



IO 3029 Including Social Cohesion in Product design



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Introduction

In this third project we, the SEDG, have to come up with a design for mobile furniture in the slum. The furniture had to be movable and of course enhance the social cohesion.

The furniture we have to design has a purpose. It has to be used for a group activity. In this way it would enhance the social cohesion. In the assignment it was already told the furniture would be used to watch movies in an open air cinema. We don't think this the most fitting purpose, so in this project we will also think about another way the people in slum can use it.

Besides designing furniture we tried in this project to connect all our projects. The Light Talk and the Airbag are projects we already came up with and which will be implemented in the slum. With this furniture project we will try to design a scenario which combines the three. This way, we can implement the three projects at the same time in the slum, and we will stimulate the social cohesion the most.

For this project another research was done. As you will see later in this report, cardboard is a material we find very interesting. It is not expensive and it is not hard to find or to fabricate. Even in the slum, people have all the needed materials.

But there are also some doubtful points: could people sit on cardboard? It would be a fiasco if somebody sits on the chair, and it cracks! Also cardboard doesn't have an expensive, design exterior. This may be a problem if we wanted to sell the chair at the Bijenkorf.

A research to things that are made of cardboard opened up a new world. Apparently we weren't the first to think of cardboard. In figure 1, below you see some examples of chairs that are made of cardboard. The item on the top right in fig.1 is a picture we took at the faculty of Architecture. Here we accidentally came across a cardboard chair. This was our inspiration for cardboard in the first place. All the other chairs are design items.

But would cardboard be strong enough? It seems cardboard has different sides. If you sit on the smooth surface, it will be pressed together, and not keep its shape. But if you sit on the side where you can see the ribs, this will not happen. On that side it can carry a lot of weight.



Figure 1: Existing cardboard chairs



After the research everybody had a lot of inspiration. We did a brainstorm, to organize our idea's (fig. 2). It seemed every team member had enough ideas for scenarios.

Next to the scenarios, we had to design furniture. After the brainstorm, a creative session came up, in which we discussed all different forms the furniture could have.

With paper models, we tried to find the best suitable form in the slum. Also the information we got out of the research about the cardboard, we used by making the models. Further on in the report, in our final scenario, the final design of the chair is shown.

On the next pages you can find the scenarios that in the end were written. You can read the story. Furthermore you can see how the scenario scores on important criteria. After the scenarios there is more information about those criteria and you can compare all the scenarios.

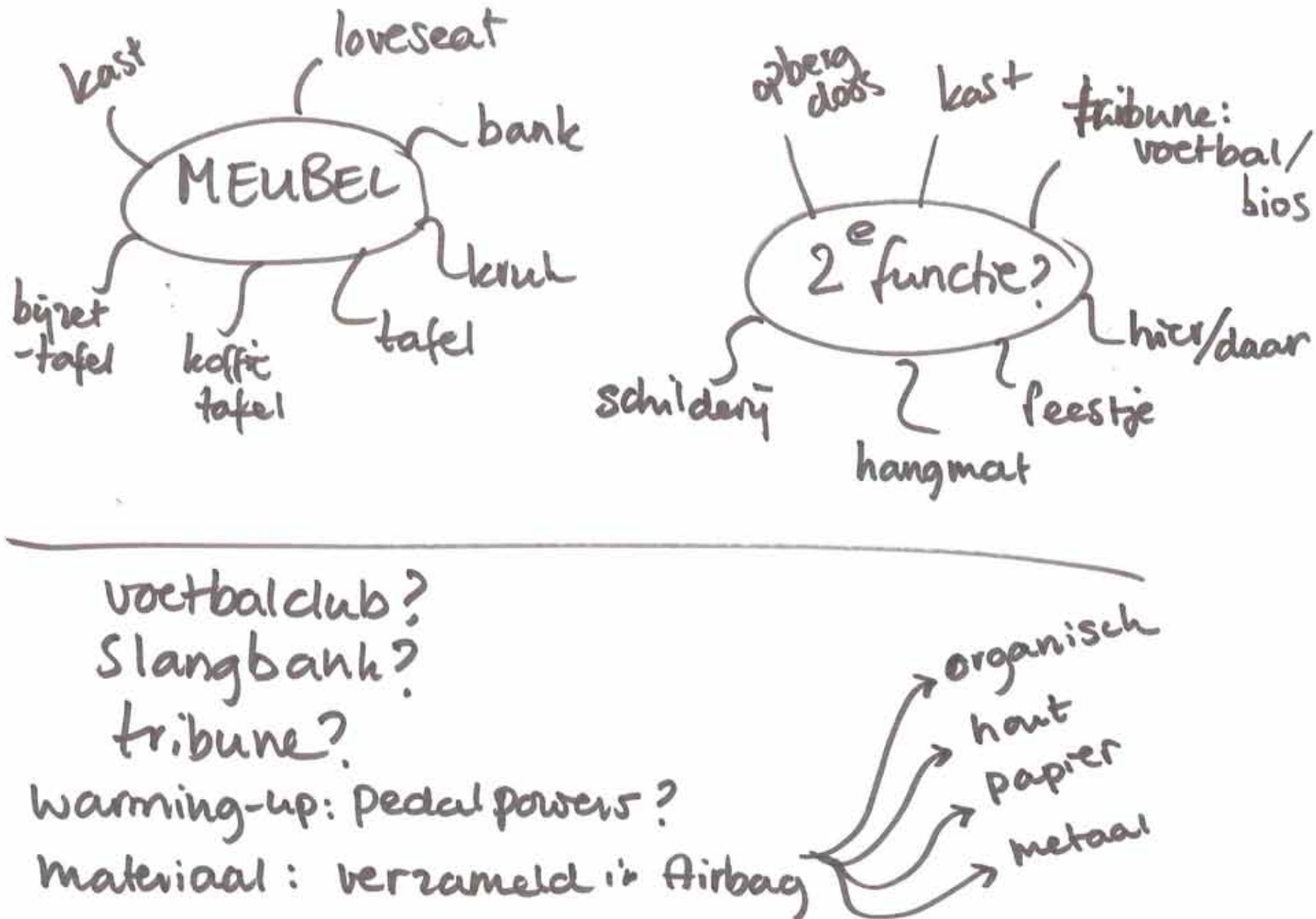


Figure 2: The team brainstorm

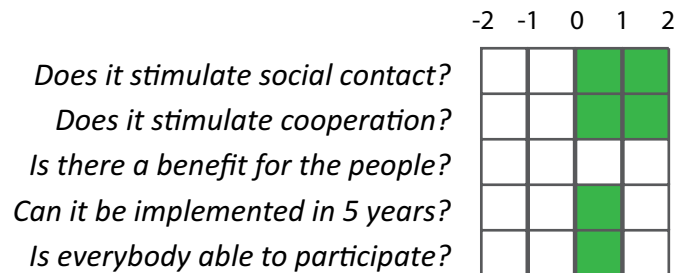


Identification

1.3 Scenario's

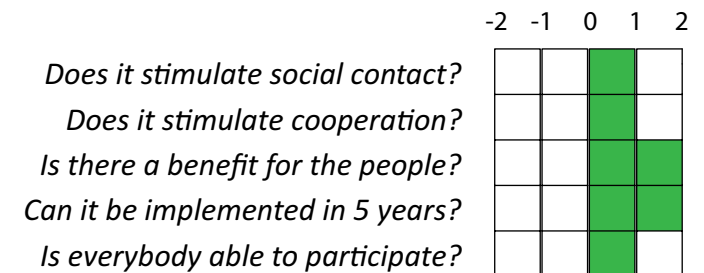
Puzzle

Every household buys a part of a chair, when they work together they can make the chair in to one big one, on which they can sit together and have BBQ's together. They buy it at the supermarket.



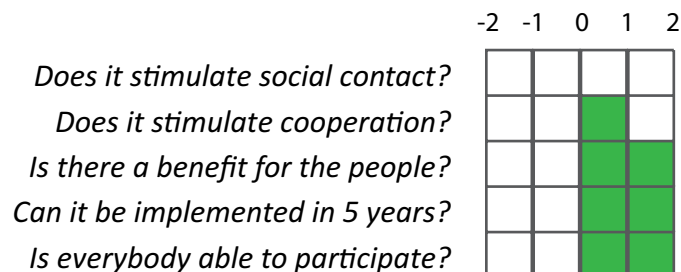
Return Costs

At the supermarket there will be a paper/cardboard collecting point, people can hand their paper in for little money. The super market gives the paper to the workshops, and they pay the supermarket. The workshops sell the chairs and couches to the Bijenkorf.



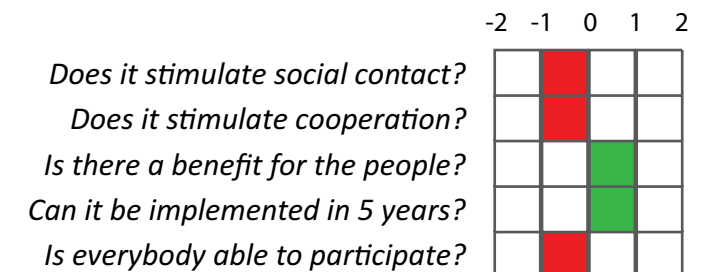
Chairbag

At the houses they collect paper/cardboard with the Airbag, they bring it to the workshops and there they make chairs of it, which will be used for the schools in the slum. Children can sit on it at school.



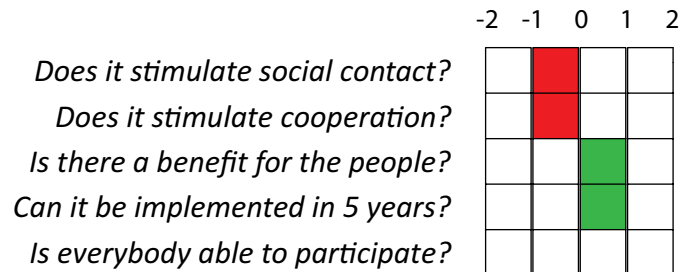
Hard business

One man gets a micro credit at the bank. With this money, he starts a carton factory. Here the chairs are made from recycled materials. After the chairs are fabricated by the locals working in his factory, children are able o paint the chairs to give them a personal, original look.



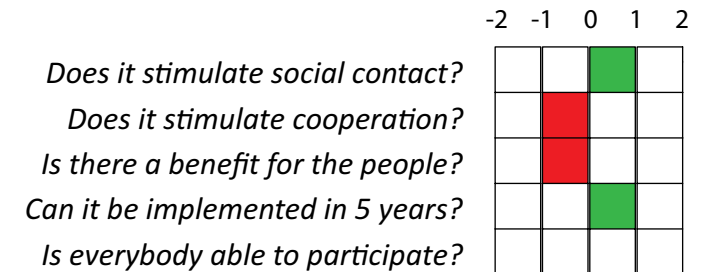
Chair/table

We set up a factory where the furniture will be made. The fabricated furniture will be a combination between a chair and a table. They will be both used in the slum and sold to the Bijenkorf. In the slum they are used in the school. Because of the clever shape, the chair/table combination will be able to fold somehow to store them easily.



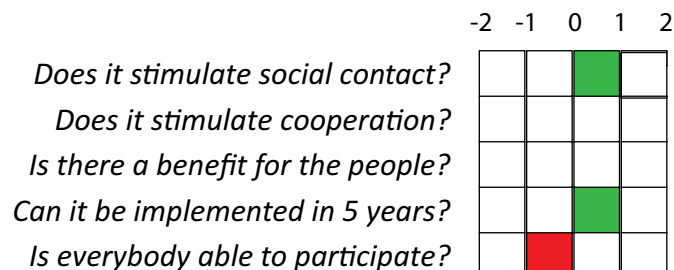
The Chinese wall:

Safra lives in a block in the slum. With her block they buy a few tables from the furniture shop. It is a special table, because it can be connected to other tables. Every Sunday evening all the blocks connect all the tables they have and everybody sits together and eats. Later in the nights they play games. All the tables are standing connected in a long line through the slum



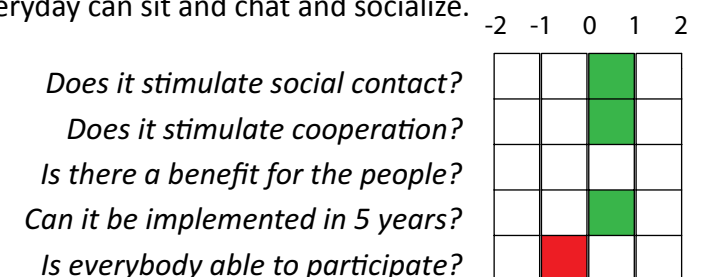
Large couches

In the wood workshop, large couches will be fabricated. It will be able to merge them in order to make one large couch on with people can sit. This might enhance the social cohesion since it will stimulate their being with each other. The large couch will be used during the cinema nights in the slum. The couches will be sold in the Bijenkorf. There might even be outdoor cinemas in Holland which would like to implement the furniture as well.



Socialize:

Musti is a man who lives in the slum in a block. He has a family. The block he lives in pedals together for light the want in the evening. Also they set up a schedule for collecting garbage. With the money they collect in that way, they want to do something for themselves. So they buy a furniture piece at the furniture shop. This furniture are all pieces that can be connected. If the people of the block have a get together, they ask other elements to hire their furniture, so they can connect pieces and have a big furniture chair. Here everyday can sit and chat and socialize.



School baggage:

Hamis is a boy living in a slum. He goes to school. Because not all parents can afford to pay school for their kids, a new system is found. The school only is a building. Parents don't have to pay all the books and stuff, but only the furniture. So every child who goes to school has to take his chair with him.

	-2	-1	0	1	2
<i>Does it stimulate social contact?</i>					
<i>Does it stimulate cooperation?</i>					
<i>Is there a benefit for the people?</i>					
<i>Can it be implemented in 5 years?</i>					
<i>Is everybody able to participate?</i>					

Identification



There are many ways to get from all the scenarios to a final system. All the scenarios have advantages and disadvantages. Therefore choosing one of the thirteen scenarios is not an option. The result will be better if some scenarios are combined to one. This way a much more effective scenario is created.

To reach this goal a Harris profile is set up. This profile consists of criteria the scenario should satisfy. When comparing the scenario to the criteria you get an indication of the advantages of the scenario. Compare all these result with each other, and you get an idea which one satisfies the criteria the most.

The criteria the scenarios should satisfy:

1. Does the scenario stimulate contact? The most important thing so social cohesion is contact, and social control. So if there is no contact, the scenario is not the way we want it.
2. Do people need to cooperate? Cooperation is a thing we think is important to learn people. If people can work together, a lot of problems can be solved.
3. Is there a benefit for the people? We want to make the peoples lives better. But if we implement as system where they have no benefit of, people will not participate.
4. Can it be implemented in 5 years? We want to help the people in the slum relatively quick, and make changes that people will notice and not have them waiting for 10 years.
5. Is everybody able to participate? It is important that nobody feels excluded. And it is also important that nobody feels that they are doing all the work alone.

In fig. 3 the Harris profile of the scenarios is shown. Red spots are a bad sign, while a lot of green is usually a good sign. Now it is best to look at the best of the scenarios and take their best parts and combine them into one scenario.

Some positive elements out of the scenarios are:

It is important that all the previous projects can run together in the slum. If The Light Talk and the Airbag are also needed in this scenario we can easily make it one project which is all going on in the slum. This aspect you see in *Chairbag*.

The contact between companies is also a significant aspect. In *Returning costs* you see different elements of the slum working together.

In *Hard business* there are also children participating. This idea is very interesting. If we want help people take themselves and the slum to a higher level, children are a good way to start. By learning them how to make possibilities, they can pass it trough to their children and so on. This is the reason why we were fascinated by this aspect, and brainstorm in what other ways we could involve children.

Including the brainstorm and the other important aspects, we came up with the final scenario, which is explained and illustrated on the next pages.

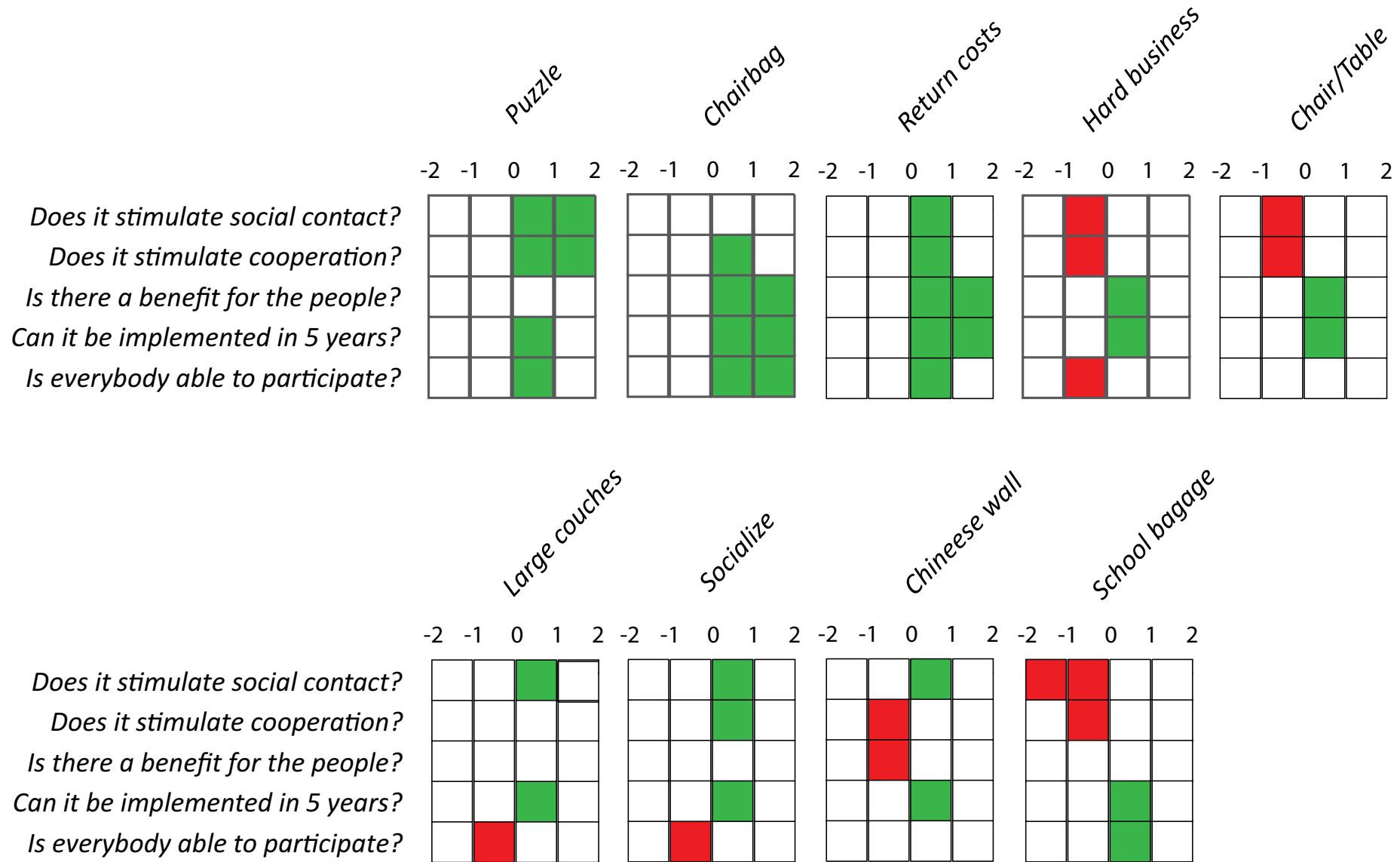


Figure 3: Harris Profile with all the scenarios

During this project we, as a Social Entrepreneurial Design Group, will support and guide the person who requests a micro credit loan and participates to our program. It is important that we do not request the micro credit loan. Instead, we want local people to request a loan. This way, it stimulates their self development. Eventually, we will not be there anymore to guide them, so it is important to import our knowledge so that they are able to set up such a system when we are gone.

Abu is the main person in our final scenario. He lives together with his family in the slum. He comes to us the moment he heard about the other projects we recently guided and stimulated ("The Light Talk" and the "Airbag"). Abu is enthusiastic and studious. He is just the right person for our next project; The Skybox.

The basic idea of this project is to collect paper, cardboard and wood. This material will be turned over into a cardboard-chair. After gluing the cardboard pieces together into a chair, the chairs are being painted by local artist, they will also be printed with sponsoring from the festivals.

The chairs will be both used in the slums and sold to several festivals, theaters and outdoor cinemas.

We looked for an activity to attach to the chairs so that the people can use it individually and together too in order to stimulate the cohesion. This activity will be playing/watching soccer, we will come back to that later.

Abu request a micro credit loan. With this loan he will have to startup several elements:

- First he starts up a cardboard workshop. This workshop will be used to store and fabricate all collected cardboard, paper and wood. This material will be recycled into new cardboard which will be used to fabricate the chairs.
- There are many children in slums. We would like to involve them in this concept too. Since sports unite people, we thought it would be a good idea to let Abu start up a soccer club. The children that will play at this soccer club will pay a small amount of money each month so they get training. He will make one person responsible for that part of the concept. From now on this will be Malik.

A part of the produced chairs will be given to the local people living in the slum. They are free to use the chair at home. The same chairs will be used as tribunes for the soccer fields. Elderly are free to come and watch their children enjoy the soccer practices. In the weekends there will be played soccer matches. People then hand in their chair in order to create a tribune otherwise the people who want to watch the matches can not sit on a chair. The chairs can be connected to each other to build a tribune. Again, the elderly are free to come and cheer for their children. Using the chairs this way will save the soccer club money, since they do not have to store the tribune parts every now and than. At the same time people use the tribute-parts as chairs at home, this way they will be used when they are not necessary at the soccer club. Due to the social control in the slum we think they will hand in the chairs every weekend. They feel responsible for doing that, also when they do not want to watch themselves, but give the chair to other persons that want to watch.

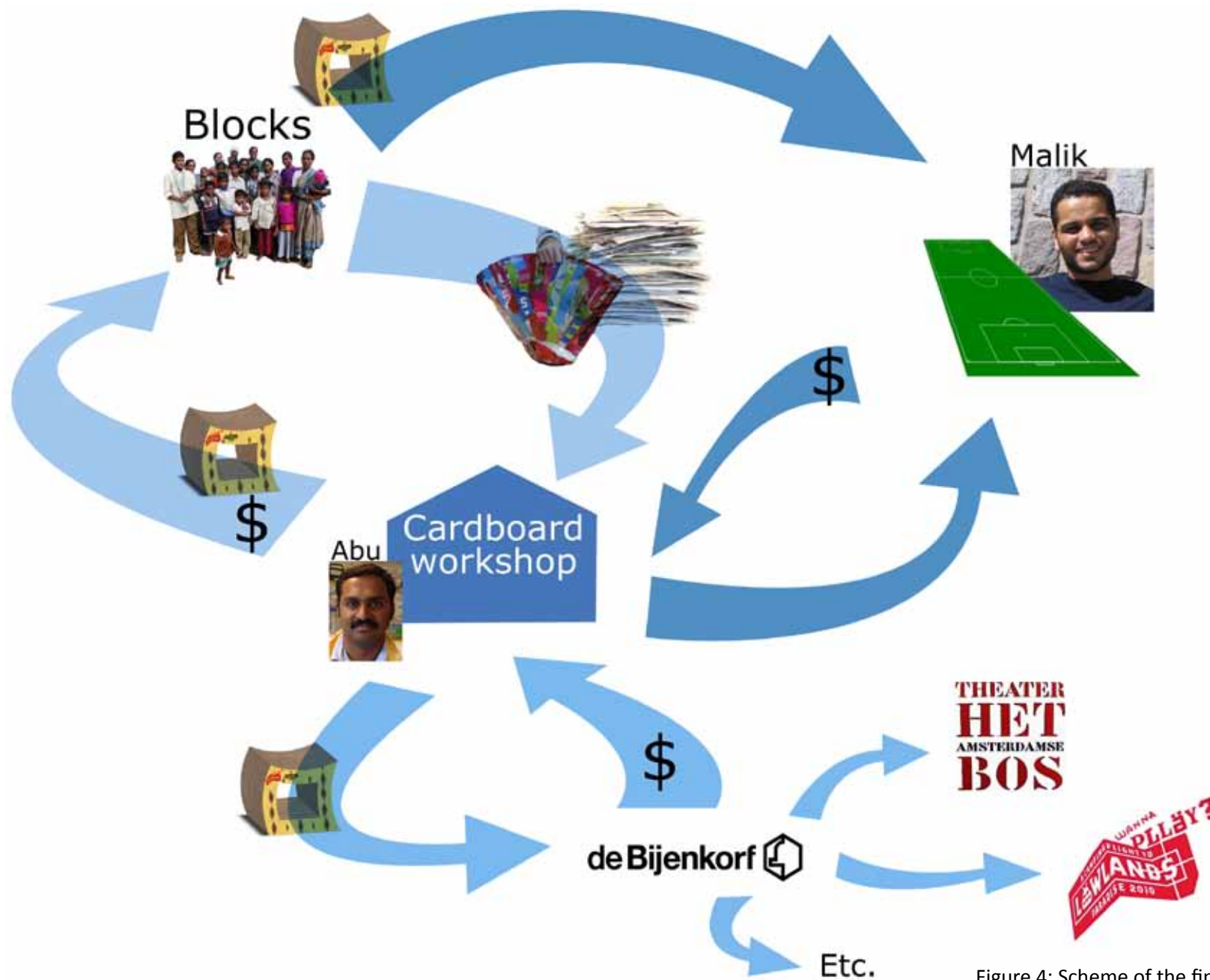


Figure 4: Scheme of the final scenario



Since people in the slum do not own the chair, it will be easy to collect for any reason. For the example we just gave: the soccer practices/matches, but also a birthday party or any other group activity. People will easily exchange them because they did not pay any money for it.

The idea is that every block gets a chair and they decide together who will use it, and they work together with other blocks to create a tribune at the soccer club.

This will give the people a kind of group feeling, belonging to the same club, supporting the same club. With this Abu and Malik try to create the feeling that people can contribute to a better and bigger club. People want to be part of the soccer club and do something for it.

People living in the slum already collect plastic (see the Airbag system). This system is comparable. They will use the Airbag to both separate their plastic and cardboard/paper/wood, but the cardboard/paper/wood will be brought to the cardboard factory. There they will be paid by Abu per kilo.



Figure 5: Tribune of Skyboxes



Social interaction is a very important aspect of our system. That is why the overview is made. As you can see in the picture Abu is the main person in our system, he talks to almost everyone in the slum and in the Netherlands.

Abu is the owner of the cardboard factory he also sets up a soccer club with Malik. So he really has to cooperate with Malik. Malik keeps Abu posted about the things that happen at the soccer club and they make decisions together.

Malik trains and coaches the children so he talks a lot to and with them. The children live in their blocks with their families so there is a lot of interaction there between the family members. Because the family members collect paper and cardboard in the Airbag and bring it to Abu at the cardboard factory in return for a little money.

At the cardboard factory employees make new cardboard from the material from the people in the blocks. With that new cardboard they make a chair for in the slum or to sell it to the Netherlands.

Abu talks to the different festivals like Lowlands, theatre, open air cinema so he knows how many chairs they have to produce and in what amount of time. He also has to speak to the Bijenkorf because they have to put the chairs in the showroom and actually sell them.

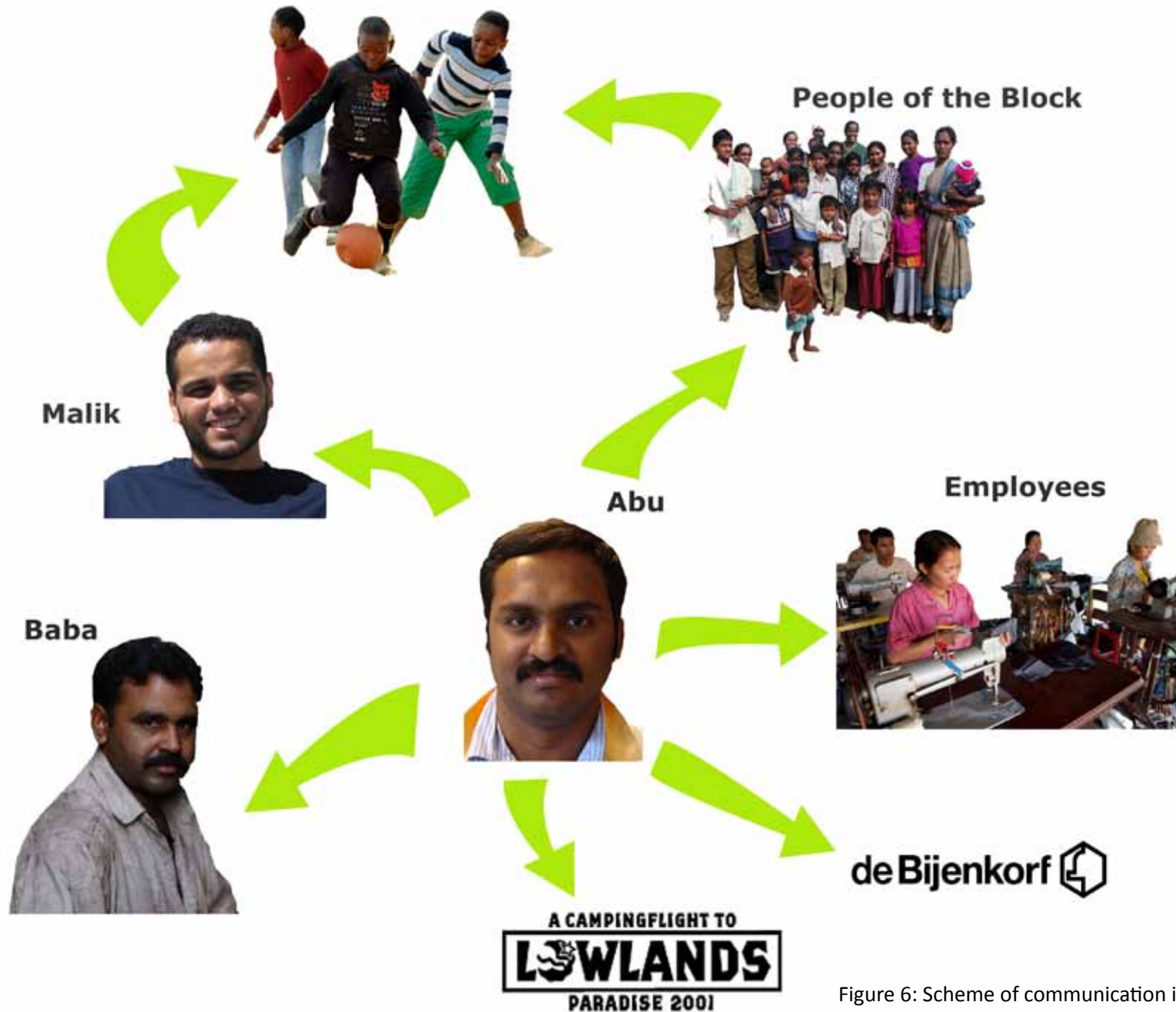


Figure 6: Scheme of communication in Final scenario

The moment our job is done, we leave the slum. Abu will have to maintain the system on his own. To do so successfully, we think it is important that we only guide and advise him. We will not take over any tasks he will have to do in the future. This way, we can “educate” him and bring the slum to a higher level by implementing a system they are able to maintain on their own.

Just as in our previous system, the man who requests the micro credit loan will be the person who will have to oversee the whole system since he plays such a crucial role. Abu’s income will be steady as long as he manages to keep the fabrication running. His other monthly income will be the contribution he collects. This will not be much; it will be collect because of a symbolic matter.

Abu’s costs:

We can separate Abu’s costs into single costs and monthly costs. His single costs will be the following:

- Abu will have to set up a soccer club. Therefore he will have to invest money to realize the grass field and the goals. The sports club will own the skyboxes. They will be used to built a tribune when necessary. At times the skyboxes will not be used by the sports club, local people can borrow them to use them at home.
- Abu will have to start a cardboard factory. Here, the skyboxes will be fabricated. To start this workshop, Abu needs a machine which is able to make cardboard out of recycled paper, recycled cardboard and recycled wood. Abu will have to use the money he borrowed from the local bank to set up a cardboard factory and invest into this cardboard machine. In the end, Abu will earn enough money by selling his skyboxes to pay pay his loan.

Next to this single costs, Abu will have to deal with some monthly costs:

- Abu will have to pay the people who bring in the paper, cardboard and wood. For Abu, this will be a small expenditure. Still, it is very important to give something in return for the material the locals hand in. This will keep the material income constant. Local people already separate their garbage and hand in their plastics at the garbage factory using the Airbag (see pervious project). Since these people are already separating their garbage, it will take little effort to pick out all paper, wood and cardboard too.
- Abu will have to pay Malik who is the soccer trainer. Malik is in charge of the soccer club.
- Abu will have to repay his loan. This means he will have to save money on a monthly base.
- Finally, Abu will also have to save money to maintain his family.

In the Netherlands, the skyboxes will be used by different organizations as canvas to print their logo and the logos of their different sponsors on. This means the Skybox will be used at an advertisement tool as well. In the end, the sponsors are the parties who are paying for the fabrication/transport of the Skyboxes. Entrance tickets of these organizations will be sold at the Bijenkorf. The customer receives a Skybox the moment he buys a ticket at the Bijenkorf. He does not pay extra for his ticket.

Every organization can have their own print, this will result into the fact that customers are able to collect the different skyboxes. Off course the shape of every skybox will remain the same, the print will vary.

Looking at the customer it is only beneficial to buy your ticket at the Bijenkorf. The customer will get a skybox for free by buying a ticket. Since there are different prints, we hope people will collect the skyboxes in the Netherlands. By buying a ticket at the Bijenkorf, they are able to support people living in the slum.

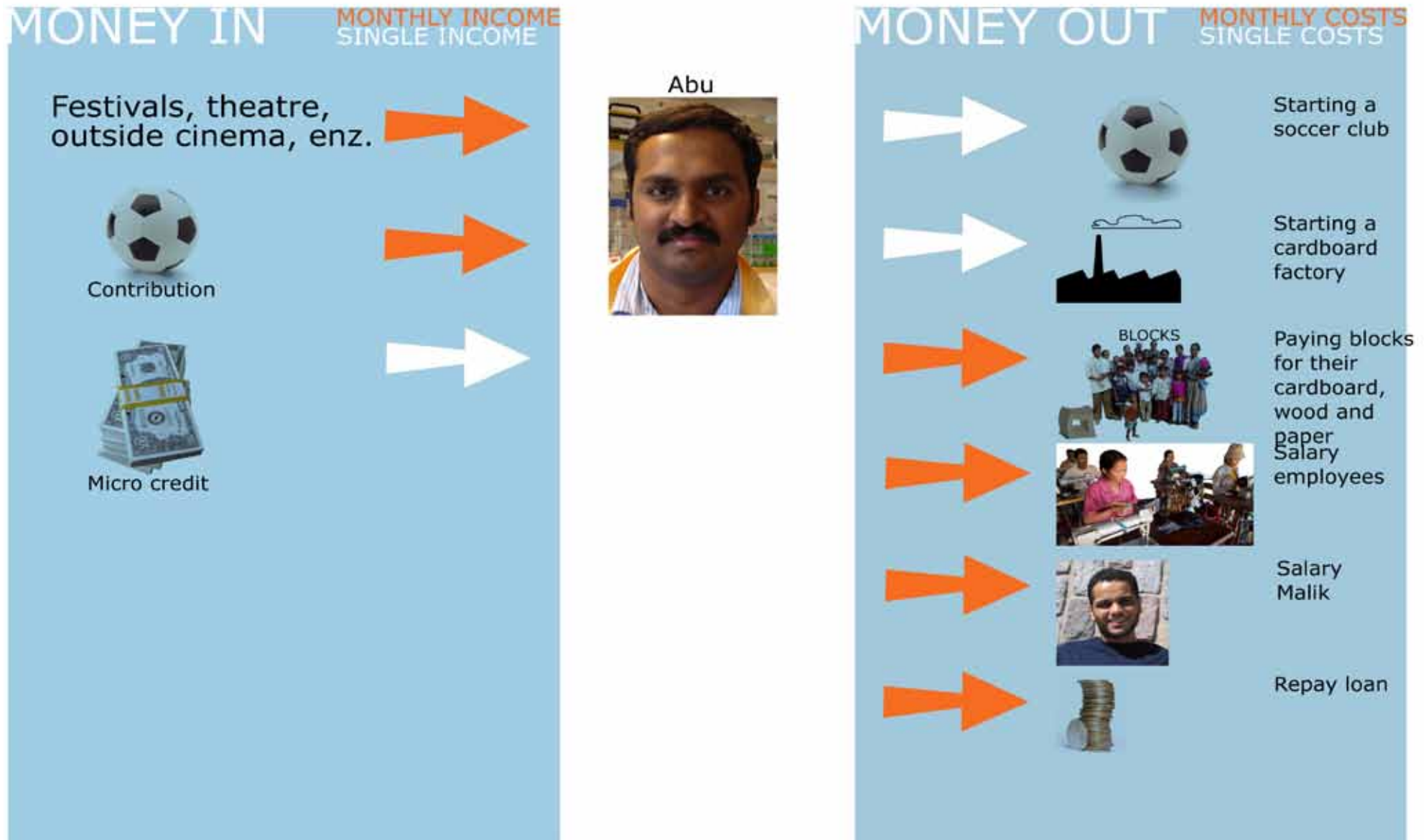


Figure 7: Scheme of cash flow in the Final scenario

In the final scenario furniture is used to bring people together. We designed a chair which fits in the final scenario and which supports our vision. The design of this chair triggers people to work together, this which will bring them closer together. The chair has to be made and used in the slum itself. It will be sold in the Netherlands as well.

The chair which is designed is called the Skybox. Again there is a reference to a 'fresh breeze' in the name of the product because it is in the air which we referred to with sky. The product looks like a simple cube, that's why we referred to a box.

The two references together make skybox. A skybox is a part of a tribune at a soccer station which is more luxurious then the usual tribune. Here people can also watch the game. That's what we wanted to create for the people in the slum. We wanted to help them create a safer and luxurious space, where they can sit and watch something together.



Figure 8: Logo of the Skybox

The Skybox is designed in a way that it can be connected to other skyboxes. The skyboxes can be connected like a puzzle. It is possible to connect the skyboxes in front of each other. At the same time, it is possible to connect the skyboxes by stacking them on top of each other. When everybody brings his skybox, they can connect them together. In the end this will result into a big piece of furniture on which people can sit together. It can be built in several shapes of course: a tribune or a big couch. By designing the skyboxes this way people will have to work together in order to make the "building part" successful. This will enhance the social cohesion since it will result in a positive atmosphere of people having the feeling they succeeded together.

In the previous project we designed a concept in which all the garbage will be collected. With the plastic they made bags, but all the other garbage didn't have a fitting purpose. By choosing one of those "waste" materials for the skybox, we could combine the two projects.

Besides we wanted to use a rough material. It should have a steady look, but also fit in the slum. Another requirement is that the skybox has to be carried. The people have to take it with them to the soccer field. Because the chair only exist of a frame it is very easy to take with you and it is also light to carry.

We choose for cardboard material because the look is a bit similar to the feeling we got with a slum. Also our setting is made out of cardboard and it looks good together. We also choose cardboard because it is environmental friendly and sustainable material because it is made of trees and can be used over and over again. It is only not so hygienic, but for this product that is not relevant.

Cardboard is not a good material to use in the rain, a solution for that problem is to design some kind of sleeve for it, but we think this makes the product too complex. What we could do is impregnate it with varnish so the cardboard is protected to the rain.

We want the Skybox to be useable for everyone, that is why we searched for ergonomic sizes. There are specific sizes which would be important for our design:

The vertical distance from the footrest surface to the hollow of the knee is important for the height of the seat. Also the horizontal distance between the hips is interesting for the breadth of the seat. And last is the horizontal distance from the back of the measuring chair to the hollow of the knee parallel of the long axis of the upper leg. (The sizes are for people between 20-60 and for men and women).

Because it is not a problem to have a wider sit area and we wanted to make a cube, we decided to make the cube 50x50x50 cm.

We want to use as little material as possible, because then we can make the most skyboxes. That is why we came up with a frame in stead of cardboard plates.

The form also follows function in this case because sitting on a flat horizontal plate would not be nice (in terms of ergonomics). That is why we cut a kind of rounding out of the cardboard so it would be pleasant to sit on.

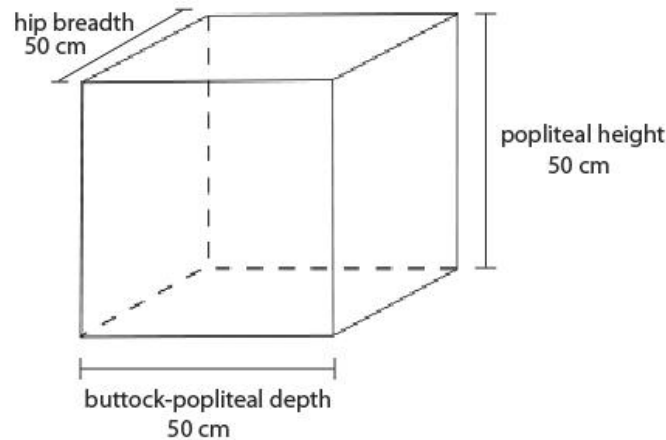


Figure 9: Dimensions of the skybox

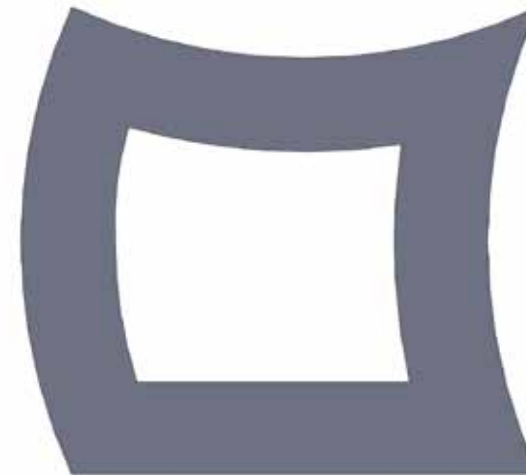


Figure 10: Frontview of the skybox

In the Netherlands there are a lot of festivals, open cinemas and theaters. This seems the perfect place and setting for the skybox. The skybox can be used the same way in the slum. People at festivals can also connect all the skyboxes and hang out together. In what culture you live, people always want contact with other people. That's why this product will work in both cultures.

To get the skybox at the festival they're not going to be sold at the festival itself, but the skybox is going to be a ticket. The festival can buy a batch of chairs from the slum, which are going to be sold at the Bijenkorf for the price of a usual ticket (not more!). People can choose themselves to take the chair with them at the festival or use it at home and not bring it to the festival. The receipt from the chair is their ticket to the festival.

The festival has to spend money on the chairs, and they will earn it back from the sponsors. They will earn it back because the sponsors get the opportunity to print advertisements on one side of the chair. Here the festival can also print the logos of several sponsors. In this way they make a lot of advertisement for the festival, when they support the slum at the same time. The other side of the chair is painted by local artists.

The chairs can turn into a collector's item;
For instance Lowlands buy a couple of chairs in only one color or print on the chair and sell it at the Bijenkorf.
Next year they do it the same but with another color or print on the chair. People will try to collect all the different chairs, like they do now with the wristbands as is shown in the fig. 3.



Figure.11: Wristbands from Lowlands

All over the world, people are interested in soccer. Here, in the Netherlands, we have our own competition. All little boys here play soccer. They play it in the streets, but they also join a club. They train there once or twice a week, and on Saturdays they play matches. For us this seems very common, but for little boys in slums around the world, this is not obvious. The boys in the slum like to play, but often don't have the opportunity. They don't have the time, because they have to work. Besides they don't have the place, or even a soccer ball. The boys there are very innovative to find solutions for those problems. But the fact is they don't have the possibilities we find normal.

That's why we wanted to give those children the opportunity to play soccer like the boys here. This way we make a lot of children happier, and give them something to look forward to.

Another positive fact is: sport unites people. Not only the boys that will be going to play soccer, but also the parents and other people of the slum. They watch and support the children, and at the same time, they have a lot of social contact.

If we implant a soccer club in the slum, all the people in the slum will feel the benefits.

How will the soccer club be implemented in the slum? A soccer club, like in the Netherlands, may not work in the slum. The soccer club we will implement will only exist of a field, the soccer balls and jackets. No pavilion, changing rooms, showers and so on. But still the people don't have the money to build and buy everything that is needed for this soccer club.

That's why Abu supports the children in the slum. He starts up the soccer club with the money he earns from his cardboard factory. He builds a soccer field, buys the equipment for soccer and gives all the people in the slum a Skybox.

He also appoints a trainer, Malik. His main job is to train the children twice a week. Dependent on how many children there are, he will have one or two teams to train.

Also he will organize matches between different teams.

To let you child join the soccer club, the parents have to pay a little contribution to the club. In this way, after a while the soccer club can become self-sufficient.

On the day of the match, all the people will bring their Skybox to the soccer field. The reason why Abu gave all the people a Skybox is because it is designed to be connected. If all the people connect their Skyboxes, it will be a big couch. This will be the tribune for the soccer match.

Before every match, there will be a special warming up for the children. They will have to cycle on the pedal power. This way, a lot of batteries will be charged. They can be used during the match, to light the soccer field. As a result the match can even be played in the dark.

Malik will also take care of the promotion. He will hang posters through the slum on which people can see there is a soccer club. People and especially the children will be interested and go to the try-outs. After all the teams are made, Malik will promote the matches he organizes. So all the people know when they have to bring their skybox to the soccer field.

Implementation

3.1 Prototyping

1. Paper, wood and cardboard will be collected by the local people using the Airbag.
2. Employees of Abu cutting all collected usable material into bits.
3. These little chips (recycled material) will be used to make new cardboard. Abu will start a cardboard factory where this "new" cardboard will be made.
4. The shape of the chair will be cut out of the new cardboard plates. Remaining cardboard will be cut into bits again.
5. The cut shapes will be glued together.
6. Both flat sides will be used as canvas by local artists. They are free to illustrate anything. There will be one requirement: one side will be used for advertisement too. This means the local artists will have to paint some brand logos on one side. After this paintjob, the final product is fabricated.
7. Finally, the product will be both used by local people and sold to Dutch festivals and other activities (the Dutch organization)

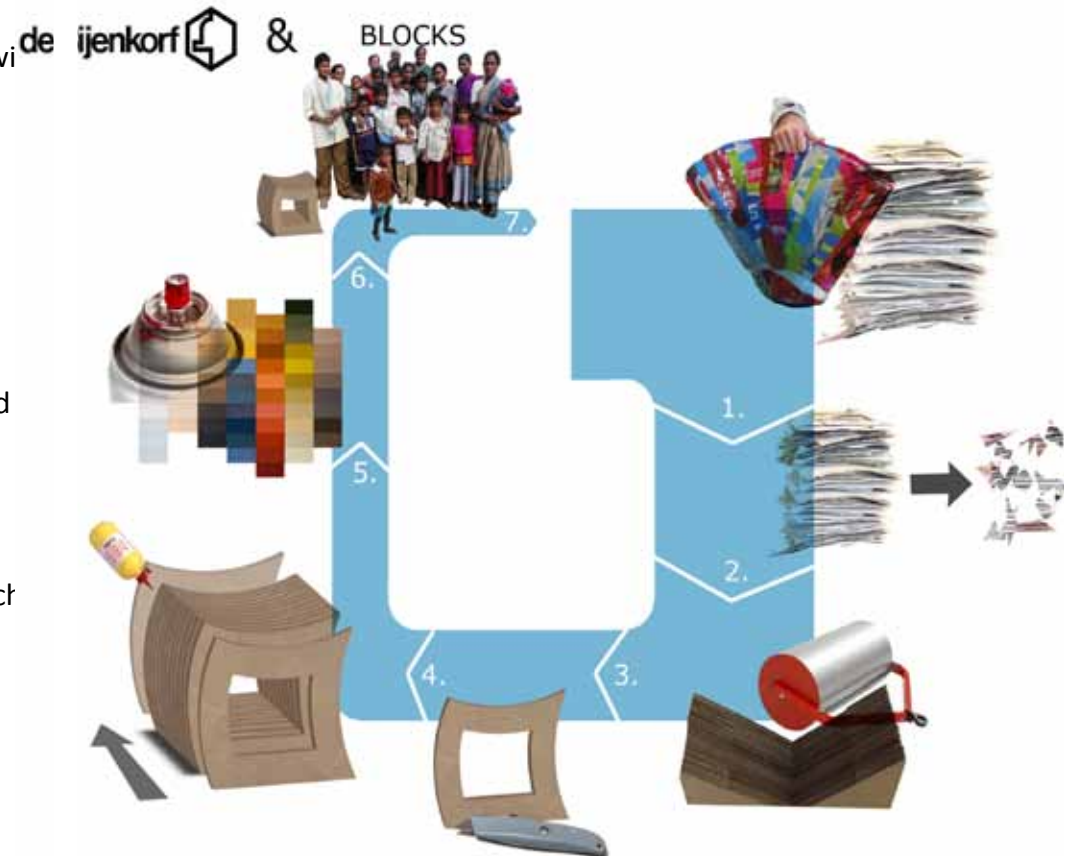


Figure 12: Scheme of the prototyping of the Skybox

The slum can combine the different cases;

1. The children can do their warming-up from soccer training at the The Light Talks (pedal powers) so they charge batteries, which they later on will use for lighting their soccer field. When they play a match in the evening.
2. The bags they made from recycled plastics, can be used for collecting the cardboard and paper for the furniture
3. The furniture is made from recycled paper and cardboard (The Skybox) will be used to sit on. So people can watch the match while sitting on the Skybox.

When everything works like this, we think the soccer club can extend, and have lights on the field so they can play in the evening and there will be more money available for hiring employees like Malik, so there will be more than one trainer.

Other slums might also be interested in making cardboard chairs, because they see it is profitable to sell them for example to the Netherlands and it keeps their slum clean. If they want to make something out of cardboard, they should make agreements on what they are going to make with the cardboard, and to whom they are going to sell it. Otherwise they are going to compete with each other, while they also can make furniture. They can produce other furniture, maybe tables or something like that. And they do not have to sell it to the Bijenkorf, they can sell it to any other store as well.

Other slums would also like to have a soccer club. This would be very useful because then they can play matches against each other. They can start some kind of competition with the slums. This will stimulate the cohesion within people from the same slum/club.

For both of the ideas, knowledge is needed. The knowledge Abu and Malik have, supported by our SEDG Air&co. We want the slums that are interested to come to these two people so they can share their knowledge and hear new ideas, this will stimulate the contact between the slums.