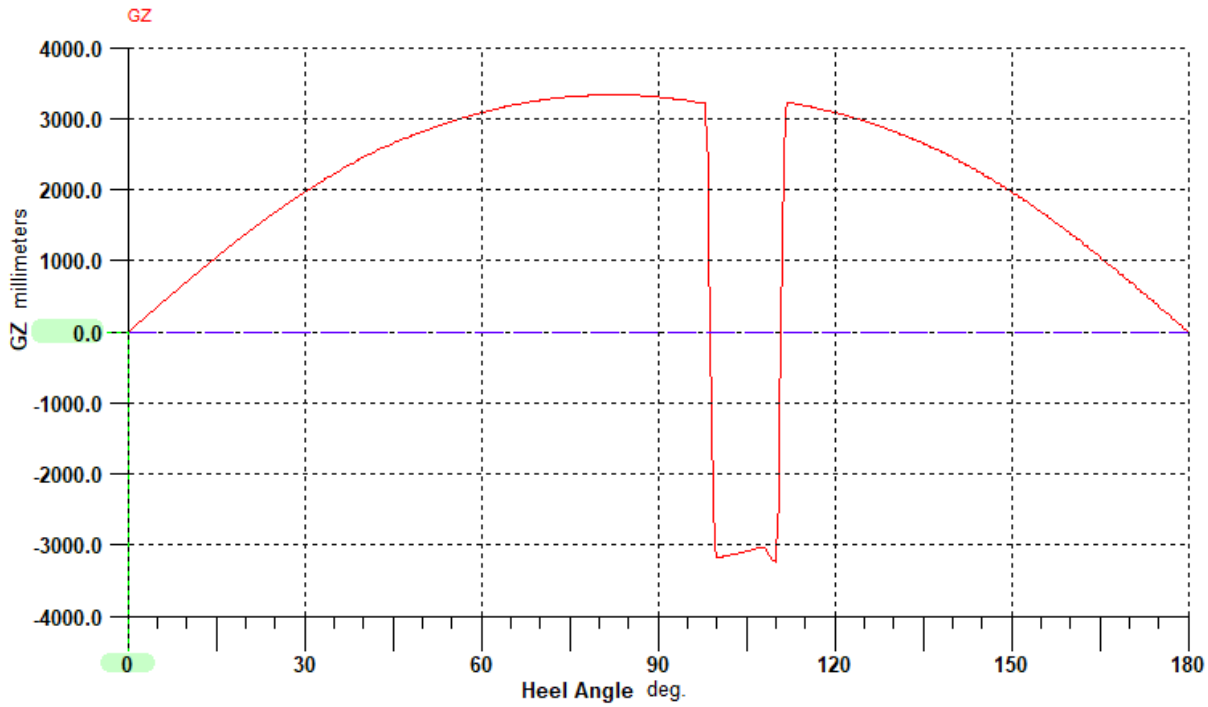
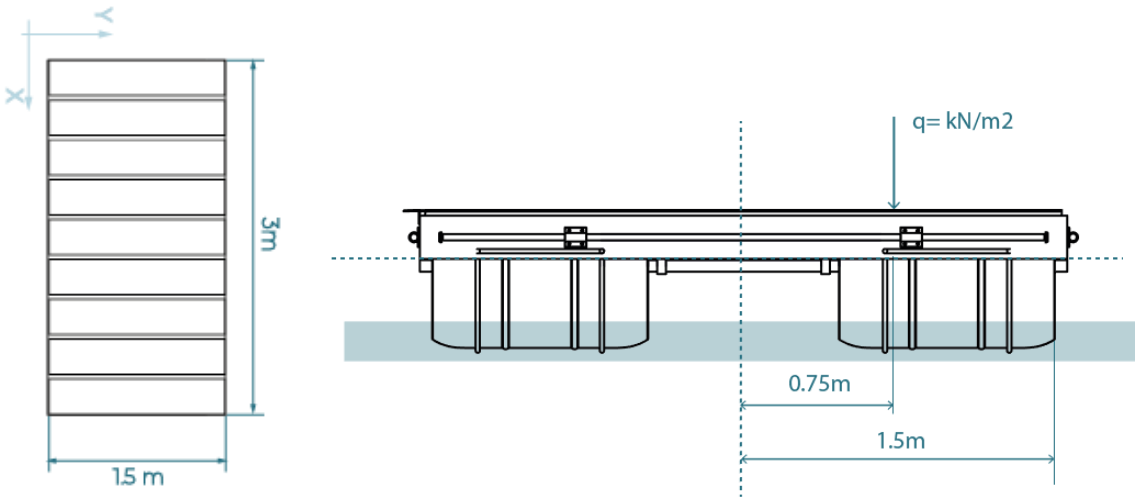


Figure 47- Live load eccentric distribution



Scenario 3: Calculation of the heel angle

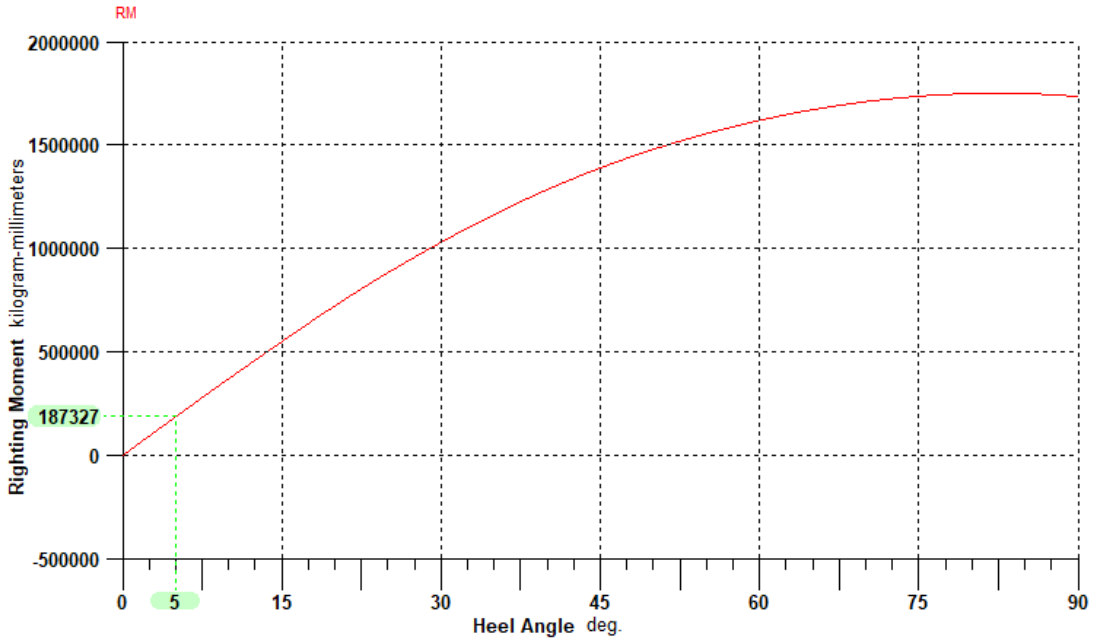
Considering the rotational equilibrium condition Mh= Mr



The area where the force is applied is 2.25m2 with a force of 5.25KN. Then, the value of q= 2.33 $\frac{kN}{m^2}$

$$Mh = q \times distance = 2.33\ \frac{kN}{m^2} \times 0.75m = 1.75kNm$$

According to the Righting moment in the graph, the value of $1.75kNm$ corresponds to a heeling angle (φ)of 4.6 º.



4. Live loads of a vehicle on top of the platform

   4.1. The full vehicle is located on top of the platform when carrying 4 people on top. Total weight 775kg.

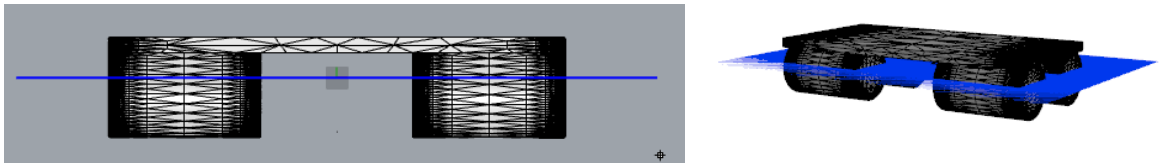


Figure 48- Load case of vehicle

Draught = 390.302 millimeters

Volume Displacement = 7.7701e+08

Center of Buoyancy = 0.527356, 0.384461, -170.078

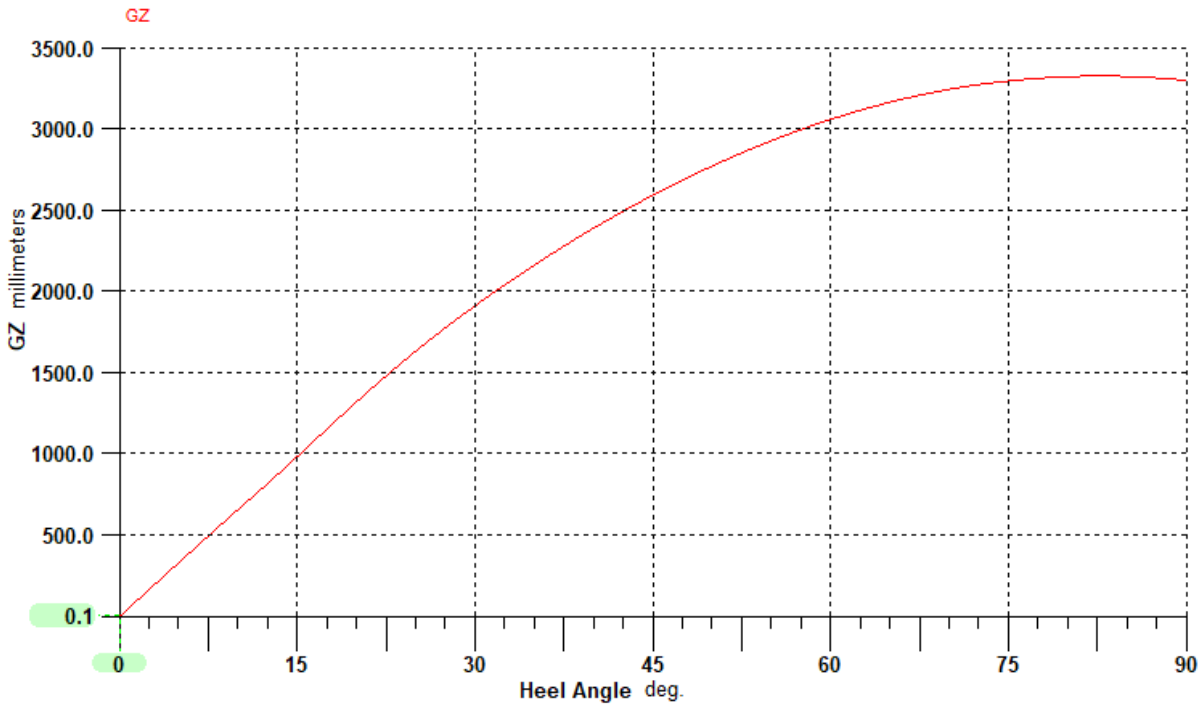
Wetted Surface Area = 6.01785e+06

Waterline Length = 3000

Maximum Waterline Beam = 1472.87

Water Plane Area = 2.29026e+06

Center of Floatation = -0.481274, 0.379414,0



4.2. The vehicle is in one side, what would happen?

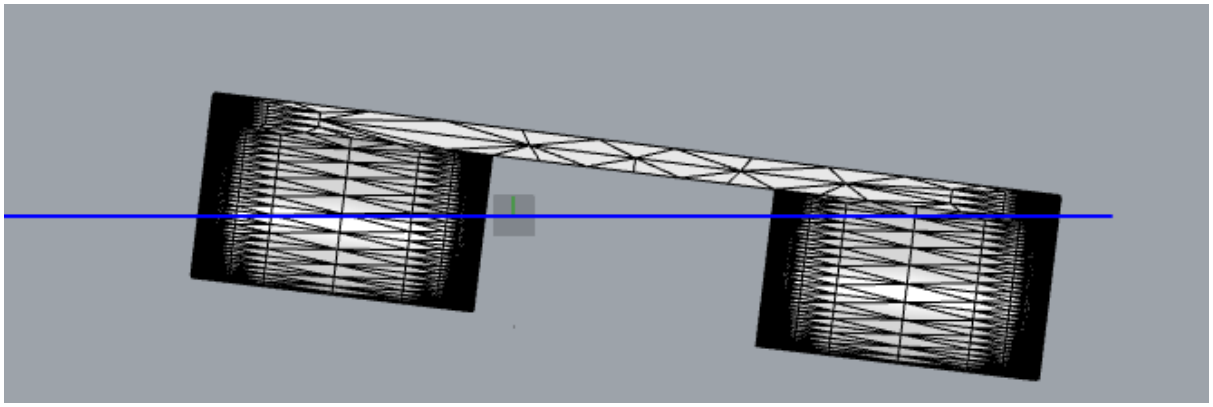
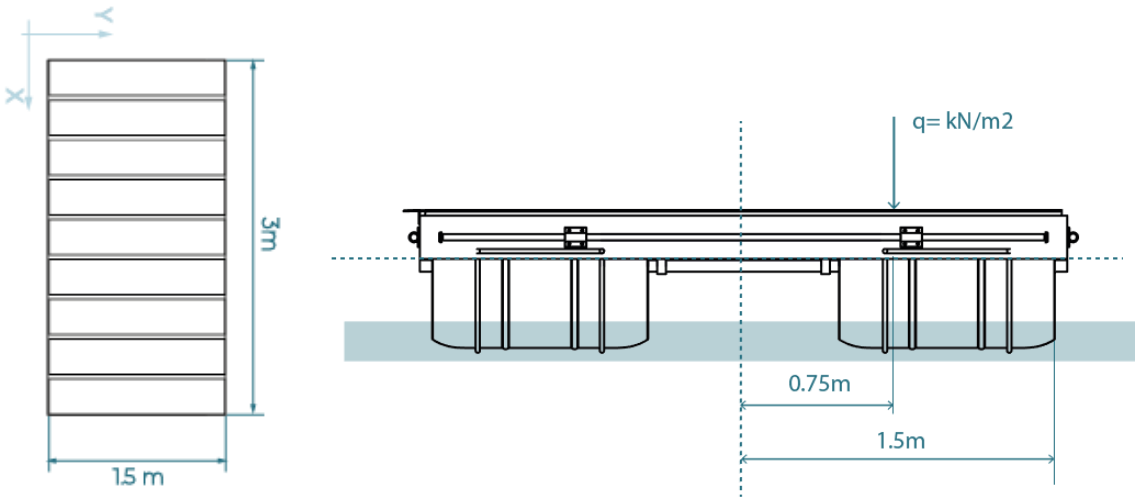


Figure 49- Platform with vehicle driving from one side.

Volume Displacement = 7.52093e+08
Center of Buoyancy = 749.982, 0.386533, -194.893
Wetted Surface Area = 6.11774e+06
Waterline Length = 3021.19
Maximum Waterline Beam = 1500
Water Plane Area = 2.13846e+06
Center of Floatation = 279.914, 0.381031,0

Scenario 5: Calculation of the heel angle

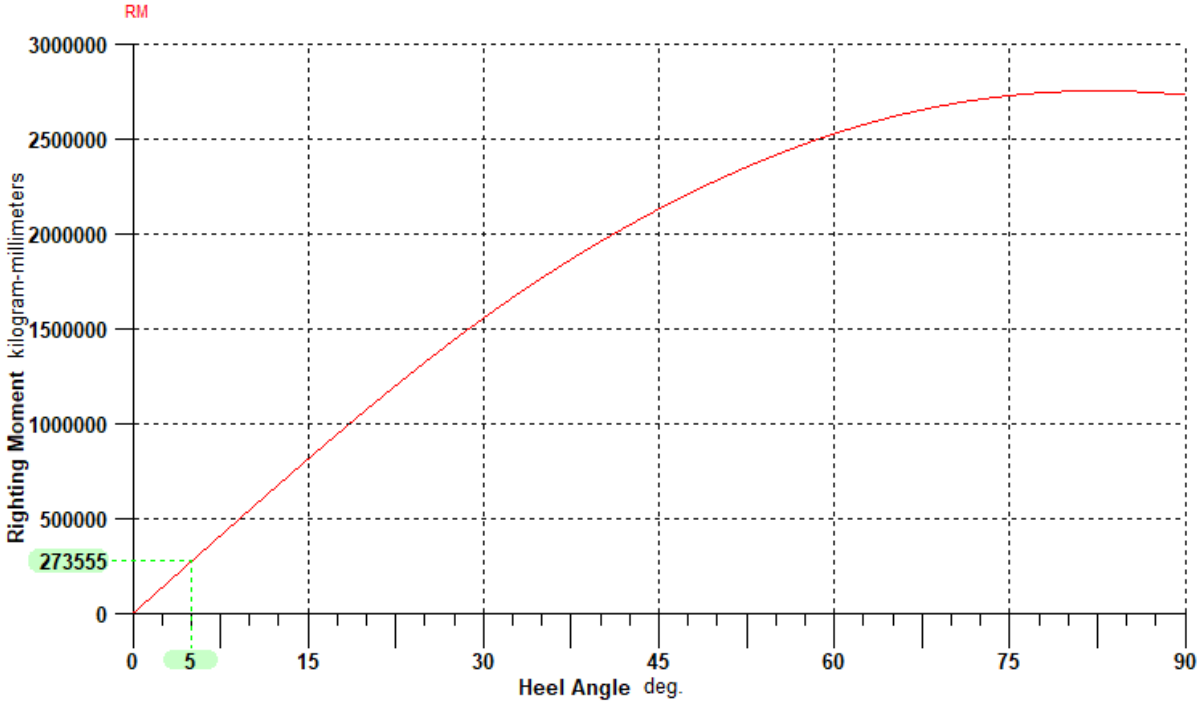
Considering the rotational equilibrium condition Mh= Mr



The area where the force is applied is 2.25m2 with a force of 8.25KN. Then, the value of q= 3.66 $\frac{kN}{m^2}$

$$Mh = q \times distance = 3.33\ \frac{kN}{m^2} \times 0.75m = 2.75kNm$$

According to the Righting moment in the graph, the value of $1.75kNm$ corresponds to a heeling angle (φ)of 5.03 º.


RM
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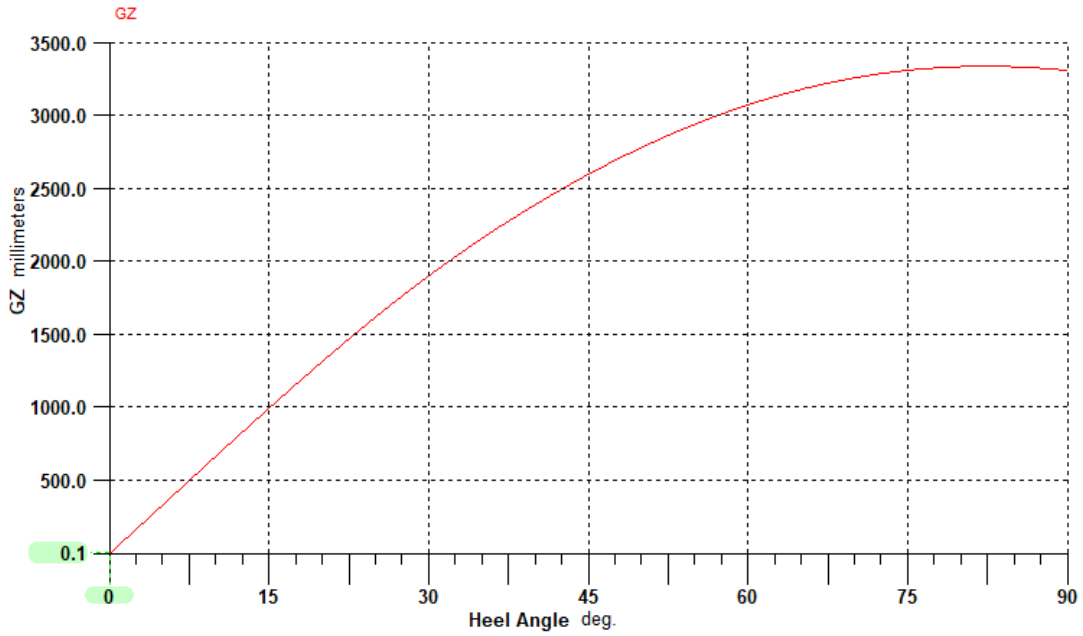
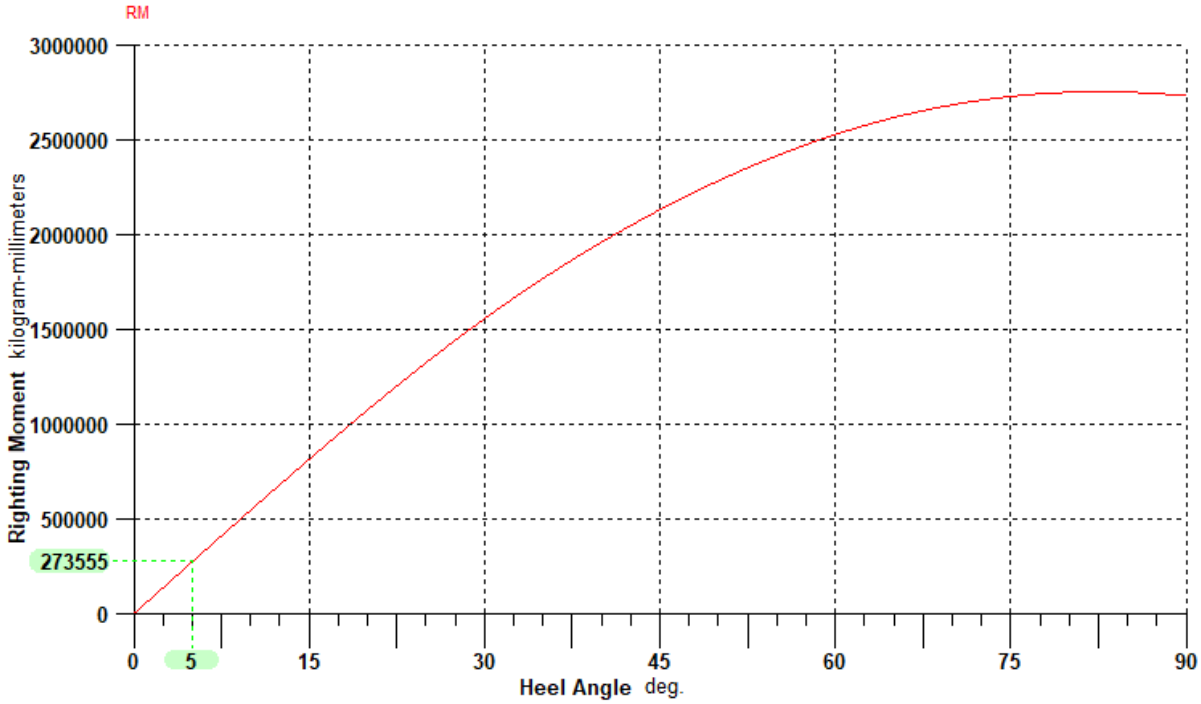
2500000
2000000
1500000
1000000
500000
273555
0
Righting Moment kilogram-millimeters
0
5
15
30
45
60
75
90
Heel Angle deg.


GZ
3500.0
3000.0
2500.0
2000.0
1500.0
1000.0
500.0
0.1
GZ millimeters
0
15
30
45
60
75
90
Heel Angle deg.



Pathway simulation

1. Deadload of pathway W=300kg

Draught= 116.60 millimeters

Volume Displacement = 3.06661e+08

Center of Buoyancy = -0.755992, -1.0816e-12, -47.2525

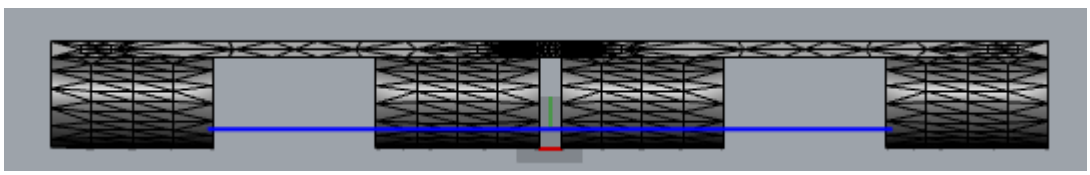
Wetted Surface Area = 4.98314e+06

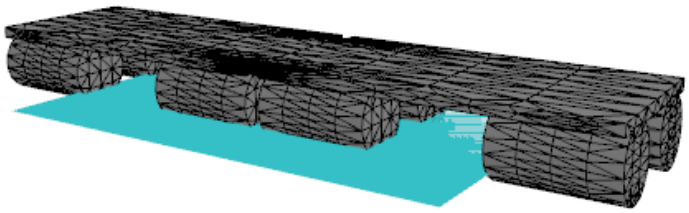
Waterline Length = 6135.03

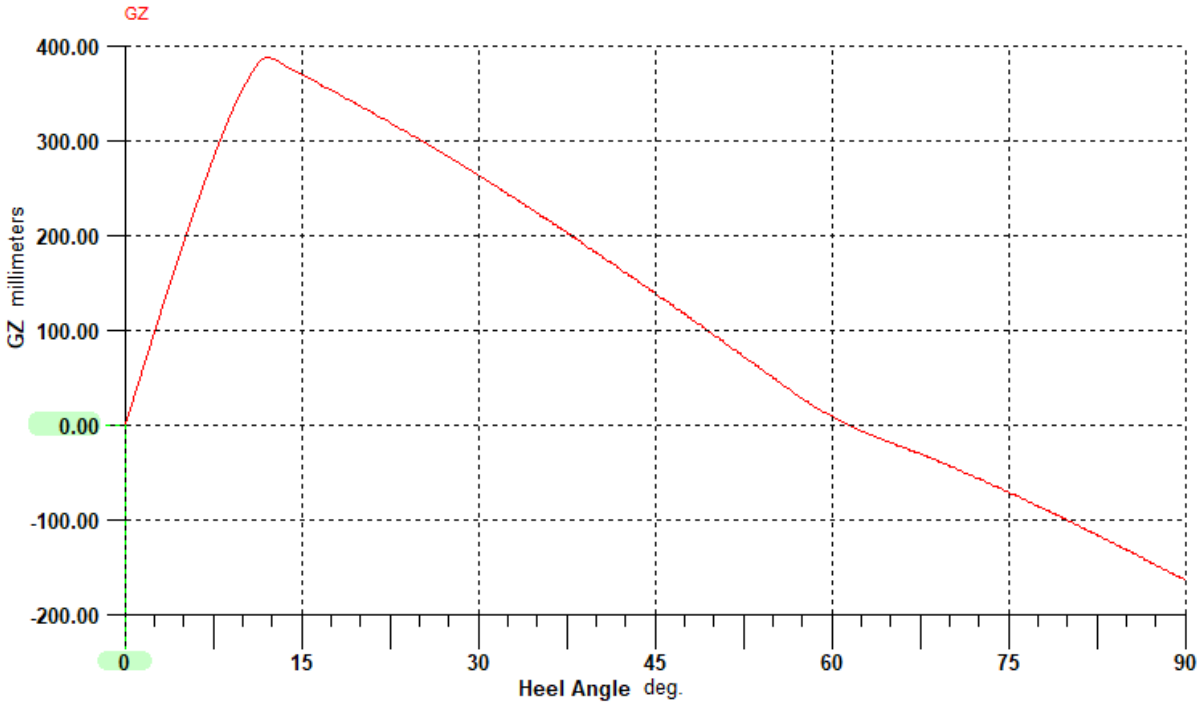
Maximum Waterline Beam = 1373.87

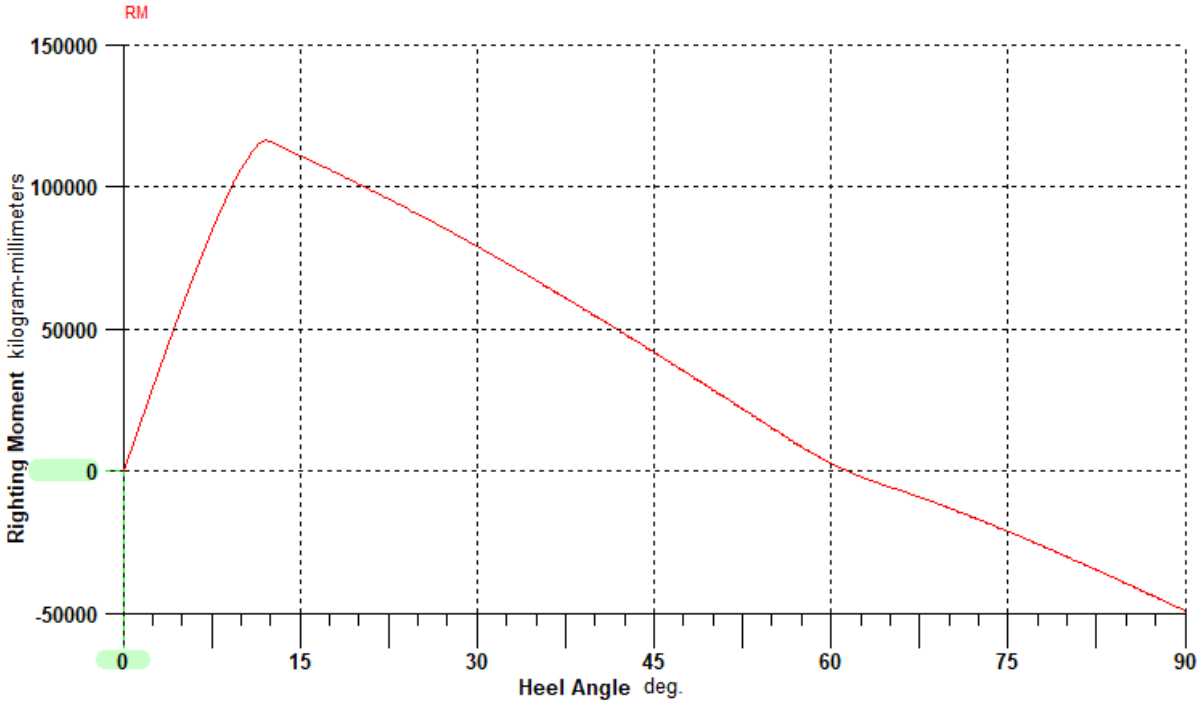
Water Plane Area = 3.79073e+06

Center of Floatation = -0.580838, 5.93989e-13,0






GZ
400.00
300.00
200.00
100.00
0.00
-100.00
-200.00
GZ millimeters
0
15
30
45
60
75
90
Heel Angle deg.


RM
150000
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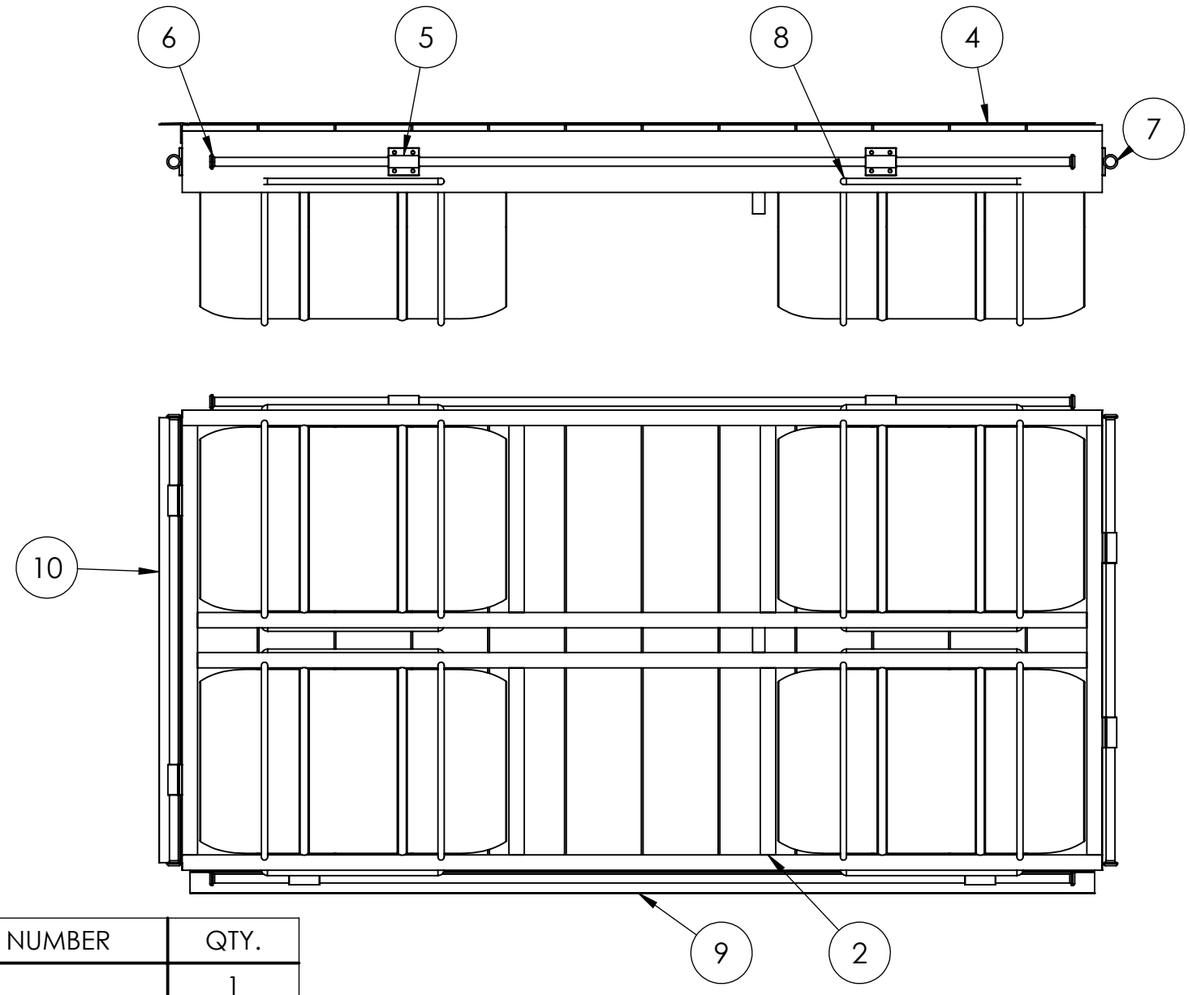
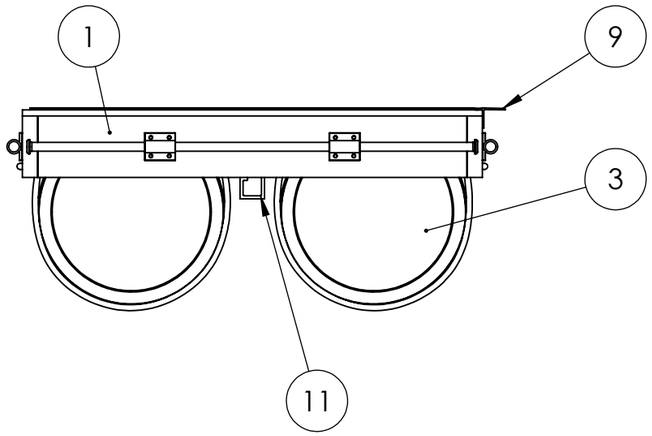
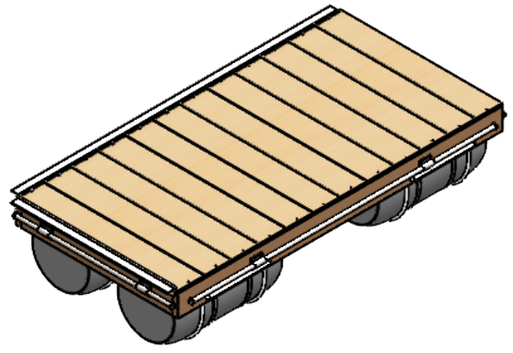
50000
0
-50000
Righting Moment kilogram-millimeters
0
15
30
45
60
75
90
Heel Angle deg.





ITEM NO.	PART NUMBER	QTY.
1	Frame 2	1
2	Final Inner structure	1
3	Drum	4
4	Final Cover panel	1
5	Horizontal Connector	8
6	Sliding Pin	2
7	Connection cilinders	2
8	Rope	2
9	T connector	1
10	T connector shorter	1
11	Hooks	1
12	Vertical connectors	2



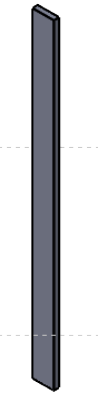
DWG NO. Final Assembly

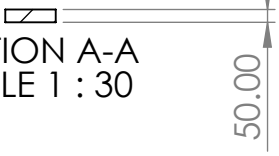
A3

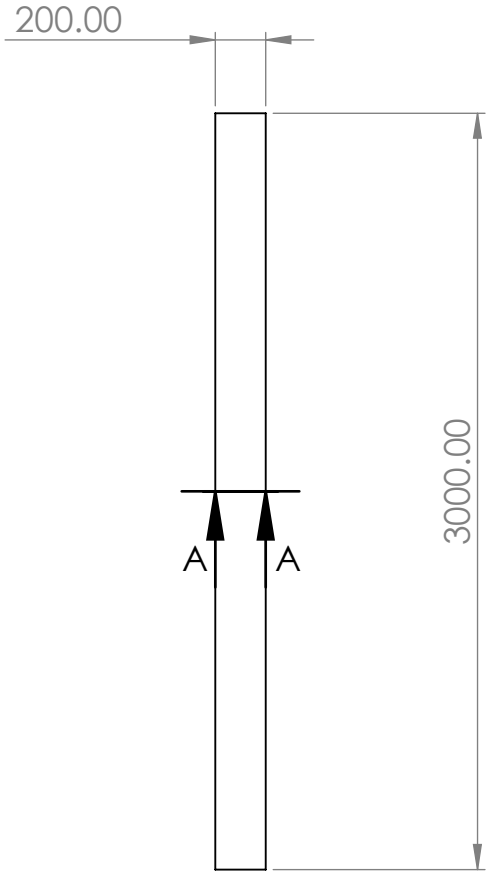
WEIGHT:

SCALE:1:50

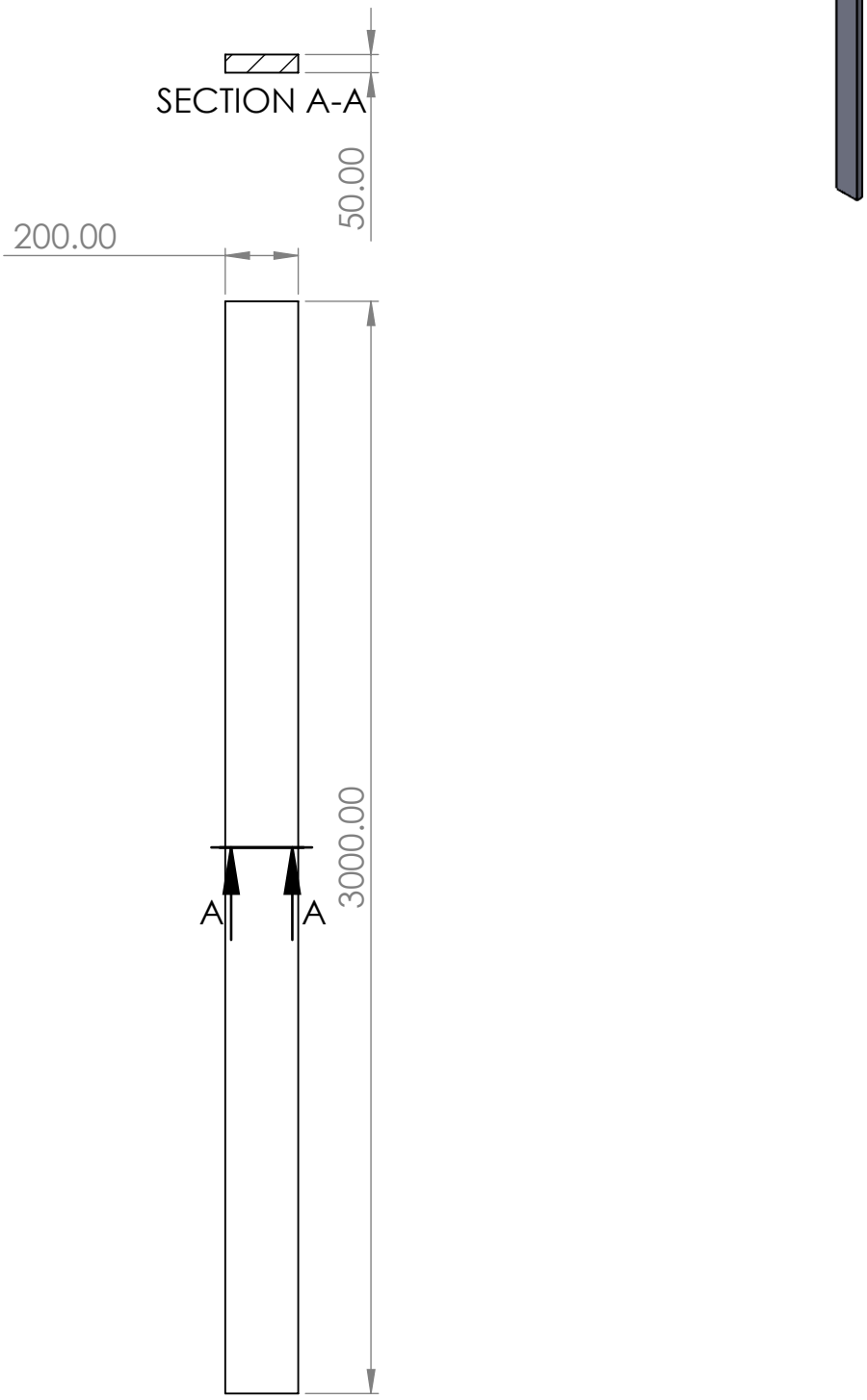
SHEET 1 OF 13







	NAME	SIGNATURE	DATE				TITLE:
DRAWN							Platform module
CHK'D							
APPV'D							
MFG							
Q.A				MATERIAL:			DWG NO. Frame_Longbeam
							A4
				WEIGHT:			SCALE:1:50 SHEET 2 OF 13



	NAME	SIGNATURE	DATE			
DRAWN						
CHK'D						
APPV'D						
MFG						
Q.A						

TITLE:

Platform module

MATERIAL:

DWG NO.

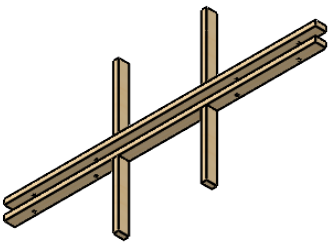
Frame_Shortbeam

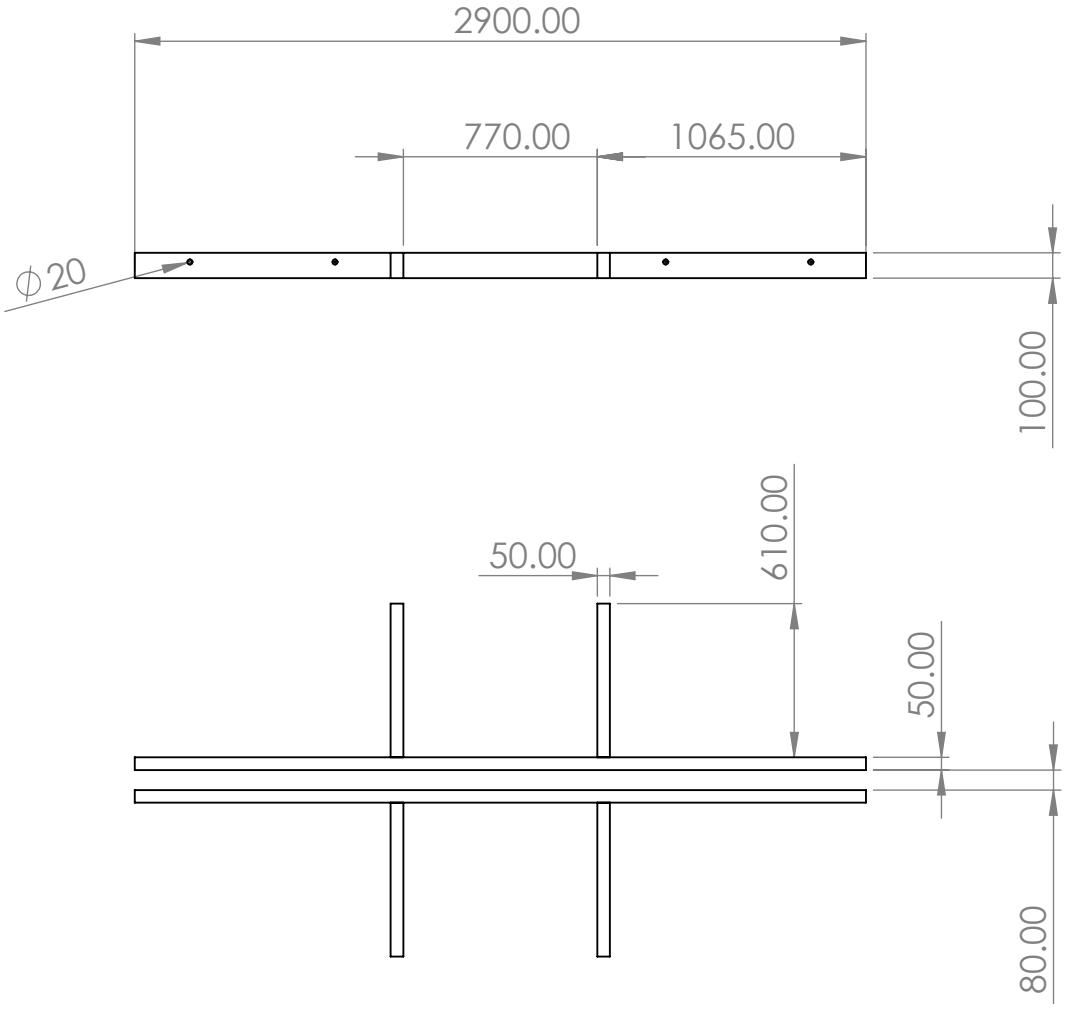
A4

WEIGHT:

SCALE:1:20

SHEET 3 OF 13





UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS SURFACE FINISH: TOLERANCES: LINEAR: ANGULAR:	FINISH:	DEBURR AND BREAK SHARP EDGES	DO NOT SCALE DRAWING / REVISION

	NAME	SIGNATURE	DATE
DRAWN			
CHK'D			
APPV'D			
MFG			
Q.A			

TITLE:

Platform module

MATERIAL:

DWG NO.

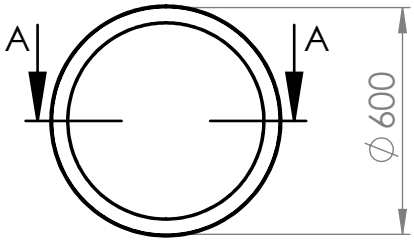
Inner Structure

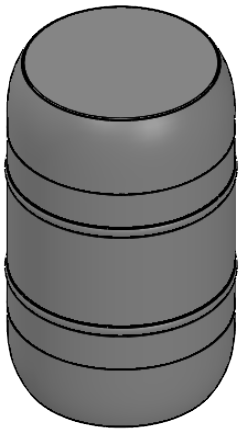
A4

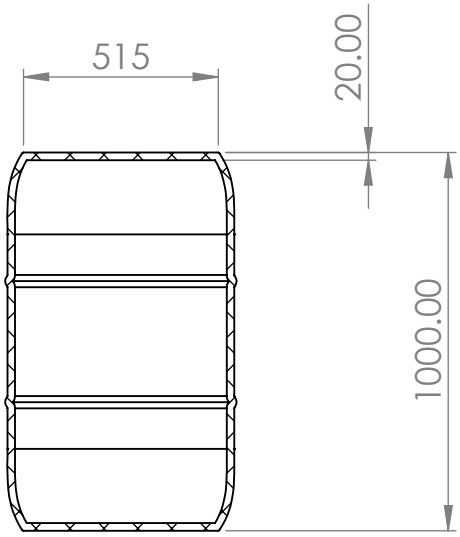
WEIGHT:

SCALE:1:50

SHEET 4 OF 13

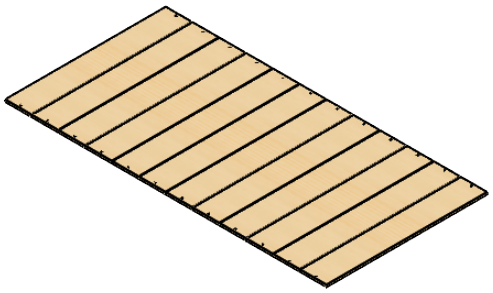


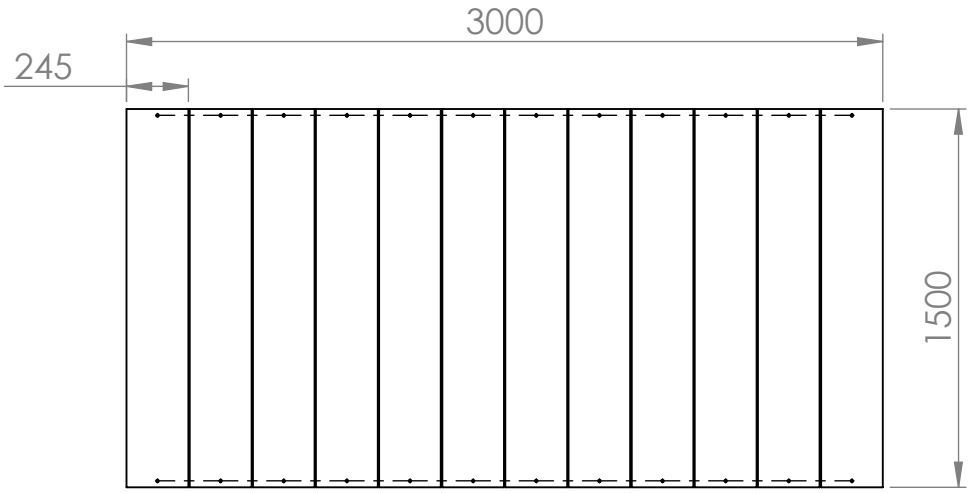


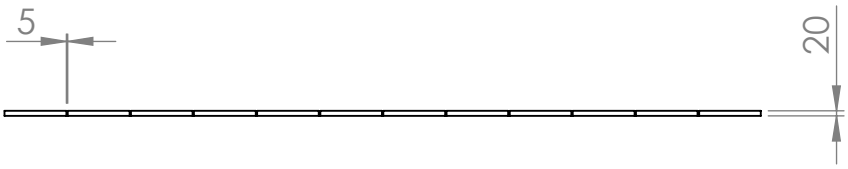


SECTION A-A

UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS SURFACE FINISH: TOLERANCES: LINEAR: ANGULAR:	FINISH:		DEBURR AND BREAK SHARP EDGES	DO NOT SCALE DRAWING	REVISION	
	NAME	SIGNATURE	DATE	TITLE:		
DRAWN				Platform module		
CHK'D						
APPV'D						
MFG						
Q.A				MATERIAL:	DWG NO.	A4
					Drum	
				WEIGHT:	SCALE:1:20	SHEET 5 OF 13







	NAME	SIGNATURE	DATE			
DRAWN						
CHK'D						
APPV'D						
MFG						
Q.A						

TITLE: Platform module

MATERIAL:

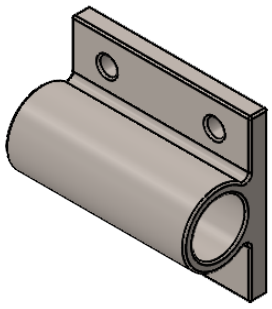
DWG NO. Platform panel

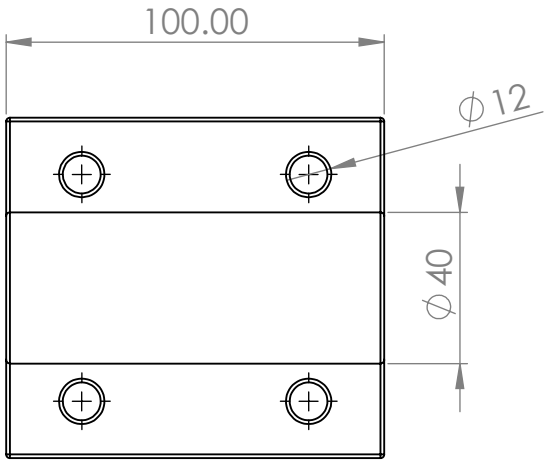
A4

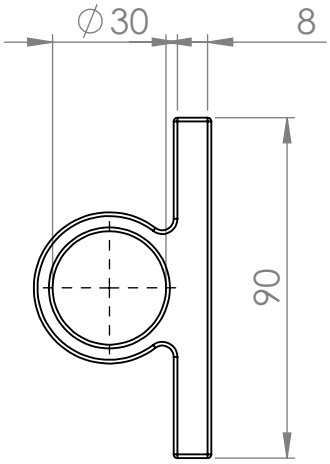
WEIGHT:

SCALE:1:50

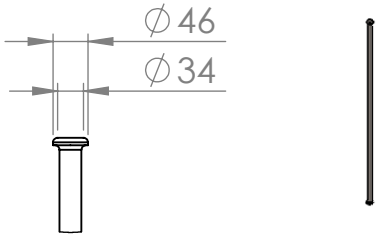
SHEET 6 OF 13







UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS SURFACE FINISH: TOLERANCES: LINEAR: ANGULAR:	FINISH:		DEBURR AND BREAK SHARP EDGES			DO NOT SCALE DRAWING	REVISION
	NAME	SIGNATURE	DATE			TITLE: Platform module	
DRAWN							
CHK'D							
APPV'D							
MFG							
Q.A				MATERIAL:		DWG NO. Horizontal Connector	A4
				WEIGHT:		SCALE:1:2	SHEET 7 OF 13



DETAIL A
SCALE 1 : 10

UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS SURFACE FINISH: TOLERANCES: LINEAR: ANGULAR:	FINISH:	DEBURR AND BREAK SHARP EDGES	DO NOT SCALE DRAWING / REVISION

	NAME	SIGNATURE	DATE
DRAWN			
CHK'D			
APPV'D			
MFG			
Q.A			

TITLE: Platform module

MATERIAL:

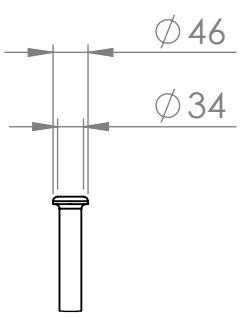
DWG NO. Sliding Pin Short

A4

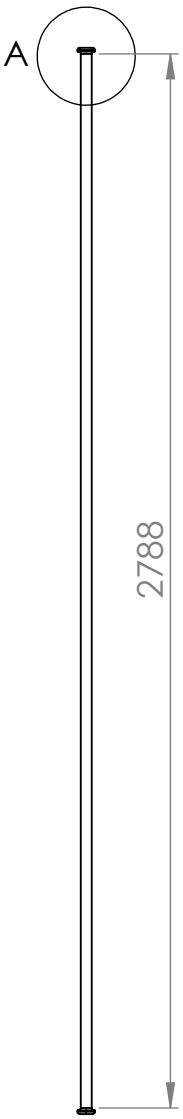
WEIGHT:

SCALE:1:50

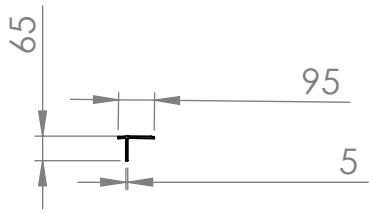
SHEET 9 OF 13

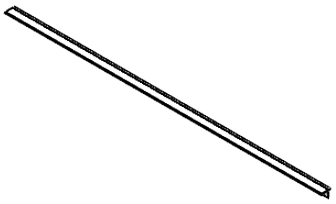


DETAIL A
SCALE 1 : 10

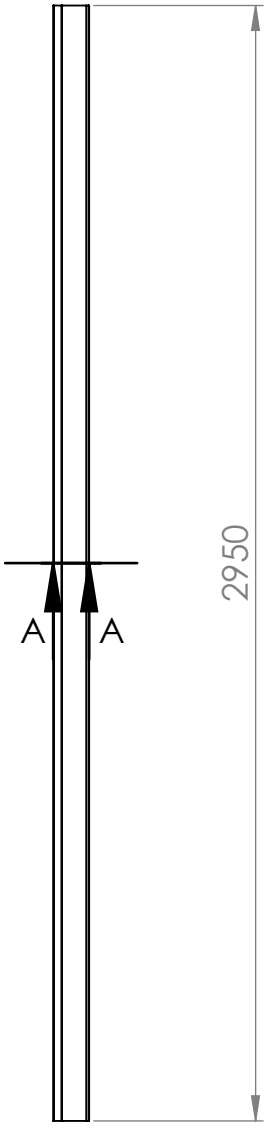


UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS SURFACE FINISH: TOLERANCES: LINEAR: ANGULAR:		FINISH:		DEBURR AND BREAK SHARP EDGES		DO NOT SCALE DRAWING	REVISION
	NAME	SIGNATURE	DATE			TITLE: Platform module	
DRAWN							
CHK'D							
APPV'D							
MFG							
Q.A				MATERIAL:		DWG NO. Sliding Pin Long	A4
				WEIGHT:		SCALE:1:50	SHEET 8 OF 13





SECTION A-A
SCALE 1 : 20



UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS SURFACE FINISH: TOLERANCES: LINEAR: ANGULAR:	FINISH:	DEBURR AND BREAK SHARP EDGES	DO NOT SCALE DRAWING / REVISION

	NAME	SIGNATURE	DATE
DRAWN			
CHK'D			
APPV'D			
MFG			
Q.A			

TITLE:

MATERIAL:

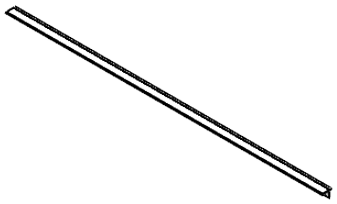
DWG NO. Gap cover long

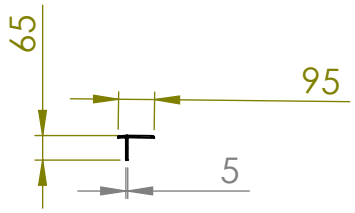
A4

WEIGHT:

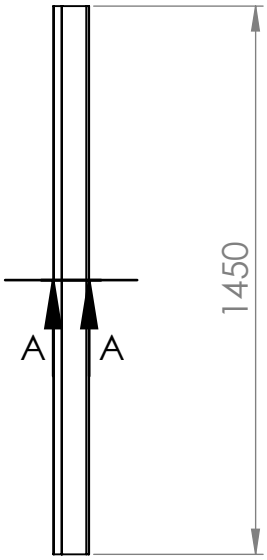
SCALE:1:50

SHEET 11 OF 13





SECTION A-A
SCALE 1 : 20



UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS SURFACE FINISH: TOLERANCES: LINEAR: ANGULAR:	FINISH:	DEBURR AND BREAK SHARP EDGES	DO NOT SCALE DRAWING / REVISION

	NAME	SIGNATURE	DATE
DRAWN			
CHK'D			
APPV'D			
MFG			
Q.A			

TITLE: Platform module

MATERIAL:

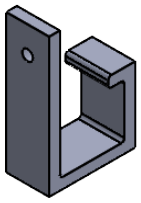
DWG NO. Gap cover short

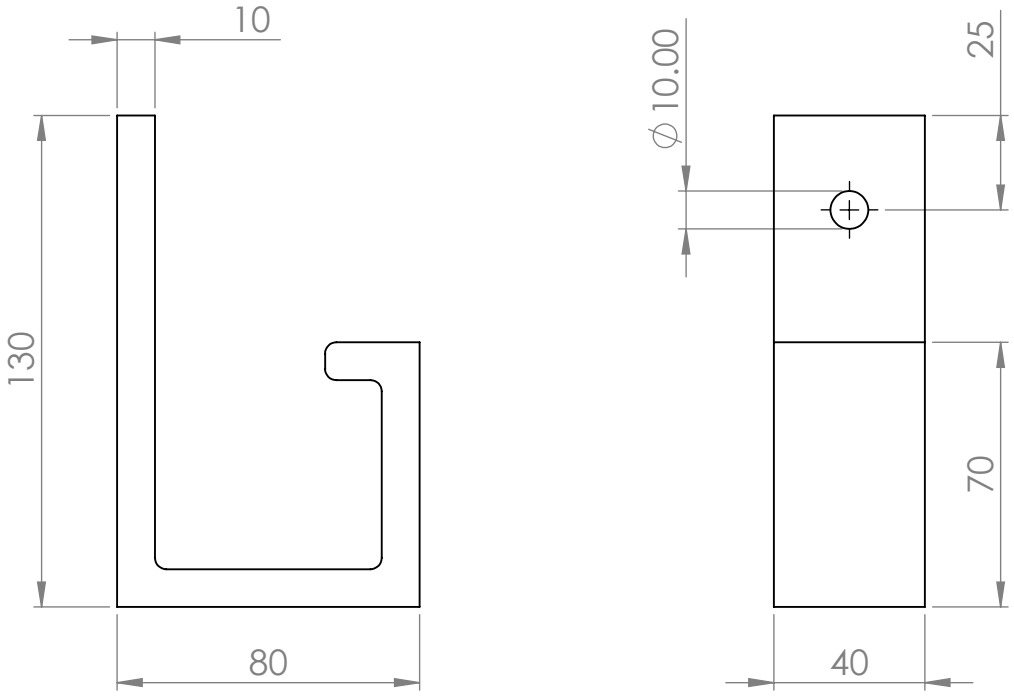
A4

WEIGHT:

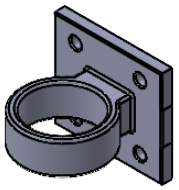
SCALE:1:50

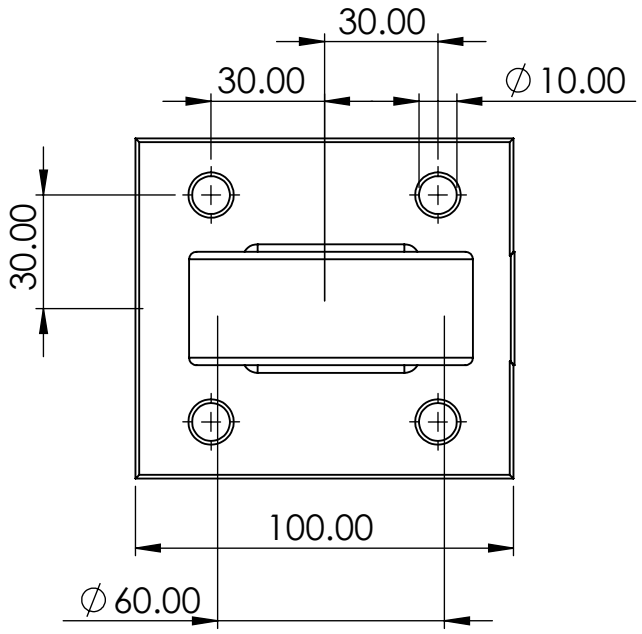
SHEET 10 OF 13

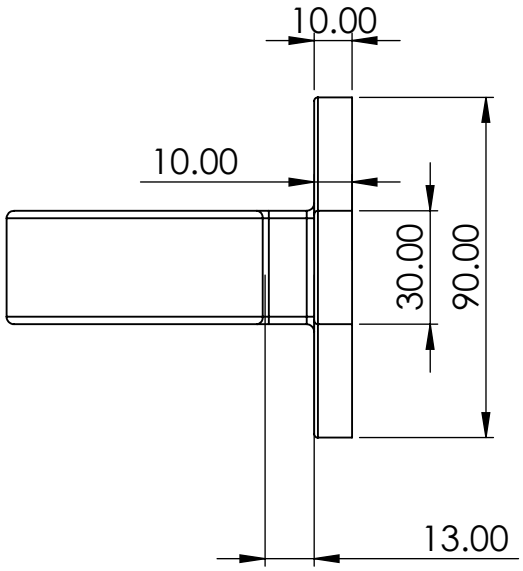




UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS SURFACE FINISH: TOLERANCES: LINEAR: ANGULAR:	FINISH:		DEBURR AND BREAK SHARP EDGES			DO NOT SCALE DRAWING	REVISION
	NAME	SIGNATURE	DATE			TITLE: Platform module	
DRAWN							
CHK'D							
APPV'D							
MFG							
Q.A				MATERIAL:		DWG NO. Hooks	A4
				WEIGHT:		SCALE:1:2	SHEET 12 OF 13







UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS SURFACE FINISH: TOLERANCES: LINEAR: ANGULAR:		FINISH:		DEBURR AND BREAK SHARP EDGES		DO NOT SCALE DRAWING	REVISION
	NAME	SIGNATURE	DATE			TITLE: Platform module	
DRAWN							
CHK'D							
APPV'D							
MFG							
Q.A				MATERIAL:		DWG NO. Vertical connector	A4
				WEIGHT:		SCALE:1:2	SHEET 13 OF 13