# HOME WORKSPACE

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# ABSTRACT

In the course of the five week project for the course DEP301 : Collaborative Design Project we were supposed to identify a problem relevant in the context of Post Covid World and plan a business enterprise based on the solution.

Our topic is the home workspace. In India it is estimated that companies would implement a hybrid model in the future where people do both work from home and onsite work depending on the nature of the work and the current houses are not designed to accommodate work from home. From our primary and secondary research we understood that people need a secluded space for working. Distractions caused by the home environment like family members intruding, laziness due to relaxed home environment, lack of organisation, etc hinder productivity. Likewise, having workspace and personal life under the same roof could make it difficult to detach after work and affect family life.

In urban cities like Mumbai there are space constraints and people live in small houses so there is a problem of how to accomodate a separate secluded workspace. Our solution which is a wall mounted home-office divider helps create a temporary work environment and space in the house which people can use for working and after they are done, it can be closed and it takes very little space. It aids the user in multiple ways apart from creating a secluded space according to their requirements.  It also takes care of not making the house look odd when being used.

Our business plan includes doing B2B sales to companies implementing work from home as well as B2C sales using e-commerce to reduce the chances of failure. We use digital marketing, distributing pamphlets in office areas to increase reach and affiliate marketing using interior designers for the next versions of our product.

# CONTENTS

# INTRODUCTION

Due to COVID, life has changed in numerous ways. It has changed how people live, work, socialise, study, consume, recreate, etc. This has created a wide pool of opportunities to design and build a business enterprise. One of the affected areas is work. The sudden lockdown forced most people to work from home.

There are various benefits of working from home and productivity was seen to be the same or even more in some cases. However this productivity is largely affected by what environment one has at home and whether it is suitable for working or not. Various distractions caused by the home environment hinder productivity.

In the future houses would be built considering accomodating a workspace. However, what about the houses that already exist? There is a need to accomodate a workspace in the current homes. Houses in urban cities like Mumbai have space constraints and is difficult to dedicate a separate secluded space just for working.
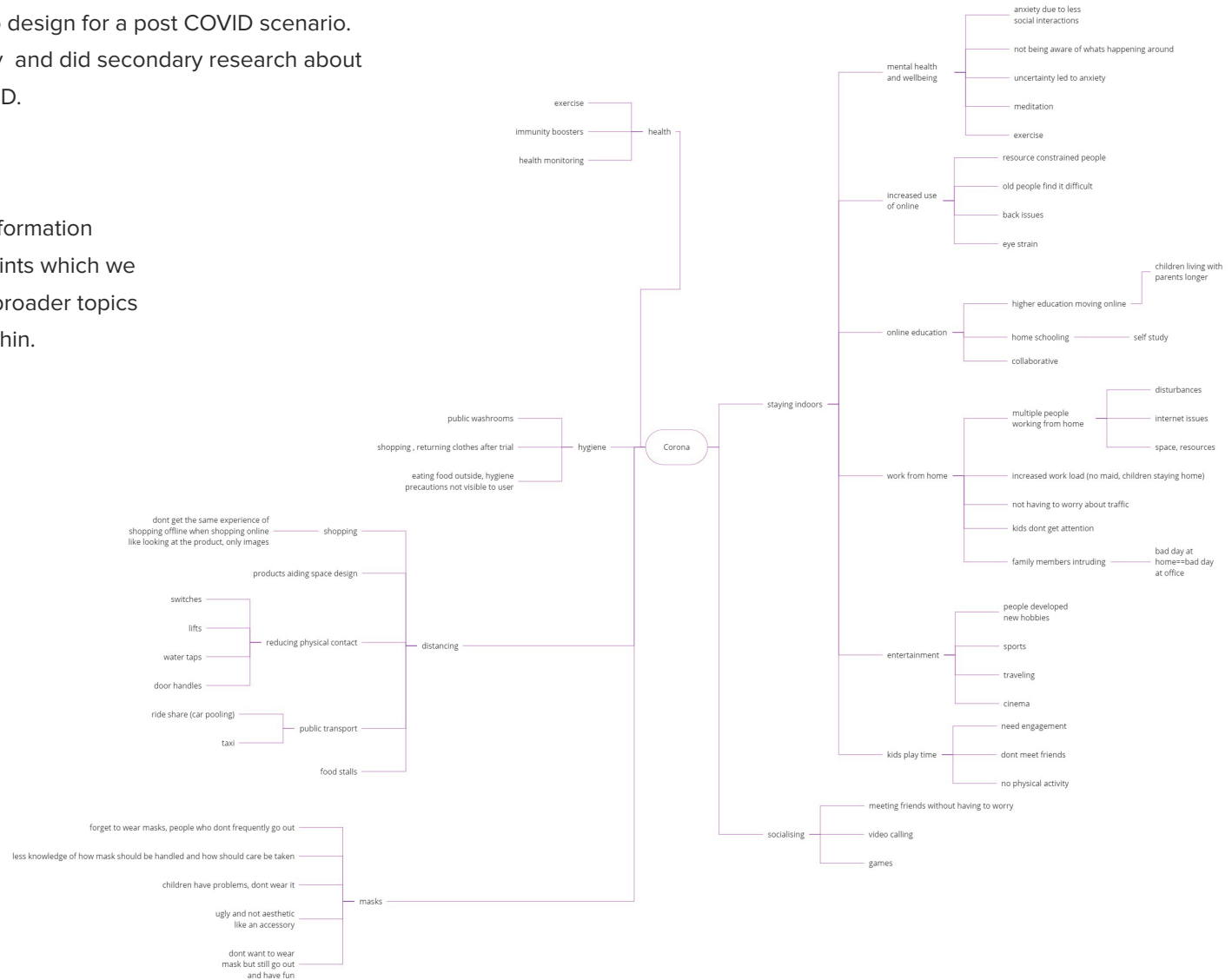
In this project we attempt to create a solution for this problem of accomodating a workspace in small houses.

# PROBLEM IDENTIFICATION

The broad topic given to us was to design for a post COVID scenario. We talked to our friends and family and did secondary research about how life had changed due to COVID.

**INITIAL BRAINSTORMING**

We made a mind map based on information collected. We also added other points which we thought were relevant. There are broader topics and each having smaller topics within.

exercise
immunity boosters — health
health monitoring

public washrooms
shopping , returning clothes after trial — hygiene — Corona
eating food outside, hygiene precautions not visible to user

dont get the same experience of shopping offline when shopping online like looking at the product, only images — shopping
products aiding space design
switches
lifts
water taps — reducing physical contact — distancing
door handles
ride share (car pooling)
taxi — public transport
food stalls

forget to wear masks, people who dont frequently go out
less knowledge of how mask should be handled and how should care be taken
children have problems, dont wear it — masks
ugly and not aesthetic like an accessory
dont want to wear mask but still go out and have fun

mental health and wellbeing
- anxiety due to less social interactions
- not being aware of whats happening around
- uncertainty led to anxiety
- meditation
- exercise

increased use of online
- resource constrained people
- old people find it difficult
- back issues
- eye strain

online education
- higher education moving online — children living with parents longer
- home schooling — self study
- collaborative

staying indoors

work from home
- multiple people working from home — disturbances / internet issues / space, resources
- increased work load (no maid, children staying home)
- not having to worry about traffic
- kids dont get attention
- family members intruding — bad day at home==bad day at office

entertainment
- people developed new hobbies
- sports
- traveling
- cinema

kids play time
- need engagement
- dont meet friends
- no physical activity

socialising
- meeting friends without having to worry
- video calling
- games

## MASKS

People find the current masks intrusive and uncomfortable in many ways. Some find physical discomfort in wearing them whereas some people worry about looking bad wearing it and whether it goes well with their outfit. There is possibility of making masks another accessory that adds to the personality/look of the person while still maintaining the safety factor. There is also lack of information about how a used/unused mask should be handled.

## DISTANCING

**Products Aiding Space Design -** There is a likelihood of future spaces needing people to maintain distances from one another, atleast in the near future. There is a possibility of creating products that will help in managing existing spaces better.

**Food Stalls/Restaurants -** Although people have started ordering food, sitting in restaurants and eating in public is still something people are worried about and it is also a high risk area. People need to take off their masks in this situation and it increases the risk. There is a need to look at how restaurants can be made safer for public dining. The concern for hygiene when dining is also one of the factors that stops people from dining out. How clean are the plates, cutlery. Bringing in more transparency in the process might help people trust more.

**Public Transport -** Taxis, rickshaws, buses, trains are essential for daily life commuting. In such an area, a lot of people are present. People are constantly coming in contact with new people. There are problems like crowding. Cars and taxis are closed environments. How carpooling would work? What are other alternatives? How to make public transport safe?

**Shopping -** A lot of people have shifted to online shopping due to covid and it has become a part of their life now. This works when buying things

that you are familiar with because you know it is going to be of a particular quality because you have used it earlier. However when you have to make purchase for a thing you aren't familiar with, like clothes there are some experience issues about not being able to look at the fabric, feel it, the quality. Returning items when purchased item not meeting expectations also increases the resources used in the process.

**Reducing physical contact with frequently touched surfaces -** Design of things or systems to reduce physical contact in publicly used environments or the design of switches, taps, door handles, etc to reduce the need to touch by hands.

## STAYING INDOORS

**Work from Home -** Due to COVID, people were forced to work from home. What was earlier frowned upon is now considered to be a potential future normal post COVID. Companies are thinking of making work from home a permanent choice for their employees. Some companies have already made that decision.

**Entertainment -** Because of staying indoors for the past few months people have adapted and found their ways of recreation at home. People found new hobbies. Cinemas would have to provide a much better experience now to attract people back. Also, maintaining the safety of people would be necessary. How would concerts be held? How would public events happen?

**Kids play time -** Because of COVID children haven't been able to go out and play. Physical activity is very important in child's growth. What can be done to engage children at home in some fun physical activity? Can we make a game for that?

**Online education -** Schools shifted online and online education is not great. Portions have been cut down, effective teaching is not happening, resource  constrained students are getting affected. Students are being asked to selfstudy some parts of the syllabus. This has created curiosity and concern among parents and there is an increase in parents willing to homeschool their children. There is an opportunity to create a game/toy for young kids to inculcate and develop the habit of selfstudy.

**Increased use of online medium -** A lot of services shifted online. People started online shopping, schools are running online, however in this sudden forced shift to online, older people are suffering a lot. What can be done for them?

### HEALTH AND HYGIENE
Due to COVID there is an increase in concern for health and wellness, people started including food items with medicinal properties, various activities with a motive to boost their immunity and stay healthy.

### SOCIALISING
After staying at home for months people want to go out and meet friends and travel. But there is still need to maintain precautions and safety norms when meeting people. How can we still achieve the same fun while also maintaining the safety standards.

# NARROWING DOWN

From the mindmap we selected six topics according to our interest and which we thought had potential even after life is back to normal. They were as follows:

**Game for socialising -** A real life world in the form of a virtual game where people can meet their friends, new people, play games, visit places.
People expressed a desire to go out and meet their friends after having been inside for months. A video call AV/VR platform/game where people can have the experience of meeting their friends but virtually.

**Addition to a health monitoring device** - In the recent years, trends show that people are incorporating health monitoring devices and COVID added fuel to it. Pehle are now more conscious and concerned about their health and seeking out to have a healthier lifestyle.
While health monitoring devices like fitbits, oura ring exist, there are possibilities of incorporating more insights and suggestions for the user from the data recorded by these devices.
A kind of a personal health monitor and guide that also motivates people to a better lifestyle, which becomes like a personal trainer and companion

**Workspace design -** Solving problems faced by people in the work from home environment. Due to COVID majority of the office going people were forced to work from home. The current houses are not designed to accommodate that. There are a number of issues like increased stress due to less social interaction, difficulty in maintaining a fixed schedule which causes working hours to get extended, disturbances at home, etc.

**Neighborhood networking -** During COVID when everyone was locked up in their homes we were getting news from all over the world but a lot of us didn't know what was going on in the neighbourhood. This would be a social networking kind of platform where you get to know what is happening in your neighbourhood as well as make friends from your neighbourhood to have a better understanding of your surroundings.

**Safer packaging -** Food packaging that looks, feels and is hygienic and safe

**Engaging toy/game for children** - Due to COVID, schools shut down and children are confined to their homes. This is toy/game to engage the child as well as promote value of self study while their parents work and engage with the kid periodically.

After this we did parallel secondary research about scope of the topics, what already exists, what are the trends and based on that eliminated some topics and selected the final topic.

After weighing in all the topics and discussion within the group, the topic is work from home was finalised.

Work from home still was a vast topic in itself and had a number of problems. So we listed all the problems in work from home and categorised them using the bottom up approach.

| slacking off due to lower morale | harder to collabotrate(not good fror team based work) | getting to know people is hard (esp if you're new) |
| no 'water cooler effect' | increased stress/anxiety due to less social interactions with office peers, uncertainty(esp in case of younger workers) | multiple people, less space for having a dedicated area for each |
| work-home balance | working over hours | currently houses not designed to accomodate work from home, furniture, etc |
| harder to track productivity | home environment-work environment clash esp in small houses where privacy is an issue | easy to get back to bed |
| with kids at home not such a good idea | 1/3 meet future spouses at work(in the us) | tv, bed and fridge the 3 enemies |

→

| problems with working from home | Stress | collaboration between team members | homes not designed to accomodate wfh | Increased responsibilites | self discipline |
| | no 'water cooler effect' | harder to collaborate | home environment-work environment clash play vs work | have to look after children | easy to get back to bed |
| | increased stress/anxiety due to less social interactions with office peers, uncertainty | getting to know people is hard (esp if you're new) | lack of a dedicated space | Family expects to help in household chores | working over hours - not keeping a schedule |
| | | getting to know people is hard (esp if you're new) | privacy is an issue | | No supervisor - pressure to complete work |
| | | | work-home balance | | |

miro

From these categories we selected to work on the issues that the person faces due to the home environment like disturbance from family, lack of a dedicated space for working, play vs work environment, etc.

# WHY HOME WORKSPACE?

From secondary research we found that even though there are various pros to working from home and productivity is seen to have been the same or more in some cases, the productivity is largely affected by what environment one has at home. Whether it is suitable for working or not.

The current homes are not designed to accomodate that. Appropriate workspace is crucial to have good productivity at work. A clash and interference from the home environment, feeling unmotivated due to relaxed ambience at home, lack of organisation, home schedule clashing with work schedule etc are deterrents in creating an effective work experience at home.

Other issues like collaboration between team members is a problem relevant right now where people do not have an option but to stay at home and work. In a post COVID scenario it is estimated that work from home would be a part along with onsite work which means a hybrid model where people would go to office on some fixed days when collaborative work is involved as collaboration happens better in person when people are in front of each other but work from home when they have been assigned taskes that they can do on their own. So the issues of communication in between team members, informal conversations between colleagues and stress due to lack of water cooler effect get eliminated.

Work from home policies where in place even before the pandemic in some companies but was not very widely used. It was used on days when an individual didn't have much work to do and was looked at as a sort of a holiday and when serious work can't be done. This notion has changed during the pandemic. So there is a possibility of work from home being more widely used even after the pandemic is over and can have a permanent sort of change in our lives.

# PRIMARY RESEARCH

We interviewed 7 people in the age group 22-27, living with their families in Mumbai and working from home. We couldn't get a diverse set of people in terms of age and gender.

**We prepared a rough tentative list of questions to guide us during the interviews. It had the following questions:**

• What does a typical day in your life look like?
• Where do you live?
• Who do you live with? How many members, what do they do?
• Different rooms in your house?
• Why did you decide to work from home, or what made you decide to work from home?
• What work do you do?
• How long have you been working from home?
• How many family members are working from home?
• Do you go to the office some days of the week?
• If you had the option of working from home even after corona, what would you choose? Why?• Where do you sit for working? What does your work space look like?
• (If they have a room of their own for working) how would work if you did not have this? What would you do? Would it hamper your work? How?
• Do you have fixed working hours?
• What aspects of a physical office do you miss the most?
• Do you think you are more productive working from home?
• Do you experience any physical pain? After or before work from home?
• How often do you take breaks in between work?Similar to back in office?

• Do you stand and work from time to time?
• How much are you willing to spend on a better (more ergonomic) setup?
• Do you spend more time with your family now?
• Do you get disturbed by your family members ?
• Would you consider getting yourself proper work furniture if this is to continue or if you're going to be working from home for at least a couple of days of the week? Why?
• What does your workspace generally have? What are your requirements? Books, papers, desktop, laptop, etc?
• If they have a room of their own, what else is there in their room apart from work desk?
• Can show them examples of already existing products depending on their answers wherever applicable, ask opinion of how it will be helpful or not
• Would you be willing to make structural changes in your home to create a better work environment in your home? Why?
• How does having kids at home affect your work? How do you deal with them?
• How much would you be willing to spend?
• What are your biggest concerns/considerations/requirements when you buy new furniture?
• What changes would you make in your current work from home work space if you had no restrictions? why?
• What was/is your set up like at work? More ergonomic chairs? Better inter net?

# WORKSPACES OF PEOPLE INTERVIEWED
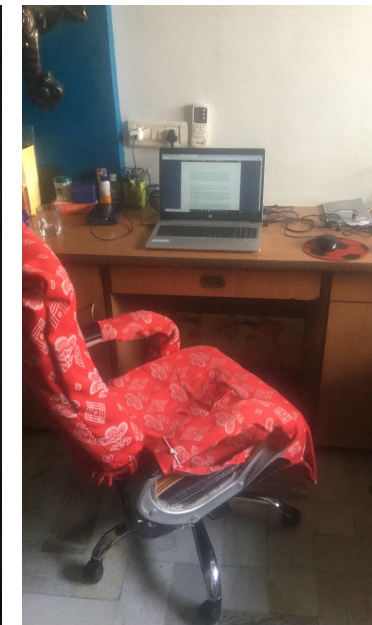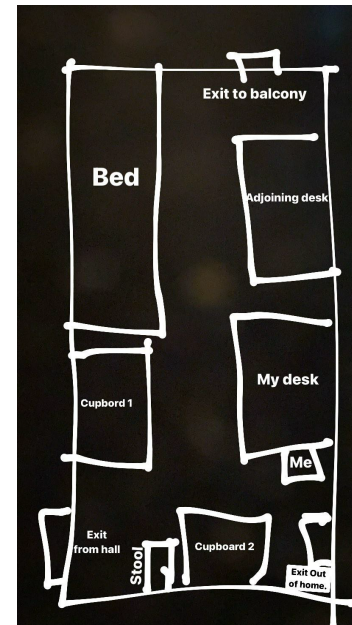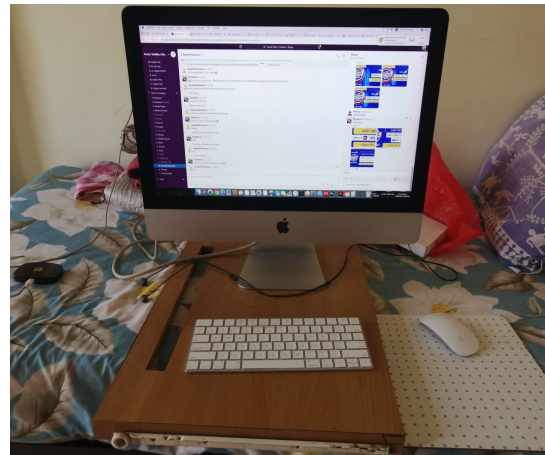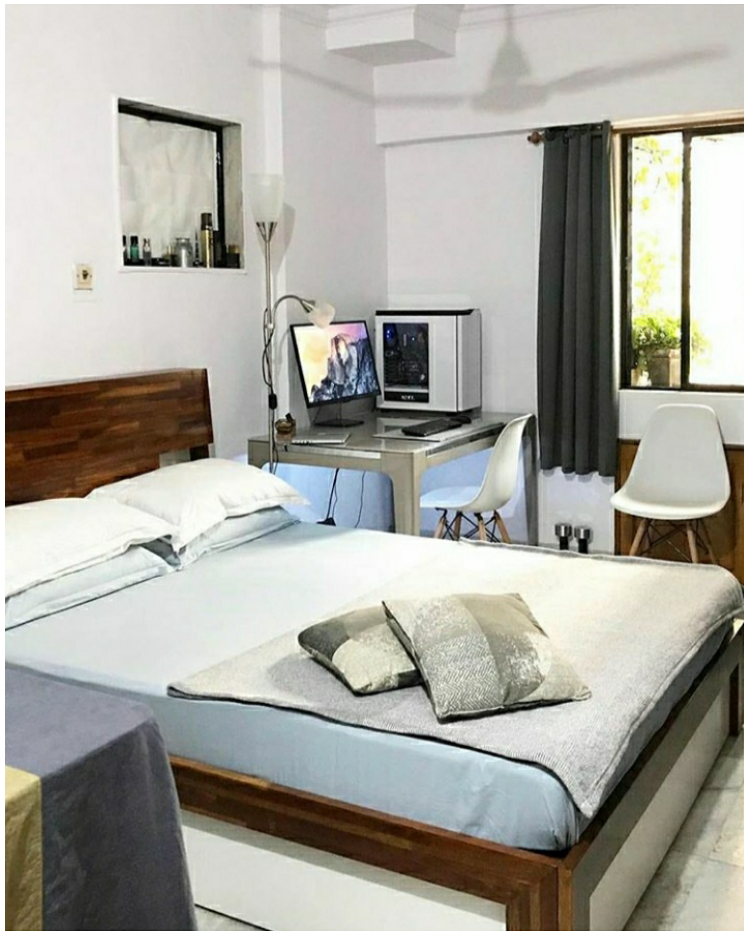
# INTERVIEWS



**USER 1 - M27 - Family lives on the other floor**

User is living alone but his family lives in the same building on the other floor. User has furniture issues in his room. It doesn't have a good chair, his chair is broken which gives him back pain. His family lives in the same building on a differnt floor and has good furniture however user prefers to work in his room on the other floor despite of having bad furniture because he has his own space without disturbance here. He doesn't have a private space on the other floor which is very inconvenient to the user.



**USER 2 - M27 - Shares bedroom with brother**

User's workspace is in corner of his bedroom doesn't have any problem with his existing workspace. However, user's brother who shared bedroom with him has to adjust. User asks his brother to not be in the room when he is working because he wants his space to work efficiently. User closes the door to stop people from coming into the room and it is like a cue to not disturb when the door is closed. User was freelancing a few years back and that is when he set up his workspace. It consists of a simple chair and table with a multicolour light in one corner of the room.

# INTERVIEWS
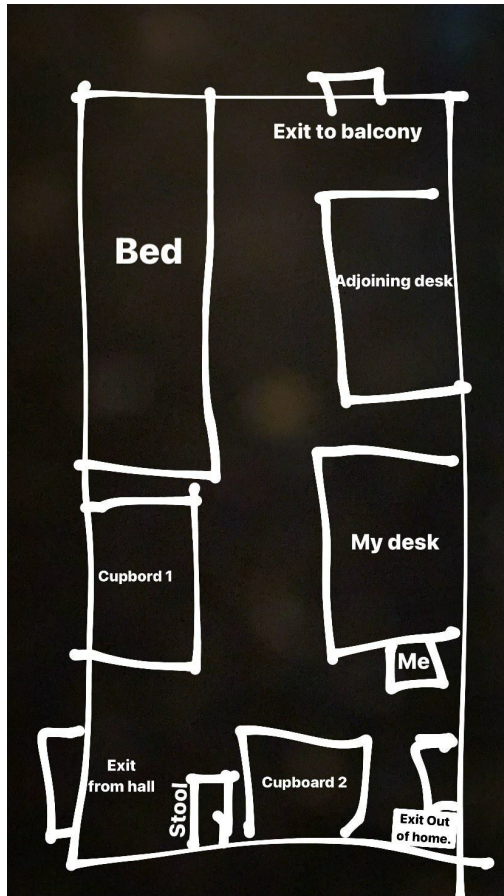


**USER 3 - M28 - Doesn't have private space**

User lives with his parents and grandmother. He uses a wall mounted folding desk in his living room for working. Living room is a shared space and other members of the family also spend time here and do their chores throughout the day. As a result of this there is constant movement of people around the user's desk which causes his attention to get diverted again and again causing loss of focus. He uses noise cancelling headphones. User has to inform family members before meetings to not be around his desk.



image for reference

# SURVEY

We also conducted a survey to understand the market, what people's buying preferences are, what kind of changes are they willing to make in their home, whether they are willing to make structural changes to get a better workspace, how much are they willing to spend, what changes would they want to make in their current workspace, what issues are they facing,

Gender



Do you have a separate isolated workspace in your home?



Would you be willing to work from home post COVID if given the option to do so?



If yes, would you be willing to make structural changes (building new walls or breaking walls) in your home to have a better work environment at home?



Where do you live?
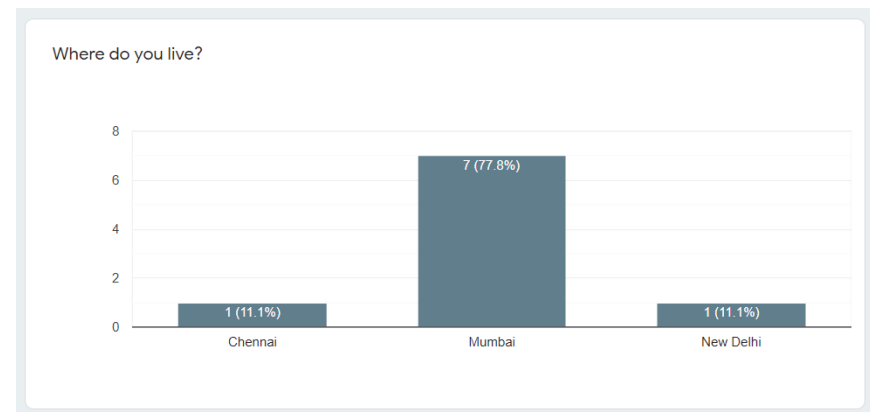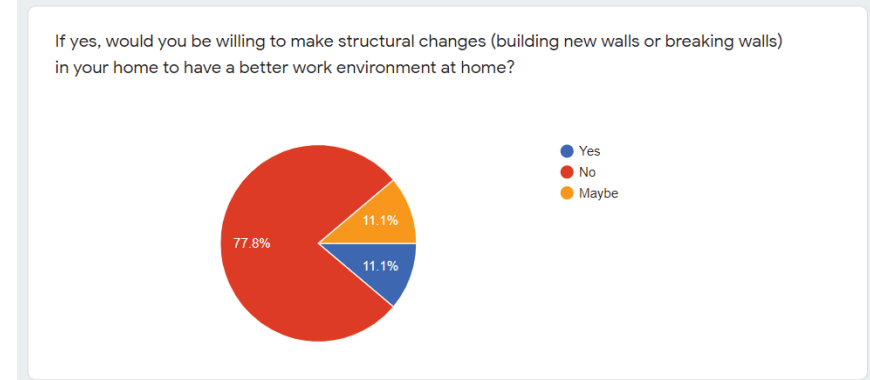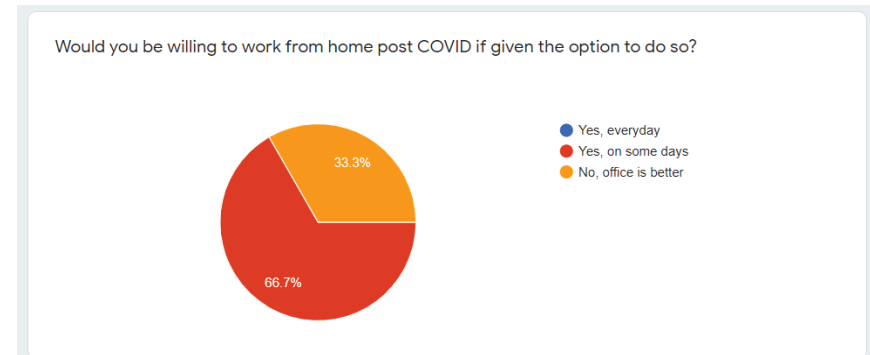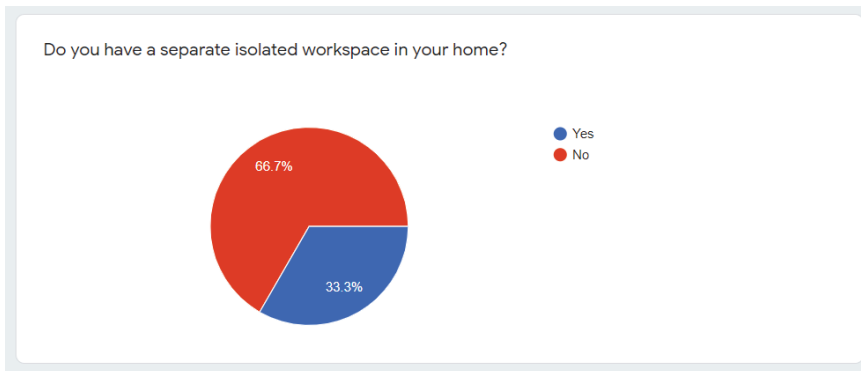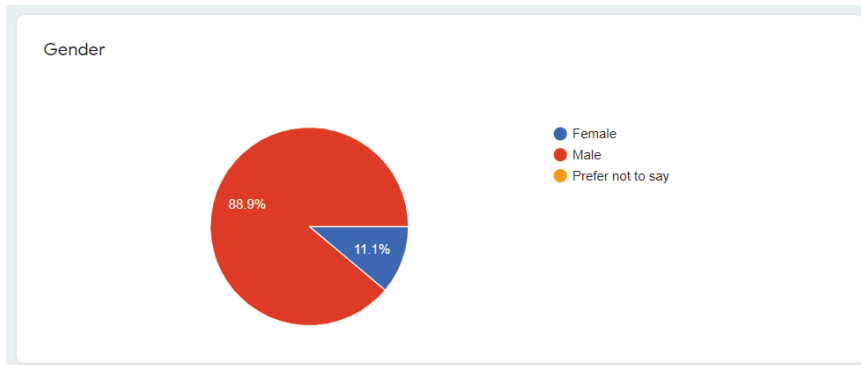
## Work from Home Survey

### What issues are you facing when working from home?

| Issue | Count |
|---|---|
| Noise in surroundings | 4 (44.4%) |
| Lack of privacy | 6 (66.7%) |
| Lack of desk/table for work | 3 (33.3%) |
| Children at home | 0 (0%) |
| Feeling lazy, unmotivated | 6 (66.7%) |
| Taking longer breaks | 6 (66.7%) |
| Have to do household chores | 4 (44.4%) |
| Harder to collaborate with team | 2 (22.2%) |
| Family members unintentionally intruding | 1 (11.1%) / 7 (77.8%) |
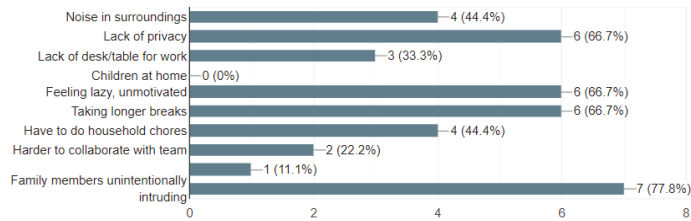
### What level of privacy and isolation would you like for your workspace at home? What disturbances affect your productivity?

Current one is good

Secluded workspace for 9 hours. Interruptions in the form of noise, power cuts may affect productivity

Personal room

I would like to have a private room for my home workspace. Currently I share the living room for my work. There are instances wherein my work is affected by other family members doing their chores in the living room.

Separate room

Don't ask questions, talk to me when I'm working

Peaceful room without any disturbance is what I mostly prefer.

Need isolated place for atleast 4 hours straight.

### Where would you prefer buying furniture from?

| Source | Count |
|---|---|
| Online | 5 (83.3%) |
| Local store | 3 (50%) |
| Custom made | 0 (0%) |
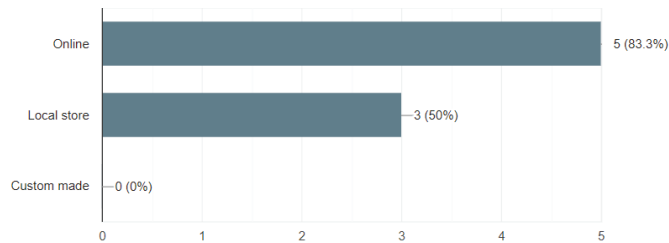
### What are your biggest concerns/considerations (cost, space, comfort etc) when buying new furniture in order of priority?

Cost

Comfort, Cost, Space

Normal table would do

Space, Comfort, Price, Logisitics

Space cost

Space

Mostly it's space

Space, cost

### Which websites would you probably buy from?

| Website | Count |
|---|---|
| Pepperfry | 6 (100%) |
| Ikea | 5 (83.3%) |
| Urbanladder | 2 (33.3%) |
| Amazon | 5 (83.3%) |
| Flipkart | 3 (50%) |
| Wooden Street | 0 (0%) |
| InLiving | 0 (0%) |
| Homeshop18 | 1 (16.7%) |
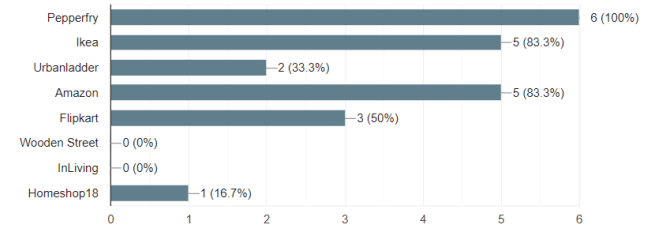
### How much are you willing to spend?

I'm happy with current

20 K

2 - 3k

Upto 20% of my monthly salary

Around 2k

2k max

15-20k

20k

5k

What changes would you make in your current workspace at home if you had no restrictions?

No changes

Design a secluded space exclusively for work

A proper table and chair near the electric board

A private enclosed workspace, a table, a good focused light source

Private room

May be upgrading in furniture and increase space in the room by shifting unnecessary things outside the room.

Better monitor ram and graphic card

Private area where people don't come

# KEY INSIGHTS FROM RESEARCH

**People want a secluded space**
The key insight that we got from the study is that people need a secluded space for work. Our users had their family members interfering with their workspace unintentionally disturbing them causing them to lose focus. People primarily need a private space where they dont want to be intruded. Family members unintentially interrupt user's work flow.

One of the people we interviewed doesn't have any problem as such with his current set up. However his brother who shares the bedroom with him has to adjust because user wants his personal space. So either the person working from home or the family members have to adjust in order to acco-modate work from home in their daily life. We also saw people prioritising privacy over comfortable furniture.

**Temperory and affordable**
People do not want to make structural changes in their current existing home to get a better workspace because they have somewhat adapted to their situation and spending so much money on changing the interior is not worth it. Solution should be something temperory and affordable.

Why we were trying to see if people are willing to make structural changes is because there are two approaches that we could have taken. One was to design for houses that are yet to be constructed and the other one is to design for spaces that have already been constructed and people are living there. We want to design for houses that are already there.

Structural changes are not something you do a lot. So it was necessary to understand to what extent the users are willing to make changes in their house and spend to have a better experience of working from home.

**Furniture requirements are table, chair with power supply nearby**
There are furniture related issues for example more people are working from home but the family has only one desk, those issues are solvable by existing furniture designs. There are a lot of options available in the market to meet the needs of comfort, space, table for bed, aesthetics, etc which would involve some rearragement of things in the room. There are no special needs for that. The reason people currently don't have them is because they didn't find the need to buy them currently in this scenario where the future is uncertain in terms of working from home.

So the main concern is private and personal space which is required to stop distractions caused by family members unintentionally intruding. Invisible boundaries can often be misunderstood and can cause trouble.

# PROBLEM STATEMENT

Designing for privacy in a home workspace to reduce distractions created by home environment for a person working in a shared space at home without making structural changes.

# PRIMARY RESEARCH

STAGE 2

**What kind of privacy?**
We went back to our users and talked about what kind of privacy do they want when they are working and why did they want that.

**Diversion of attention caused by constant movement of people**
People going about their life, moving around the user's workspace would cause the user's attention to get diverted again and again everytime someone passes by. In this way family members unintentially disturbed the user.

**Family members unsure of whether it is okay to talk or not**
User asked his mother to not disturb him an hour back. Now after an hour mother has to ask something to the user and is unsure if the user is still not to be disturbed or it is okay to talk to him now. People can sit in the same place where they work, where they have set up their desktop for some other work which requires them to use it. For example, to buy groceries, do online shopping, pay bills, etc.

**Display of home environment in the background during meetings**
People don't want to be worried about what is happening behind their back in the background during meeting calls

**Inability to concentrate because of people watching**
Some people find it difficult to concentrate on work in front of their family members or when people are watching them.

**Sounds from household activities**
There is noise from the kitchen, dogs barking and all sorts of other noises that can disturb the user. Some people are using noise cancelling headphones or even normal earphones cut out noise significantly.

# EXISTING SOLUTIONS

In the context of work from home, the existing solutions solve the problem in terms of privacy. Some have added value of having acoustic panels but given the home setting and sound requirements for working, these won't be very helpful as these panels absord the echo and reflected sounds which reduce ambient sound levels but these are not the sounds that create distraction. They are also huge, bulky and expensive which is not worth the value it gives which is only one function of privacy. The problem of privacy arises in houses that are small, that can't dedicate a spot just for building a workspace. In such cases, the existing bulky solutions are unusable.

Those that are lightweight need some assembling before use and are meant to stay on, and not removed which makes them like permanent partitions in the sense that the partition is supposed to stay on as a partition until it is removed which is a cumbersome task and not some-thing quick that people can do at the beginning and end of their work day.
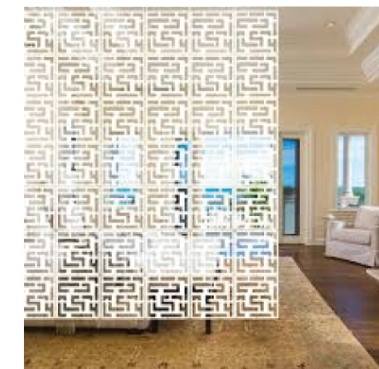
# PRODUCT REQUIREMENTS

## SCENARIOS

We brainstormed various scenarios based on different rooms that people could use, various arrangements, number of people, situations, etc. and we saw what could be done in those scenarios. From this we derived our product requirements. Some of the scenarios are described further.
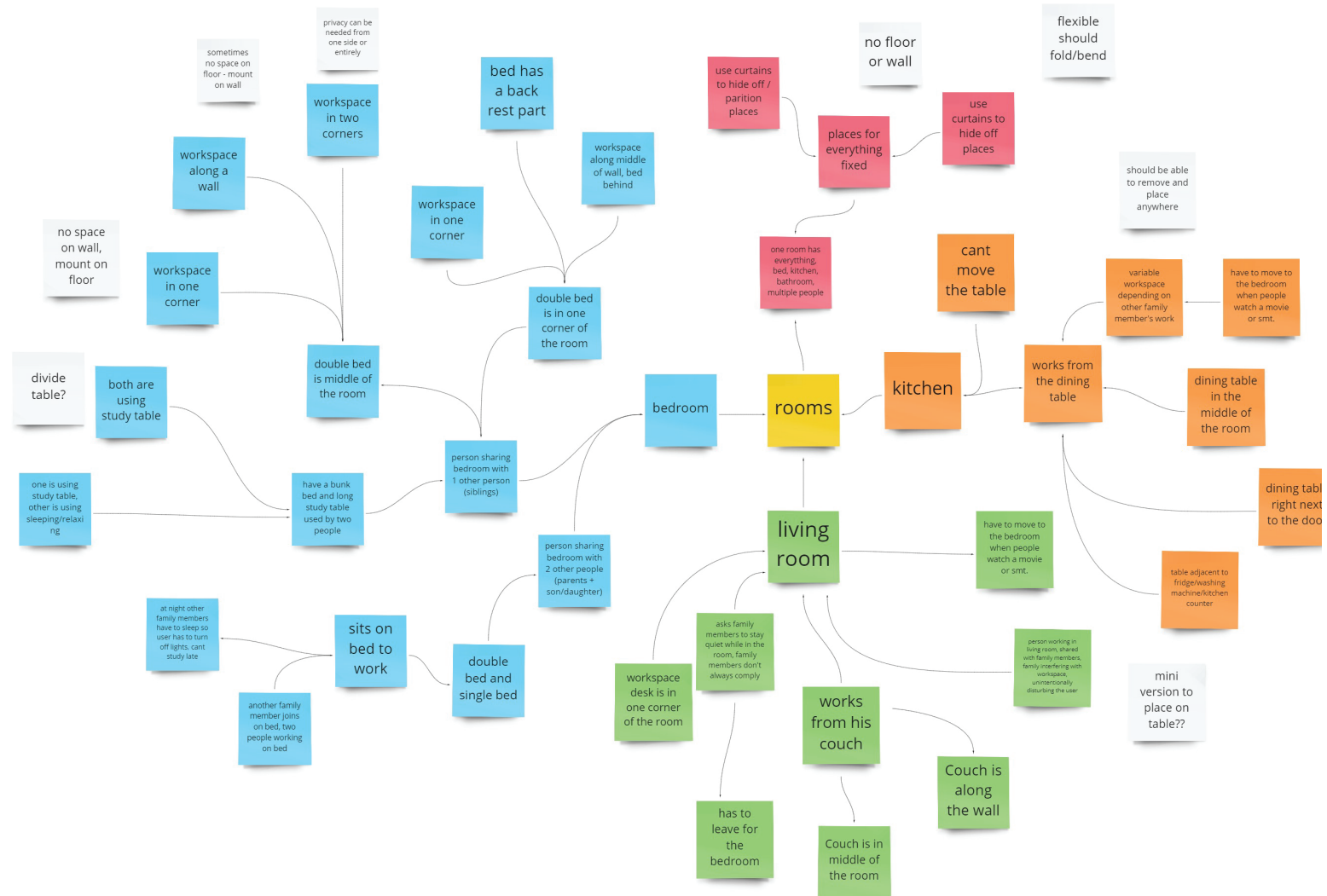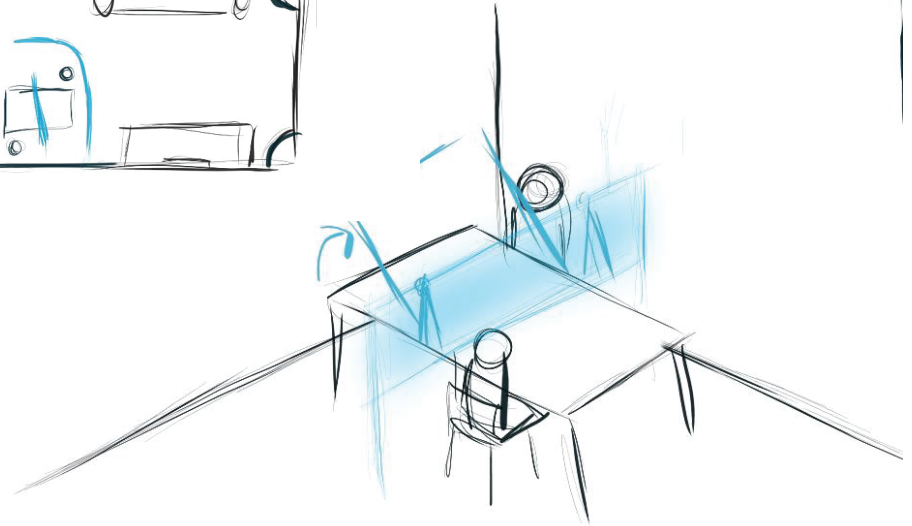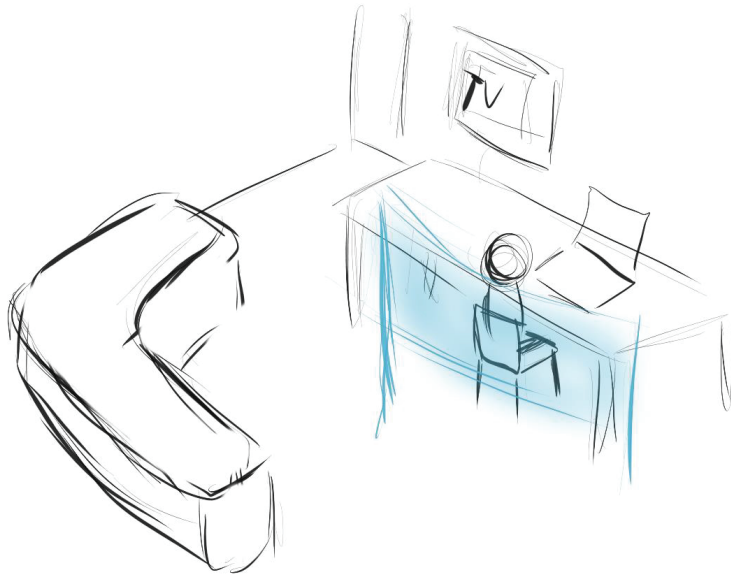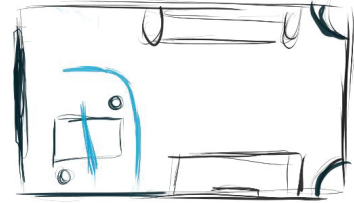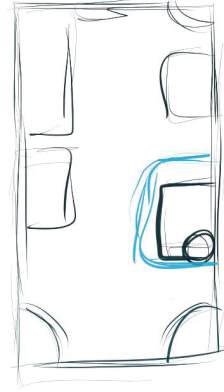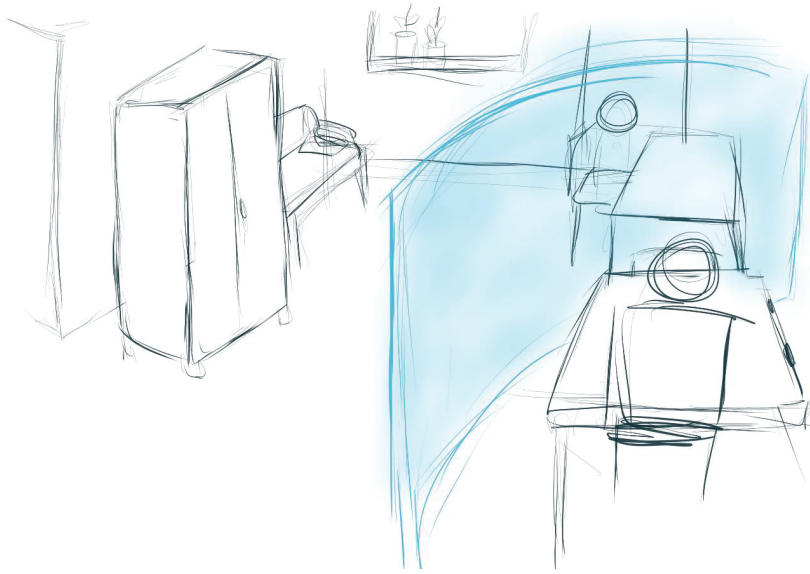
These are some of the scenarios:

**Scenario 1**

Two brothers share a bedroom. One of them has workspace in one corner. He wants his personal space to concentrate on work and if people are around him or watching him, he finds it difficult to concentrate so he asks his brother to not be in the room when he is working.

Whatever available products are there can't be used becauese they are mostly placed on the floor and there is a bed in the middle of the room here and so it wont work. Curtain rod will also disturb the look of the room . maybe we could make something that can be mounted on the wall
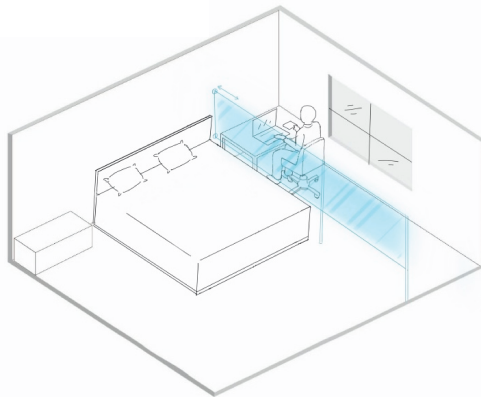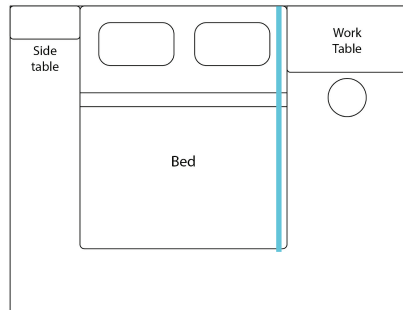


**Scenario 2**

A person works fromhis living room and has a wall mounted foldable desk as his workspace. When he is not working it is used for other purposes like for eating food or for cutting vegetables, and so on.

Family members unintentionally interfere now and then, come near his desk while he is working which he doesn't like but they are only trying to go about their life. There is also sound from the kitchen which is adjacent to the living room for which the person uses noise cancelling headphones.

In this case the person is kind of in the middle of the room and might need a complete enclosure from all sides. But then we should make sure he doesn't feel suffocated and congested. If possible some noise can be blocked out
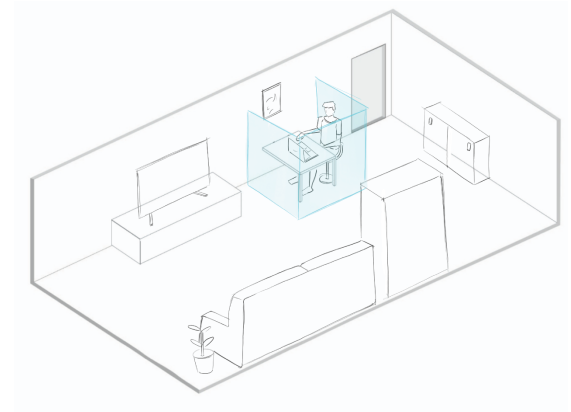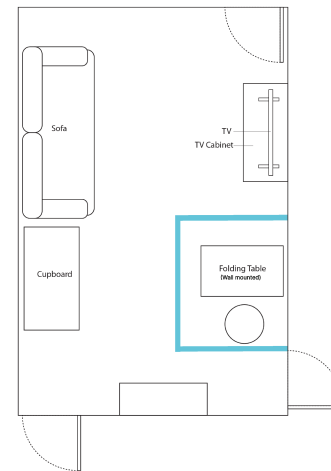
**Scenario 3**

This is a family of 3, a lady who is a teacher, her retired husband and son who is working from home. The lady takes classes for around 2 hours each day and she uses the desk in the living room as her son works in the bedroom. They have only one table in the living room which is not movable.

The lady is very conscious. She wants to make sure her background is clear. So she informs her husband to make sure he is not seen in the background. The same is the case in the bedroom where his son is working.

The husband has to adjust a lot and has to sit in the same spot of the house on the chair

In this scenario either the lady or the son can use a partition depending on where the husband wants to be. It can be used in either of the rooms. So the product should be such that you can detach it and use it in some other place.
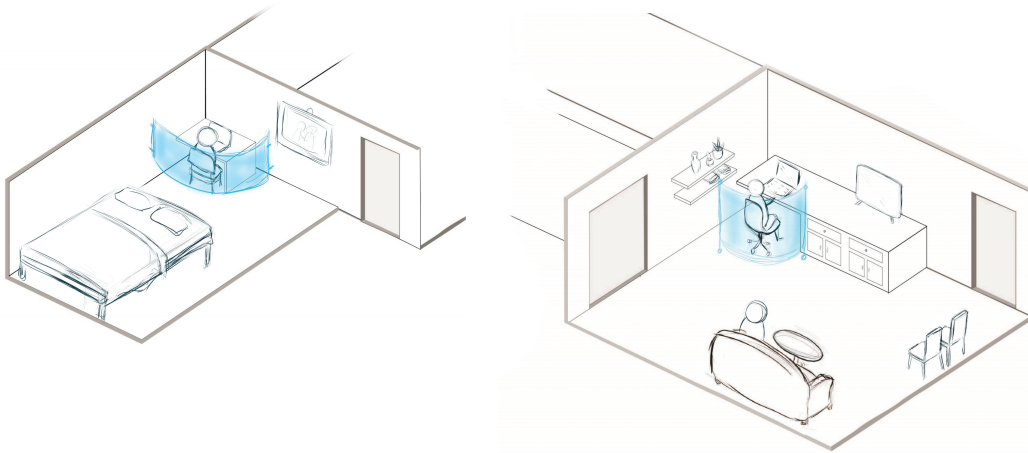
# INITIAL PRODUCT REQUIREMENTS

**Detachable**
The product should be detachable and user should be able to place it anywhere he wants. The product should be complete on its own

**Quick Assembly**
There should be minimum prep time. Should be quick to assemble, not more than 2 minutes. It is something that would be used regularly and using the partition may not be a critical task, so if it is taking lot of efforts to assemble before use, the user might be discouraged from using it

**Compact**
It should be lightweight, and compact. If it is bulky and big, instead of decreasing problem, it might increase problem by making the house cluttered.

**Storage**
It should also be easy and convenient to store when not used.  It shouldn't take up a lot of volume and space.

**Multiway attach**
Sometimes it is not possible to mount on wall, sometimes it is not possible to place on floor and sometimes one side can be mounted on wall and other can be placed on the floor. Or it can be a combination of both. So, there should be provision to do that

**Length**
Rooms are of different sizes. Person might want to enclose partially or comepletely. In this case the length needs to be variable to fit the length of any room in order to completely close from wall to opposite wall

**Ventilation**
In case of full enclosure, there should be proper ventilation and person shouldn't feel suffocated and congested
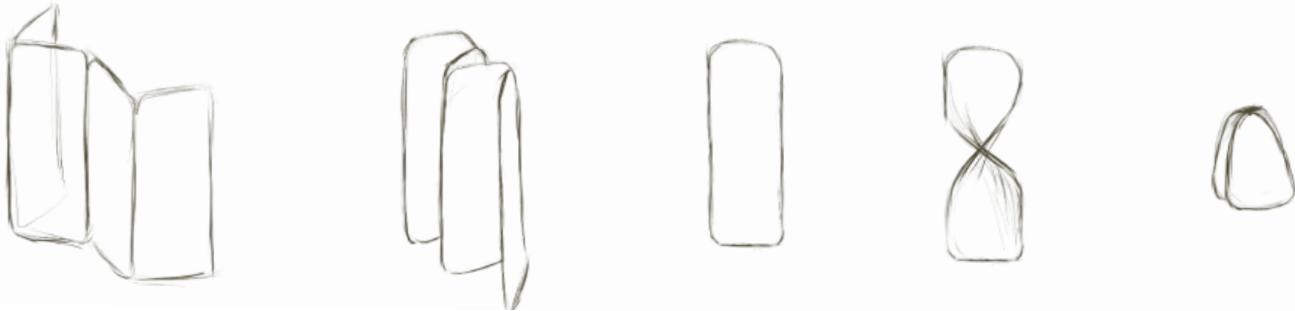
**Foldable**
The product should be foldable. It should fold or bend at various lengths to accomate various surroundings, shape and structure of workspace, etc

**Aesthetics**
It should blend in well with the surroundings. It shouldn't look odd.

**Sound**
The product should block some amount of noise if possible

# REVISED PRODUCT REQUIREMENTS

After getting feedback from our mentors we relooked at our product requirements. We considered what the day of person working from home as a routine would look like. The fact that if people are working from home for a longer duration, they would have a dedicated spot in the house and not a make-do space in the house like working from dining table or from the bed which is a result of uncertainty that they have in terms of the future where they are not sure if their company is going to implement it and whether they should invest in setting up a workspace. During our primary research we had interviewed two freelancers who had been working from home since 2-3 years and they had set up a workspace in their home.

From our primary research we had understood that a significant amount of people (approx 50%) were willing to buy new furniture if working from home even after COVID. So we also took that perspective into consideration. Earlier we had taken into consideration insights for the present situation.

**Sound Blocking**
There were two approaches, one being using material for the partition that blocks sound, but for that to have a significant reduction in noise, the person has to be covered completely, meaning the partition should either go upto the ceiling or it should be covered from the top forming a complete closed chamber. This generates a lot of issues in ventilation and feeling of congestion, space. And all this was for noise for which the user can use noise cancelling headphones, or even regular earphones with rubber buds can make a significant difference.

As mentioned earlier, a hybrid model which is a combination of work from home and on-site work is likely to be implemented where meetings happen in office. So the factor of noise is relevant from the perspective of causing disturbance to the user.

Morever softwares are developing to block out background noise and can recognise the speaker's voice and retain that.

Our revised product requirements are as follows:

**Quick Assembly**
There should be minimum prep time. Should be quick to assemble, not more than 2 minutes. It is something that would be used regularly and using the partition may not be a critical task, so if it is taking lot of efforts to assemble before use, the user might be discouraged from using it

**Ventilation**
In case of full enclosure, there should be proper ventilation and person shouldn't feel suffocated inside.

**Aesthetics**
It should blend in well with the surroundings. It shouldn't look odd. It should also feel good for the person inside.

**Light**
There should be proper light available inside. If the design of the partition is such that it gets dark inside, there should be provision for light.

**Congestion**
The person inside shoulnd't feel congested in the space.

**Get in/Out**
The user would have to get outside to have food, use the washroom or any other reason and should be able to do so without much effort

**Shape**
The product should be foldable. It should fold or bend at various lengths to accomodate various surroundings, shape and structure of workspace, etc

**Multiway attach**
Sometimes it is not possible to mount on wall, sometimes it is not possible to place on floor and sometimes one side can be mounted on wall and other can be placed on the floor. Or it can be a combination of both. So, there should be provision to do that

# IDEATION

Our ideations can be grouped in two major categories - flexible use partitions that can be used as a general partition even for other purposes and fixed type partitions that are specific to a table or a space, with less flexibility in terms of how you use it. In the fixed type there were further types like something that is placed on the floor, something that is integrated into the furniture, something that is attached to the wall. Some of the ideas are mentioned in this report.

## Ideas

Flexible Use

Fixed Use

On floor

Attached to wall or furniture

Integrated with furniture
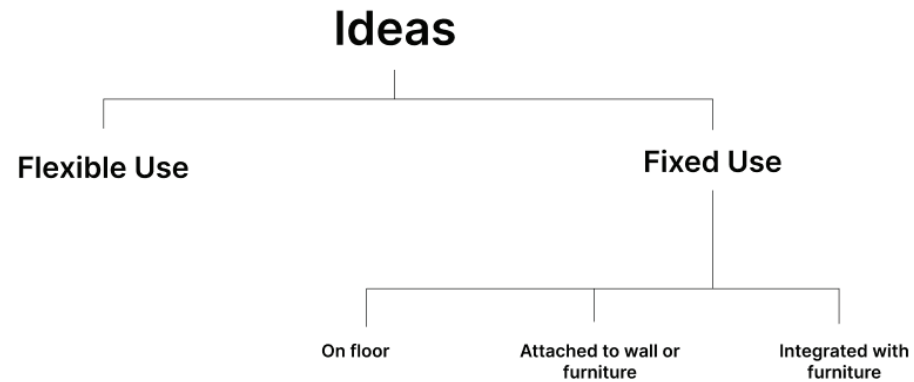
# FLEXIBLE TYPE

**IDEA 1**



This one was for easy storing, taking inspiration from pop up tents and laundry bags

**IDEA 2**



Suction holding clips

Extending legs for height adjustment

Fan fold

Becomes flat when closed
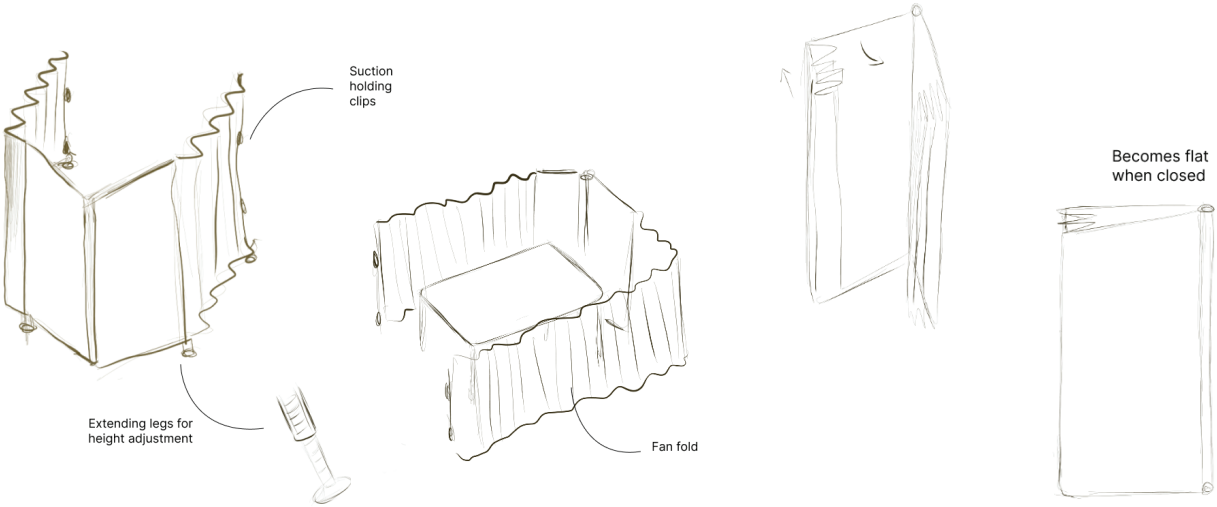
This was another quick ideation involving easy storage, and how it can take shape around tables of different sizes in different rooms.

It has two larger stiff panels and the rest of the part in the fan fold form which can take any form according to the table size.

**IDEA 3**





paper/fabric
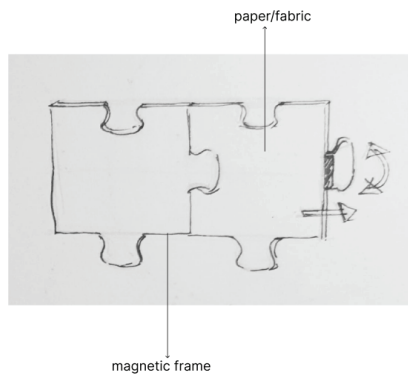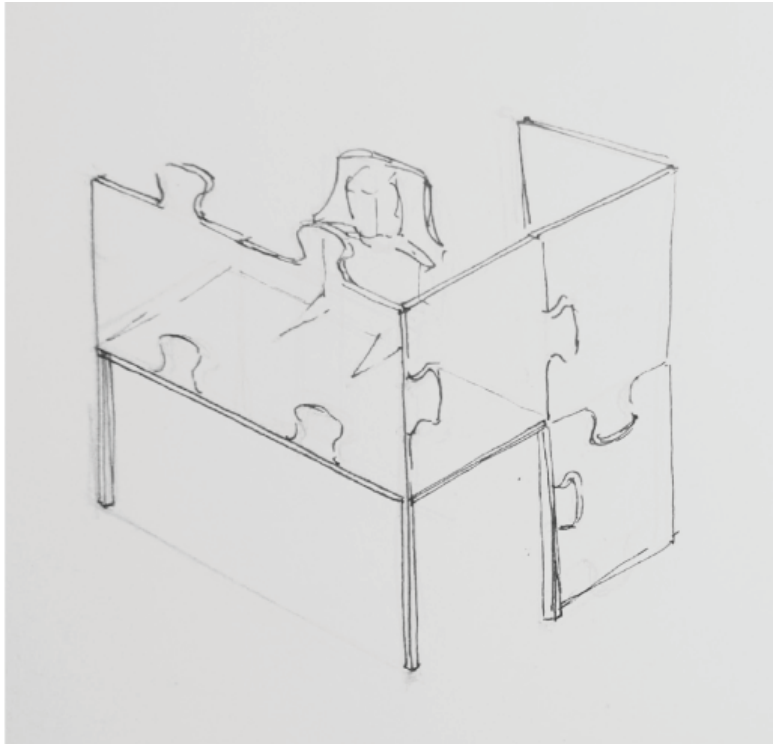
magnetic frame

This one is inspired by puzzle pieces. The pieces are super light weight, could be made out of paper. the frame is magnetic. The connecting bits can be pulled out to swing.

**IDEA 4**
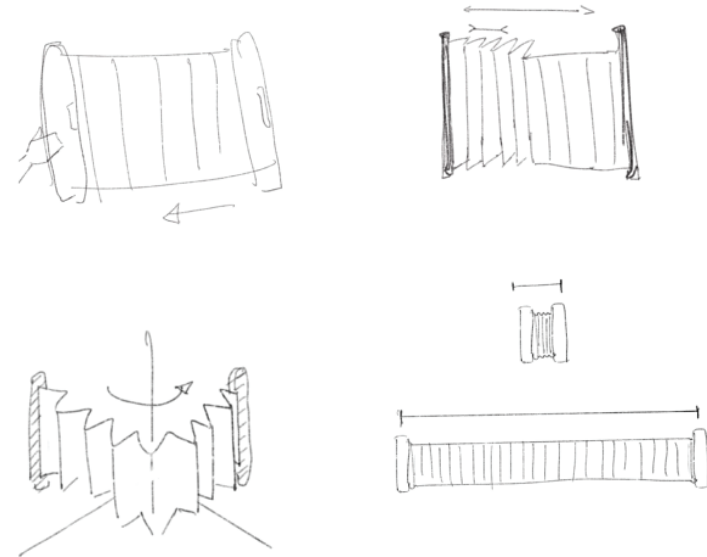


This one was for easy assembly and storage, inspired from the origami folds and an acordion

**IDEA 5**
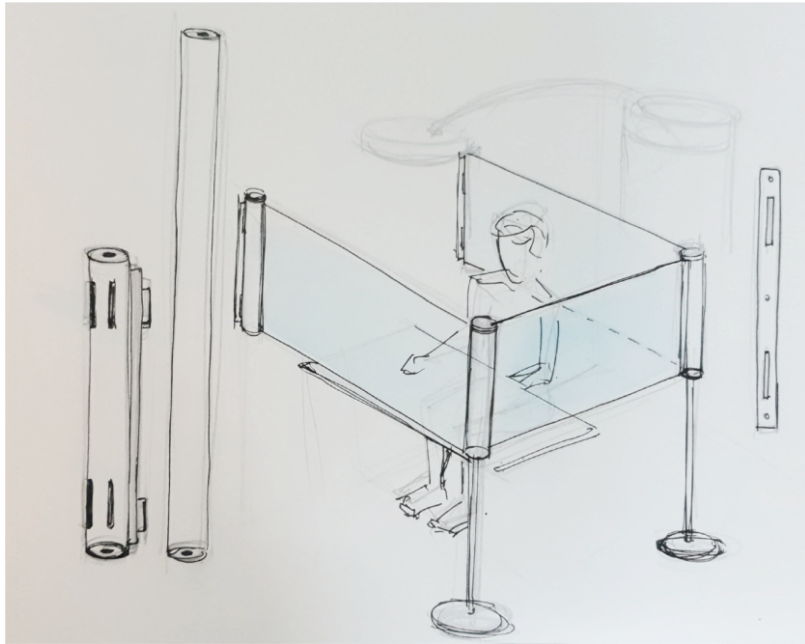


This one is inspired by retractable belts on stanchions. It would come in two heights and can be put on a pole or attached to the wall. As it would retract into the poles, it will take very little space and also no effort for the user to roll as it will automatically roll.

# FIXED TYPE

Thread/Strips
Curtain

Rods fold inside

Wall mounted
folding table
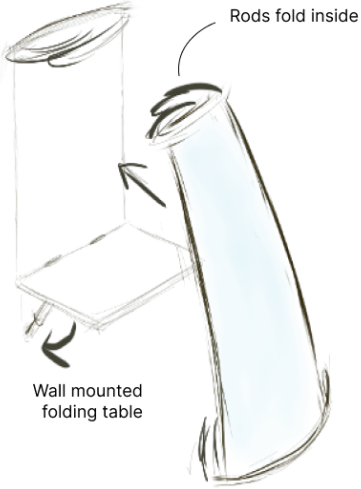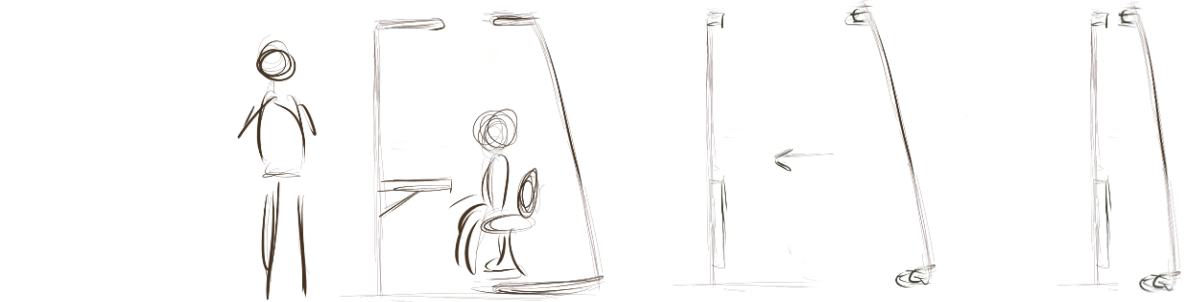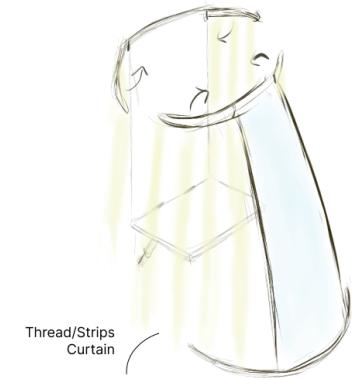
This idea was aimed towards making a workspace that collapses into a somewhat flat-ish cupboard size thing. there will be a folding table that is wall mounted and a back part which acts like a cover and both of them will have two rods that can fold inside. These rods will have strip like curtains or curtains of thread.

The curtain can be removed and washed like any other curtains. The back side of the cover can be customised, depending on the room where this will be placed. it can have a full length mirror if placed in the bedroom or have some kind of decorative piece if in the living room.

**IDEA 7**
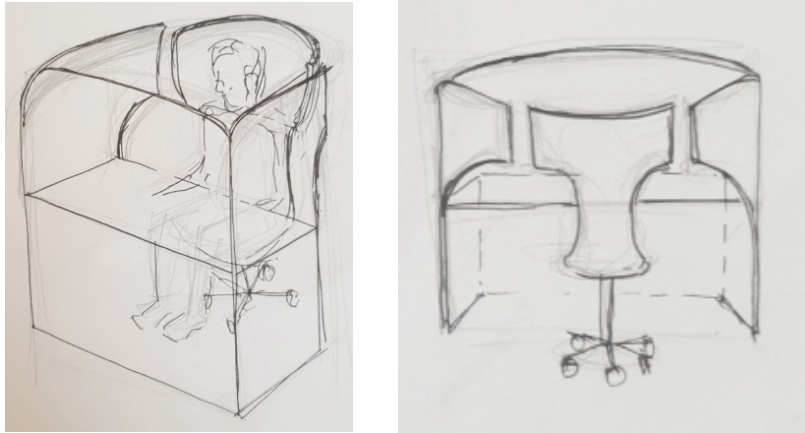


The main idea with this one was that the user had to use zero effort to get in and out of the workspace. It would be a part of the table or can even be placed separately on the floor and the chair could have an attachment or can be chair with a special backrest with that shape.

**IDEA 8**



Inspired by a space capsule concept. the flaps open and close automatically sensing human presence.



automatic flap
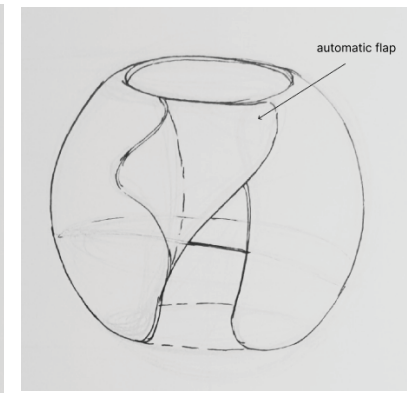
**IDEA 9**



This idea is inspired from the handheld fan shown in the image. The idea involved a similar thing which opens up and has curtains at the ends of the planks.

it can be wall mounted and will have strip curtains. The user can choose if he wants to keep it completely closed or with gaps in between. The curtains will be connected to one another and each next plank will automatically move when one is moved.

**IDEA 10**
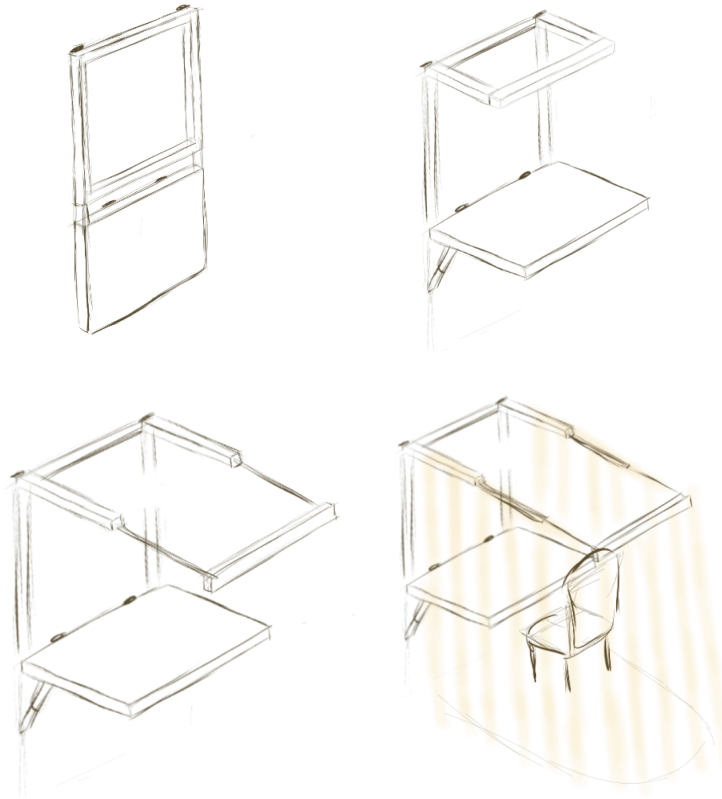


This is a type of integrated furniture which has privacy screen inbuilt. The entire thing along with the table can become flat when not in use. It can be kept open if used everyday. You open the upper part similar to the folded table on the bottom and pull it out which will form the rod where curtains will be there.

**IDEA 11**

This is a complete enclosure type solutions for sound blocking.

Fan fold

Velcro

Stays flat
when storeed

velcro

velcro

# CONCEPTS

**CONCEPT 1**



First concept is a flexible privacy screen. inspired from origami, paper foldings and traditional jaalis, the screen uses a flexible honeycomb geometry allowing it to expand and morph into different shapes in accordance to the space manipulated by the user. Made out of a flexible recycled plastic polyethylene. The screen has magnets on both ends that connects it to the  stands with magnets providing support to the structure. The screen also has structure integrated LEDs that illuminate the space with ambient lighting. Along with that the structure itself provides some sort of sound proofing as well.

**CONCEPT 2**



A lightweight pegboard, nice way to get organised & keep things close at hand

A felt material screen provides privacy, absorbs sound and also acts as a pin up board

A translucent acrylic sheet very lightweight & affordable, lets light in
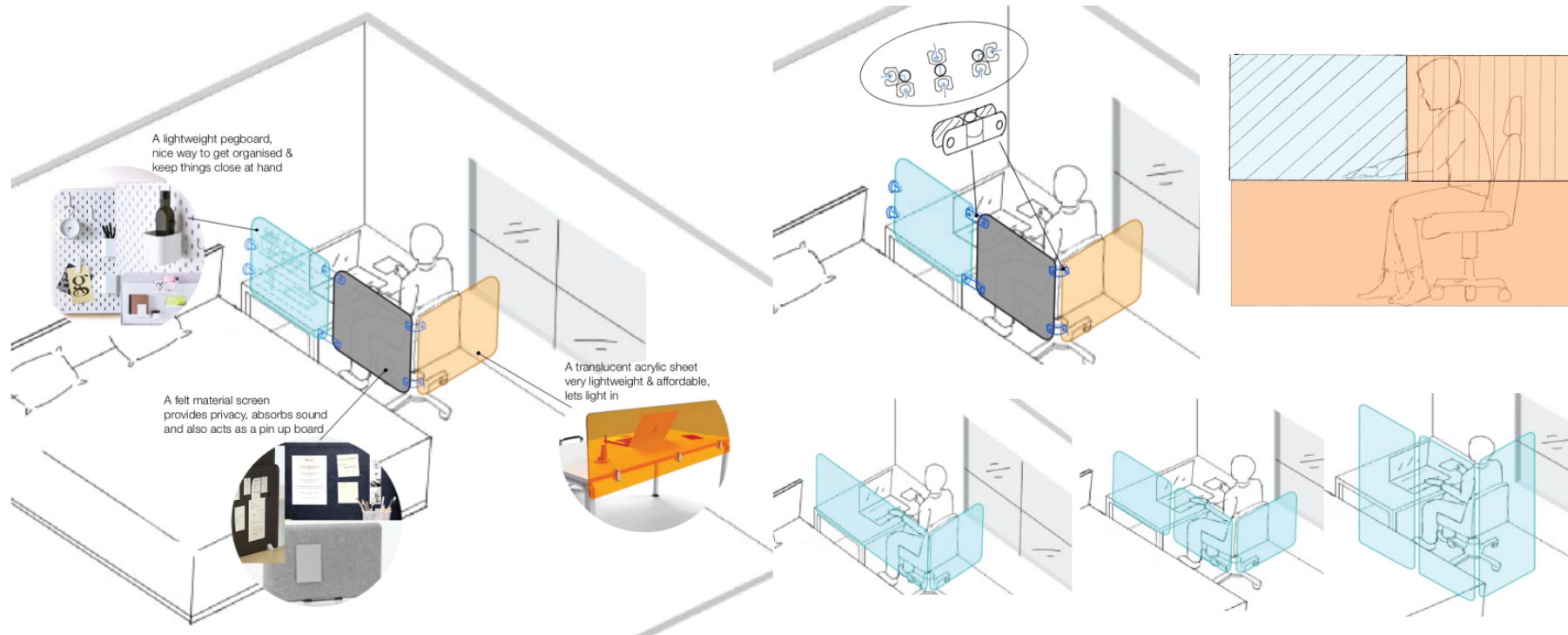
Second concept is a modular screen concept. The user is provided with two screen types, square and rectangle. The screens are of different materials for different uses. For example a pegboard screen could be used to keep small things closeby & a felt screen could be used as a sound blocking screen and a pin up board. Availability of such options and its easy configurability makes the product very versatile and easy to use(setup).

**CONCEPT 3**

Corner

String/Strip
Curtains

Top View

The fixing part would be a one time thing depending on where you want to keep the furniture. Whether it should fit on the right side or the left. It will have screws that can be removed to detach the part.

Attached depending on
position in room
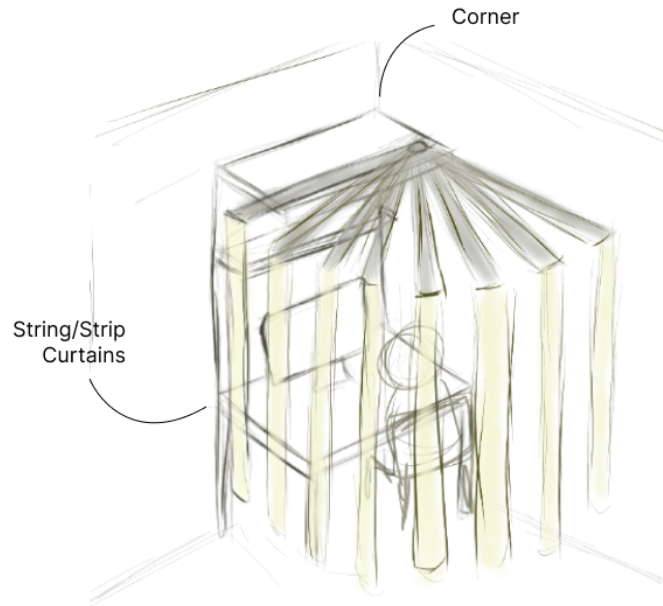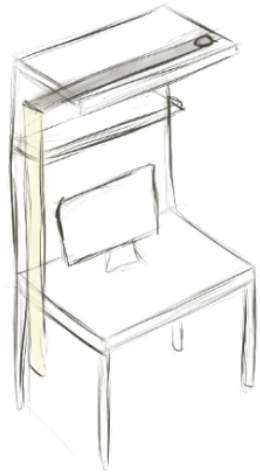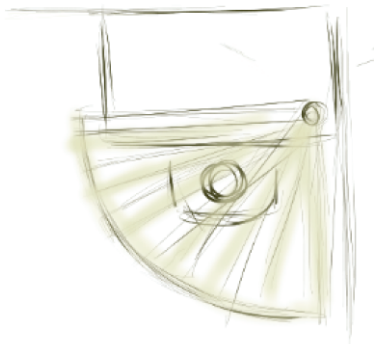
This concept is about an overall piece of furniture, where the privacy screen is integregated into the desk. Even though it is integrated into the furniture, it can be sold as a separate attachment, meant to fit onto some of the customisable furniture that our company will make.
We haven't focused so much on designing the whole desk in this one, we need to do a bit of research into that as our focus so far was how to bring in privacy in home workspace. This one is meant for desk kept in corner.

Fixed on top by screws

Velcro

The thread or strip curtains will be detachable and so can be washed like regular curtains. Because of these curtains the user can go out easily and also wouldn't feel  congested.

From a business pov, we can expand by making other attachments that people can add to their furniture to customise it. Things like maybe a sort of a folder to keep your papers or a pen stand on the side which is attach-able or a pin board that can be attached to a side, depending on the person's requirements, the user can build his workspace, lights, mini fans, etc. the main  tables or desks will be designed to accomodate these accessories.

Fans

Soft Board to pin notes

Light

Folder and pen stand
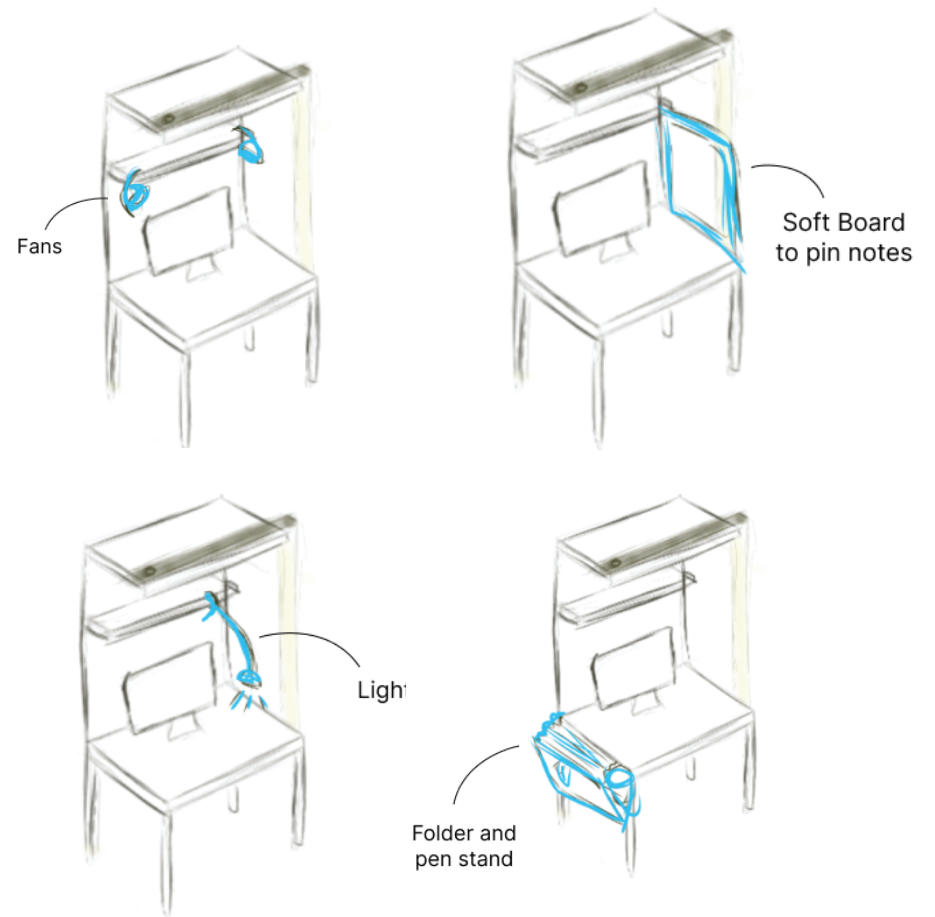
# USER FEEDBACK

We showed all the distinct concepts to know what they feel about them. We got some insights which helped in building the final concept.

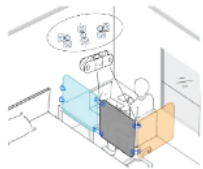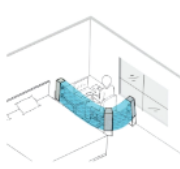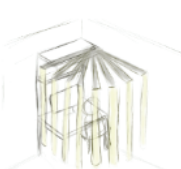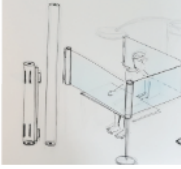| Concepts |  |  |  |  |  |  |  |  |
|---|---|---|---|---|---|---|---|---|
| User X | • different panels with function acting as partition is nice<br><br>• assembling each time is not nice, don't want to do that | • honeycomb pattern with integrated light seems unnecessary, feels that maintenance can be a problem | •back part is not attached, could fall if someone pushes it, if something happens<br>• mirror idea for space illusion is interesting<br>• full length seems bulky | • ventilation could be an issue<br><br>• strip curtain idea is good | • no comments | • will take up space<br>• will have to be custom made | •might need support from bottom end piece<br>• overall concept was liked | • the thing becoming flat is nice<br>• can be very big on the wall |
| User Y | • too much work | • too many parts to be assembled each time | • protruding poles could hurt someone | • triangle-ish inner space seems uncomfortable | • retracting is good, can adjust length | • no comments | • not sure if it'll stay in the air with just attaching from one point | • seems congested |

# ANALYSIS OF IDEATION

At this stage we had a lot of ideas that had different positive points and negative points and different constraints. We had to collate all this information to get insights to be incorporated into one final concept. For this we wrote down the pros and cons of each distinct idea to get a better idea of what is good and bad and what should be there in the final concept. This also included the user feedback insights.

Some Insights were that:
- People feel trapped inside solid surfaces. Curtains are good to cut that.
- Customisable panels are helpful to customise length and help with work from home experience.

- Automatically retractable is good for quickly setting up.
- Something as simple as pulling the thing to open like a cupboard is good for quick and easy setup.
- When not in use, if there is some value that the thing is providing, it is good
- Keeping the thing off the floor will help make the space look more spacious and not congested

can be modified according to need

assembly takes time

getting out might be a problem

stays in place, doesn't fold after use

less space to store

has lights integrated into it

material m=unknown

suction clips might not work on some surfaces

integrated lights can be difficult to repair

user can get out easily

detachable curtains

needs to be customised to fit furniture.

specifically for corner tables

curtains could sway

regular window curtains can be used?

detachable curtains

becomes flat

can get very big in size on the wall

curtains on wall look ugly

opening cover is easy

mirror makes cabin less noticeable, big thing but gives illusion of larger space

can be folded into cupboard like flatish

backside has mirror or anything related to the home aspect

mechanism can be tricky

cover maintaining balance can be an issue

curtains sway

high top to floor can be bulky

user doesn't have to roll up

can be wall mounted or floor mounted

easy to store

too much work to set up

getting out can take efforts

migh look odd in the room

easy to get out

storage issue

blocking bottom part might be unnecessary

needs a specific chair to complete

tables are generally put to the wall, so might not be very helpful

# SELECTING CONCEPTS

Even though we had a fair amount of idea about which concepts we want to work on, we wanted to tally all the concepts against our revised product requirements. We rated each of the concepts considering different parameters on a scale of 1 to 5. The parameters were easy to set up, ventilation, ease of getting out of the space, volume or storage occupied when not in use for work from home, value provided when not used for work from home, how much does it enhace work from home experience. Apart from this we also discussed factors like how it would blend into the room, whether the inner space is adjustable to avoid congestion, etc

We decided to work on concept 1 and concept 8 as they were somewhat similar and had the highest scores.
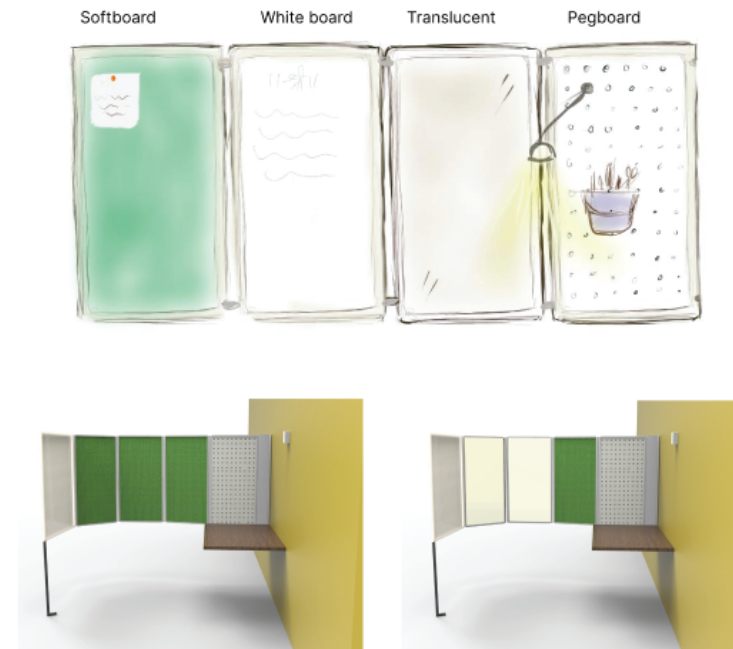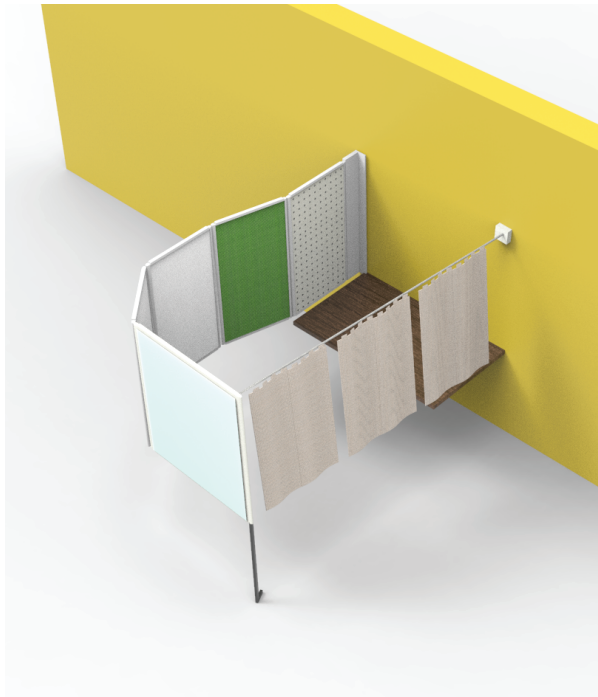
| | New grid | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| easy to set up | 2 | 3 | 2 | 4 | 3 | 2 | 5 | 4 | 5 |
| well ventilated | 5 | 5 | 5 | 3 | 3 | 4 | 5 | 4 | 5 |
| user should be able to go out easily | 3 | 4 | 4 | 5 | 5 | 5 | 5 | 5 | 5 |
| storage space/ volume when not used | 4 | 4 | 4 | 5 | 3 | 2 | 3 | 3 | 3 |
| value when not in use | 4 | 3 | 0 | 0 | 3 | 4 | 0 | 3 | 3 |
| work exp. apart from just being partition | 4 | 2 | 0 | 5 | 1 | 0 | 3 | 4 | 0 |
| Total | 22 | 21 | 15 | 22 | 18 | 17 | 21 | 23 | 21 |

# FINAL CONCEPT

**PANELS**



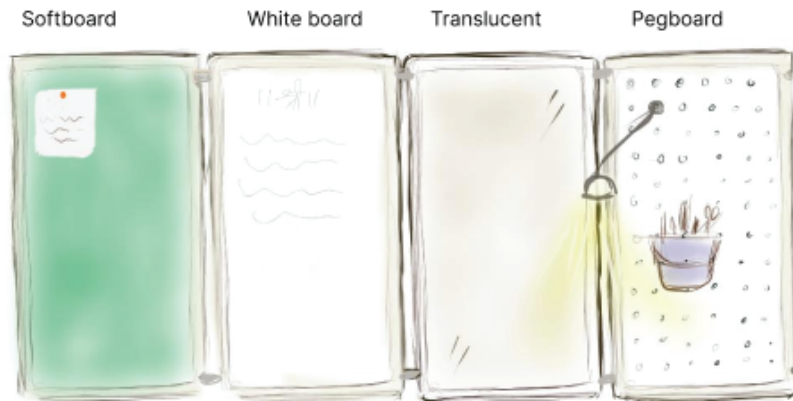Softboard | White board | Translucent | Pegboard
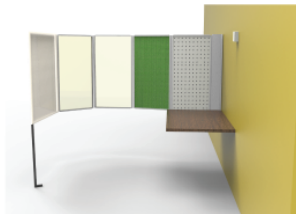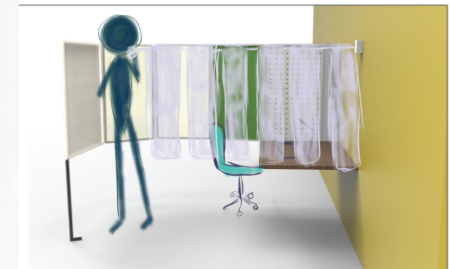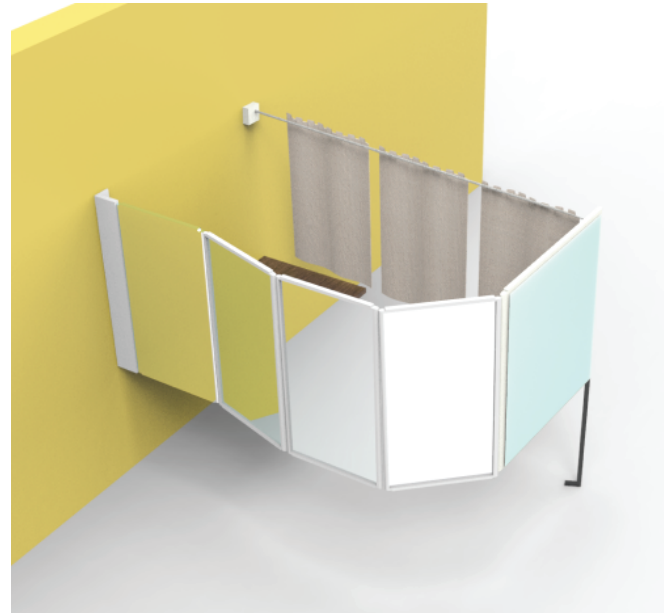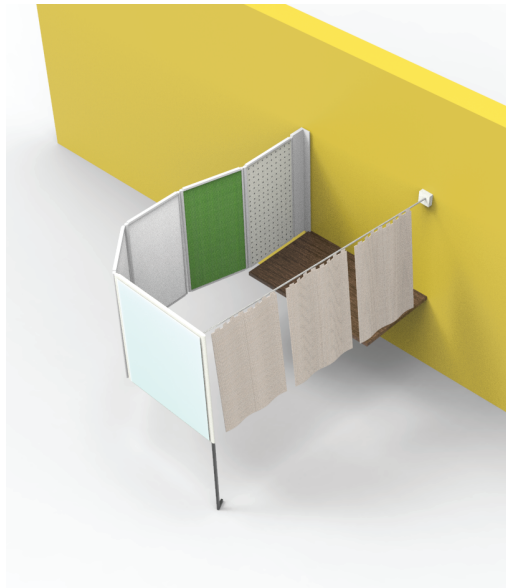


Different combinations according to need of user

The final concept is a compact customisable home - office divider. It helps create a divide between your home and work. It cuts off the user from the home environment distractions and puts him in a office environment where he can go every day while still being in his home. At the end of the day he can close it and it becomes flat taking very little space.

The divider is made of a set of panels having different functions that can be customised by the user that aid the user in his work. It is a one time assembly and the entire thing is wall mounted. When working from home on long term, the user will have a fixed space where he works and it will be mounted there. It will be a part of his home workspace. The reason for keeping it off the ground when not in use is because  it doesn't make the small house seem congested as more floor space is visible. This optical thing of keeping the bottom free so that the floor is visible  is used when designing small houses quite often.  When more floor space and ceiling space is visible, it  makes the room look less congested. It can also be removed from the wall whenever required.

## PANELS

These panels are to be chosen by the user according to his requirement and create various combinations. For example, if someone uses sticky notes a lot then he can choose 2 panels of whiteboard or translucent where he can post them.



Softboard     White board     Translucent     Pegboard



Pegboard contents stay intact

7cm



Light

Pen Stand

Pegboard

Pin notes and felt material used also absorbs echo and reduces ambient noise

Write on the board and can also attach notes using magnetic pins, has magnetic sheet inside

Translucent panel for people who want privacy but not be completely unaware of their surroundings
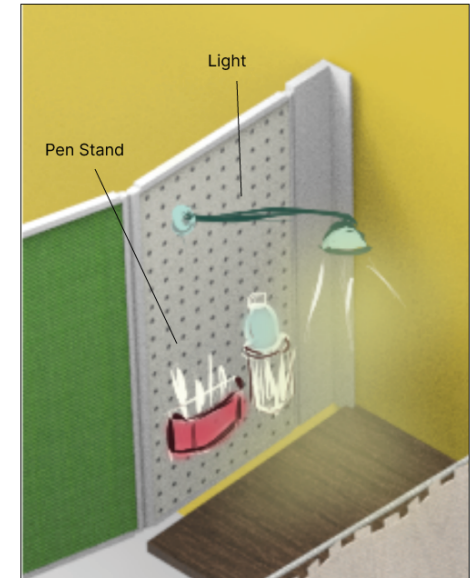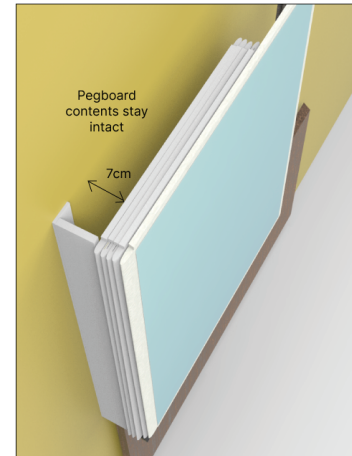
On the pegboard the user can attach pen stands to keep his stationery, water bottle holder, focused and ambient led lights, fans, and other things. Our company will also make these accessories to fit in the space. These can be additionally bought by the user according to their requirements. Keeping it the first panel helps in keeping the pegboard contents in place, that is the user doesn't have to remove whatever he has put up on the pegboard each time in order to close it after work. and since it is closer to the wall where it is mounted it will also help in handling weight.

## FULL ENCLOSURE
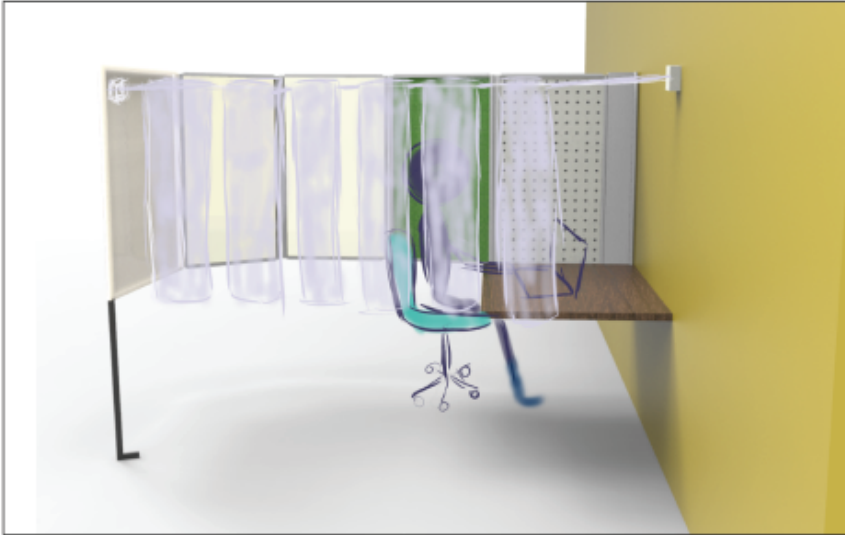


If someone is working from the living room which is a shared area of the house, there will more movement of people and so the user might need full enclosure. For that instead of providing extra panels that could cover from all sides, we are providing a detachable curtain with retractable string. This is because the inner area would be relatively small and solid surface panels could give the user a feeling of being trapped inside. Curtains are free flowing which keep this feeling away.

The user would have to frequently get outside this to eat food or use the washroom. He can get outside either by going below it or detaching the curtains from the panels which can be easily done as there is magnetic attachment.
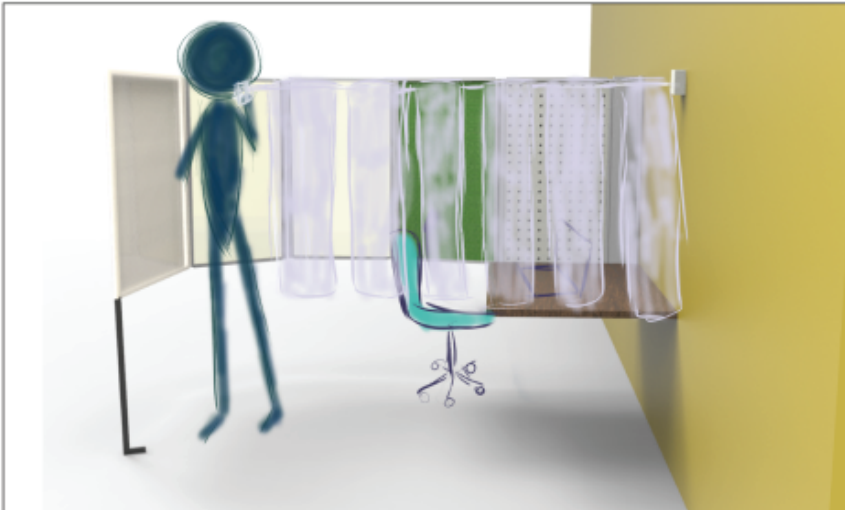


The curtains can be adjusted to keep some spaces open or completely closed. The partition is not very high and ensures ventilation.

## OUTER SIDE
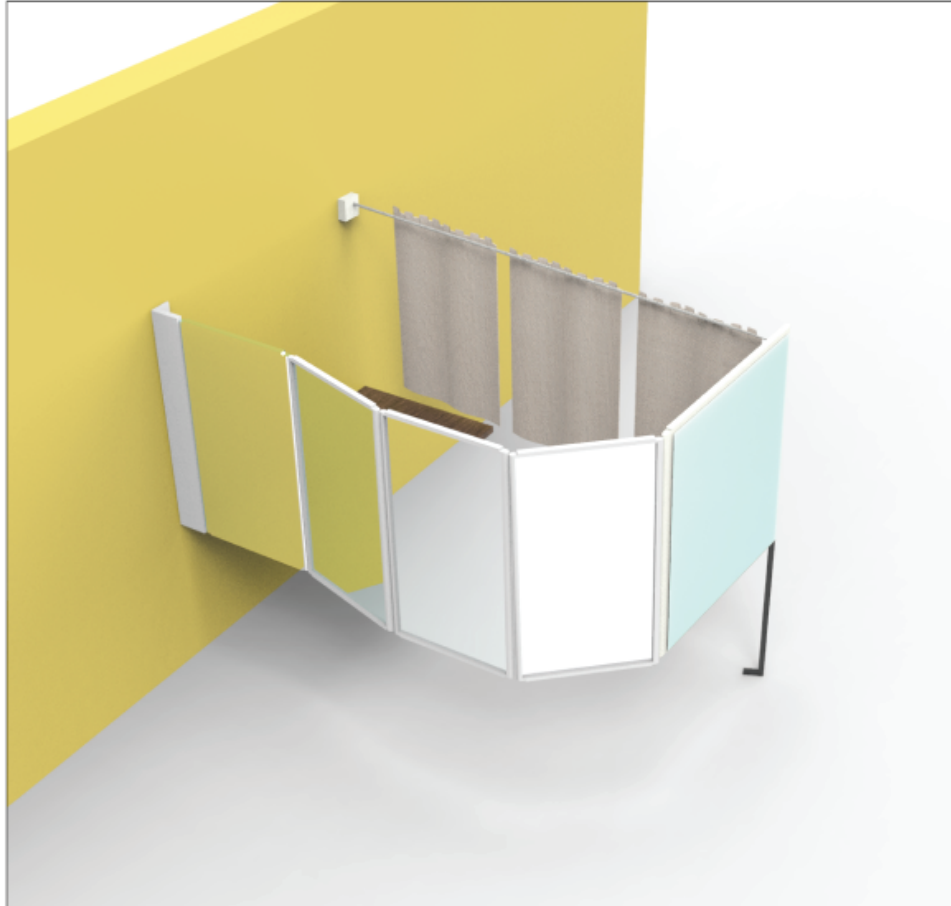






While the inner side of the partition is made to create a work environment to aid office life, the outer side should be such that it blends well with the home environment. When being used, it will take up considerable volume in the room and can make the room look full for 8 hours while the person is working which could affect the family members. We also dont want that.

To avoid that feeling we have acrylic mirrors on the outer side which make the huge volume occupied by temporary office space less noticeable in the room

**SETTING UP**





Open



Attach



Unfold
stand
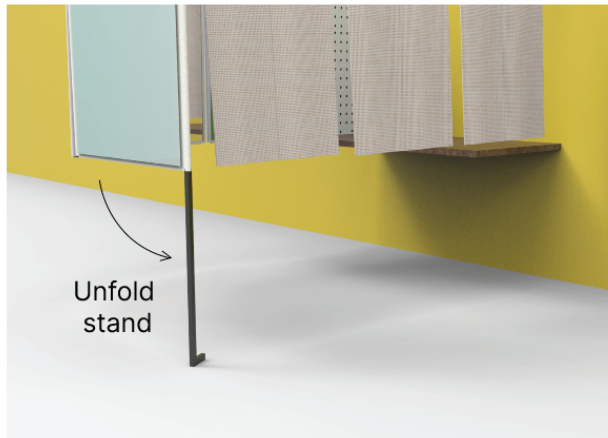
It is a one time assembly that is to be done by the user and the entire thing is wall mounted. It is meant to be kept on the wall after use which gives it a fixed space and helps in reinforcing in the mind of the user that this area is their work area which further helps in maintaining the line between home and work.

After the initial assembly it is easy to set it up each time before using. TThe user only has to pull the last panel like a cabinet door to open it and then unfold the stand.

All the way back to wall
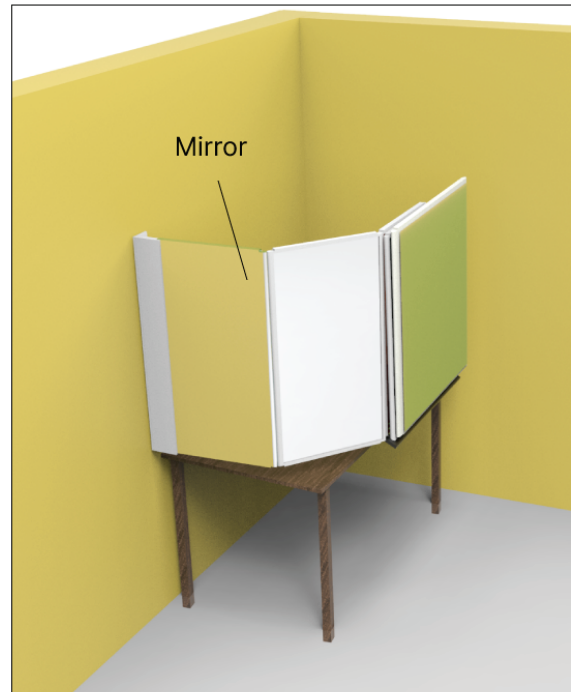


Covered Workspace
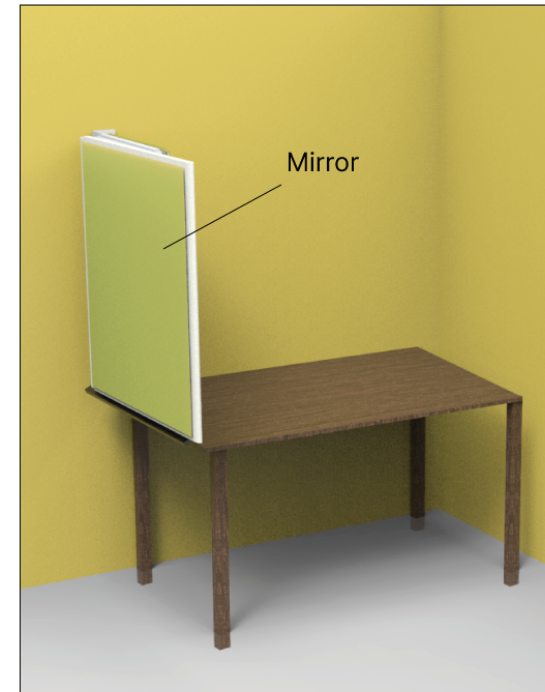


Stacked on side

When coupled with a wall mounted folding table, It can become flat having thickness of around 12cm when not used and this includes all the contents of the pegboard. When the table and the desktop is fixed, the divider can be stacked on the side.

Otherwise it can be used to cover the office desk after work. This will help in detaching from work at the end of the day because something is out of sight then it is easier to not think about it. When your workspace is in your sight all the time, you are bound to think about work at the back of your mind.

**ASSEMBLY**
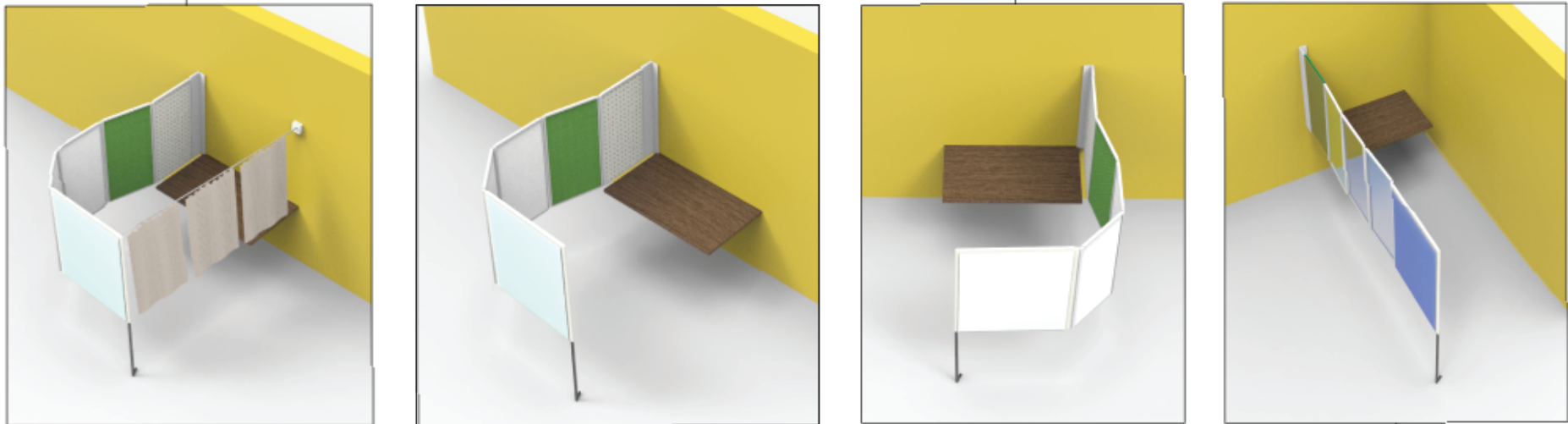


The user can use it in multiple ways according to his need and can assemble it accordingly. The user can keep the curtain away if not required or not buy it at all. The user can use it with or without the curtains, all parts are separate and can be assembled on the basis of where the workspace is going to be in the room.

Workspaces in different corners of the room will have different kind of assembly. For opposite corners the inner and outer side will be flipped and so the panels are to be assembled by the user according to his workspace. For this the parts are such that they can be attached on either of the sides - left or right depending on placement in the room. Whether it is to be mounted on the right side of the table or left.

## PARTS

These are all the different parts - there are 4 panels, one longer end panel, a retractable string with detachable curtains, 10 hinges, stand and a piece which will be mounted on the wall and hold the entire thing.

Stand

Panels

End Panel

80 cm

60cm

45cm

Curtain

Wall mounting

Hinges
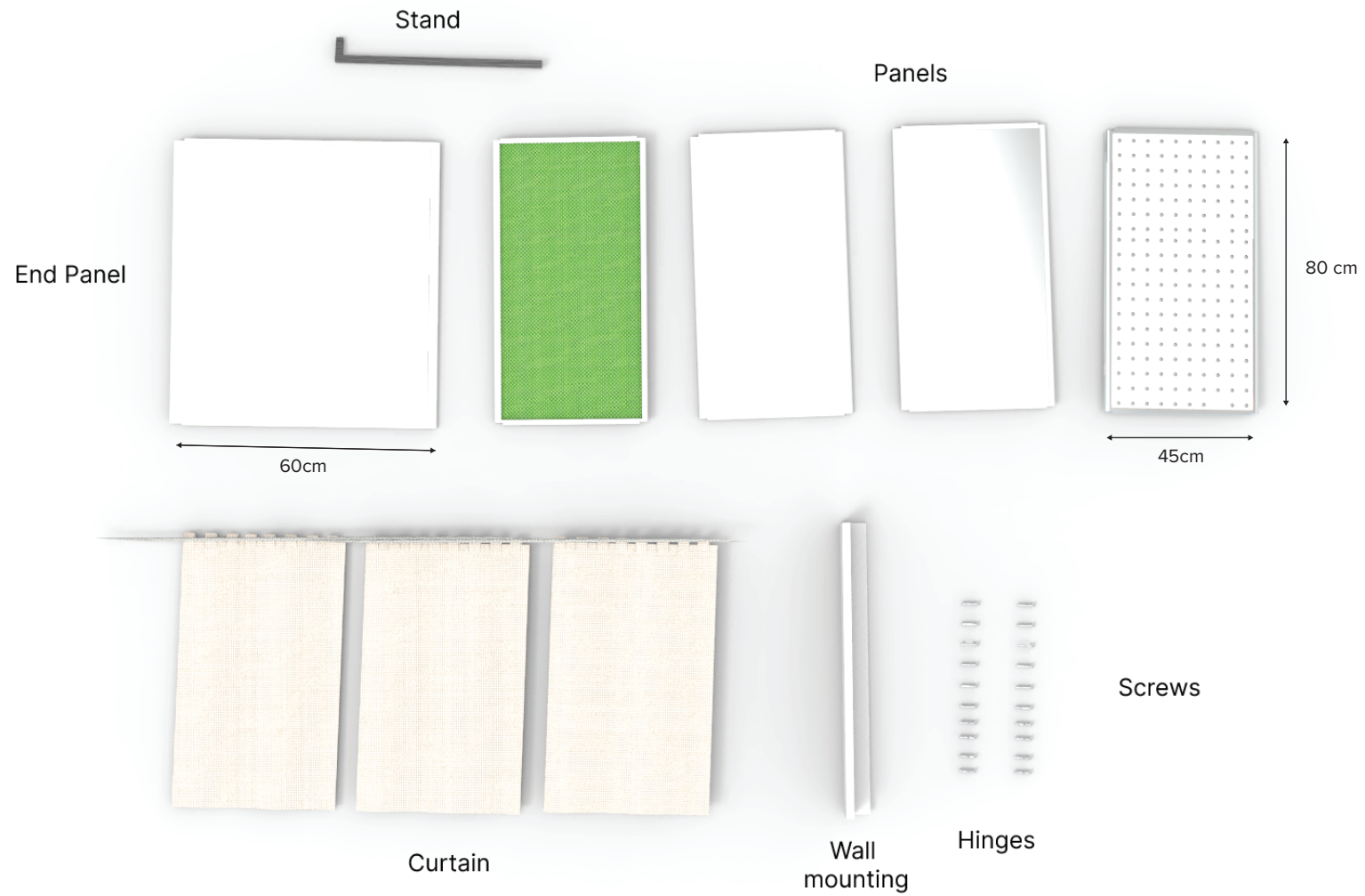
Screws

# DETAILING

**Materials**

There is a frame which is made of wood which gives structure. Wood is good for folding screws and is also not very expensive and can be made using beading patti(strip) type wood available in wholesale used in furniture. The inner packing material is PP flute board which is lightweight and cheap.

On top of this comes a thick felt fabric jacket along with the different type of boards which hides the wood frame and gives a smooth and flat look.
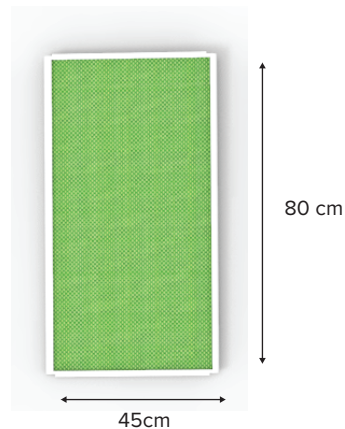
This can be manufactured on small scale and depending on the growth of our product we could shift to using plastic for the frame on the inside and mass manufacture that part.

**Dimensions**

Thickness of panel - 1cm
Width of end panel - 60cm
Width of regular panel - 45cm

Dimensions were decided considering the dimension range for tables found in India. We refered to furniture on e-commerce websites like Pepperfry, Wooden Street, Ikea for this.

Table height range - 26 to 30 inches
Table depth - 24 to 26 inches

For the length/height of the panels we considered anthropometric dimensions of elbow to head for 95th percenile male which is . This was minimum required length. We added a few extra cms on top and got 80cm.

For deciding the number of panels we considered anthropometric dimensions regarding how much should be the minimum distance to be left behind the user and on the sides.



60cm



80 cm

45cm



SInce the end panel is longer than the rest, it becomes easy to get hold of it to pull. This also helps in keeping the curtians not visible when not in use

**HINGES AND ROUNDED SIDES**



Softboard    White board    Translucent    Pegboard



Fix Screws
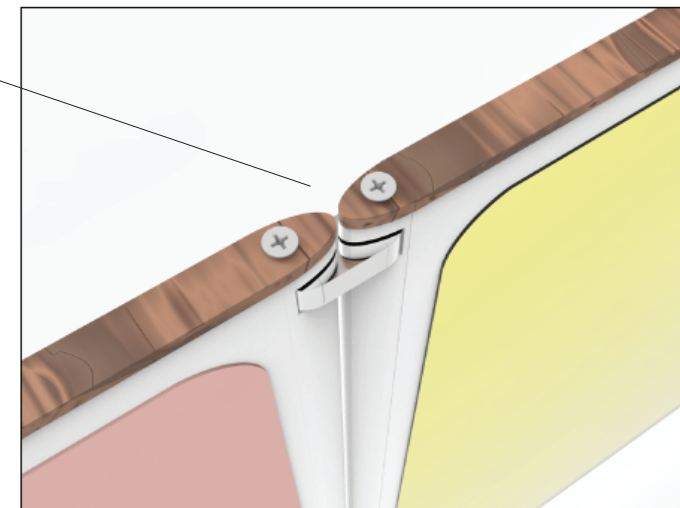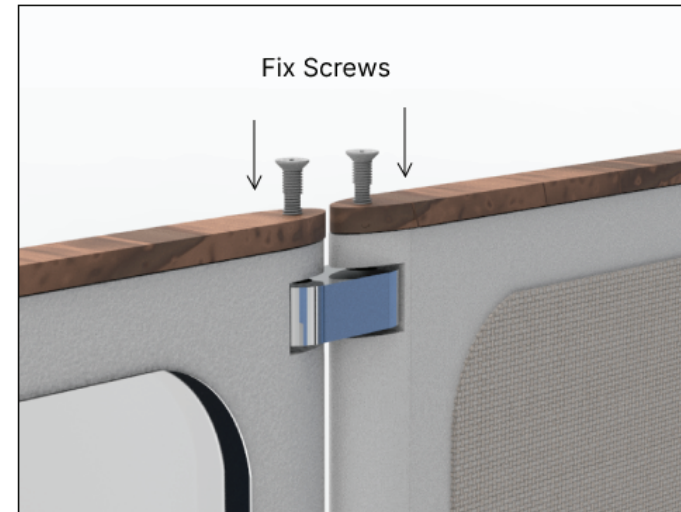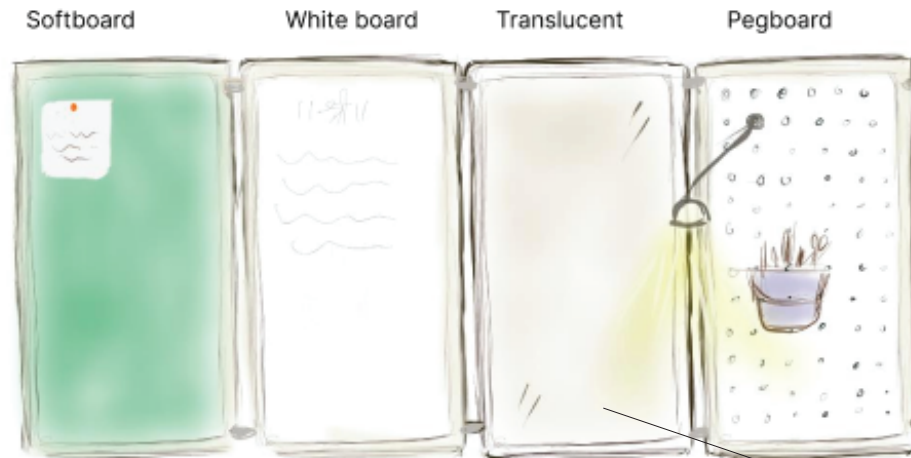


The hinges provide 360 degree movement and enable greater flexibility  in terms of how you arrange the divider and also store it

The rounded sides leave no gap in between two panels and hence prevent the chance of finger getting hurt when setting up

## STAND AND WALL MOUNTING



Unfold stand



Wheels

The stand is of adjustable height. It has wheels on the bottom for easy movement on the floor.

Hook and Eye brackets
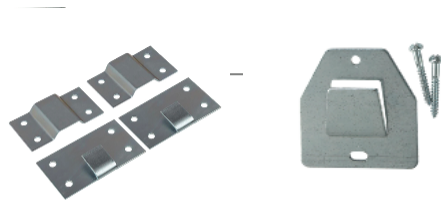


Hook and eye brackets are used for mounting on the wall. Due to this the divider can be easily removed from the wall whenever required though it is meant to be kept wall mounted.

# USER FEEDBACK ON FINAL CONCEPT

**- Customisable panels is good**
The idea of having customisable panels according to requirements of individual user's work was appreciated.

**- Can have something for sound proofing**
It would be great if it blocks some sounds also

As it was mentioned earlier, sound blocking to an extent where it is noticable and helpful in the work from home context has special requirements and will need the whole concept to be revamped and due to lack of time we couldn't go back to the drawing board and come up with a new concept.

**- Could block light coming into the room when placed near window**
If table is near the window then it'll block light getting into the room

**- Keep accessories a part of the main thing rather than separate**
Keeping the accessories not customisable as buying it as an add-on could make them feel like they  are spending more.
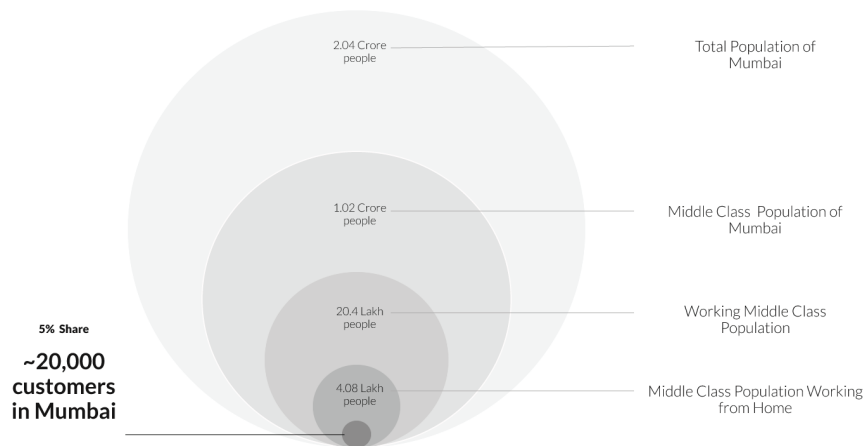
We made changes to our pricing accordingly. The displayed seling price would inclusive of extra accessories like one light, one fan, one set of curtain, but the user has the option to remove or exchange any of them which will result in reduced price.

# BUSINESS PLAN

The next part of the project was to create a private enterprise based on our design solution and plan for it to become a self-sustainable entity. We refered to the lean business canvas to plan our business model.

**MARKET SIZING**
We used the top down approach for market sizing as we didn't have enough data to do bottom up market sizing. It was difficult to estimate a number of how many users we would have initially so we went by the method of how many users can we possibly have if we capture a certain percentage of the market.



2.04 Crore people — Total Population of Mumbai

1.02 Crore people — Middle Class Population of Mumbai

20.4 Lakh people — Working Middle Class Population

5% Share
~20,000 customers in Mumbai

4.08 Lakh people — Middle Class Population Working from Home

Our initial target for this product is Mumbai.
The population of Mumbai is 2.04 Cr
50% of the population is middle class that is 1.02 Cr

If we take an average household size to be 5 members in Mumbai then there are 20.4 lakh households.
Let's consider there is atleast one working member in each household then there are 20.4 lakh people working.
If we consider that 20% of them work from home on atleast a few days of the week then 4.08 lakh people are working from home.
If we manage to get 5% of these people as customers then we would have around 20,000 customers in Mumbai.

**DISTRIBUTION CHANNELS AND REVENUE MODEL**

**Sales**
From research about various channels for sales we understood that having multiple channels for sales will reduce the chance of failure in case of one channel not working. B2B sales are usually slow but bring large and consistent revenue.

**B2B -** We would have a website where we sell our products. E-commerce has been rapidly growing and the pandemic has only added to it. Having a website makes us more accessible and since our products are meant for people working from home, we could reach them through this online platform through digital marketing.

Along with the main product i.e. the divider, we would also sell smaller accessories that would enhance this divider and increase the functionality of it like we mentioned before pen stands that would fit in a flat space, extra panels if anyone wants a larger inner space, etc. On the website the user can choose their choice of panels.

**B2B -** Second is selling to companies. In context of building home workspace some companies gave their employees a fixed amount for their work from home setup, some are reimbursing expenses. Some companies bought ergonomic chairs in bulk so that their employees can have a good workspace at home.

We would approach companies that have implemented work from home for their employees and do B2B sales. Ours is a product that can fit into most houses like the ergonomic chairs unlike tables which need to be bought according the conditions of the house. Companies can get our product in more numbers for their employees who are working from home.

**Marketing**
**Pamphlets -** In the initial phase we would give out pamphlets near office areas in Mumbai. Since people would work atleast once a week in office, we could reach our target users and pamphlet distribution is relatively cheap.

**Digital Marketing -** Use social media marketing to increase reach. Create interesting and creative videos.

**Affiliates -** Use affiliate marketing and have interior designers as affiliates where they promote and sell our product to their clients and get commission for each sale that they get us. This would be more relevant for the next versions of our product.

**Routes**
All the different parts would be manufactured and would be outsourced. Some amount of assembling of the panels could take place in our warehouse. As we get orders, combinations of these different parts would be made according to the order and sent to the customer.

**COST**
**Cost of raw materials for one unit - INR 1500**

| ITEM | COST |
|------|------|
| Wood Frame | 250 |
| Different board material | 200 |
| Stand | 100 |
| Hinges and Screws | 300 |
| Polyester Felt | 100 |
| Wall mounting | 100 |
| Packaging | 100 |
| Transport | 200 |
| Adhesives | 50 |
| Flute Board | 150 |
| **TOTAL** | Approx 1500 |

These costs have been estimated by refering to prices on IndiaMart for bulk orders and similar parts to get an approximate estimate

**Monthly Expenses - INR 1,50,000**

| ITEM | COST |
|---|---|
| Warehouse | 30,000 |
| Employees for assembling x 2 | 30,000 |
| Utlities | 10,000 |
| Marketing | 10,000 |
| Website | 10,000 |
| Miscellaneous | 50,000 |
| **TOTAL** | Approx 1500 |

These expenses are calculated considering the condition that parts would be outsourced and the minimal assembling that would be needed would be done by employees hired. Some expenses could be missed in this. However we consider that our initial monthly expenses are more or less INR 1,50,000.

We plan on selling our home-office divider for INR 6000, which is a price comparable to other types of partitions which range from INR 4000 for small ones to INR 20,000 and above for longer/larger ones.

Considering these costs,
Production Cost for one unit - INR 1500
Selling Price - INR 6000
Monthly Expenses - INR 1,50,000
We would have to sell **33 units** per month to break even.

If we consider that we sell 50 units per month, we would have **25%** profit margin

**NEXT STEPS**
As a startup our immediate next steps for would be to make physical prototype and test them with users which will help in developing and refining the product further. Parallely we would get in contact with manufacturers to understand the manufacturing and optimise the design to be produced with least cost and proceed to manufacture and launch the product into the market. This would be done in 3 months.

After that we research and plan for expanding distribution in more locations in the country and also start working on the second version of the product which would be a full length one for people who have lesser space constraints.

Company logo:



OFLO

HOME OFFICE SOLUTIONS

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