

# CONCEPT DOCUMENT

26 April 2013

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# 1 RESEARCH INSIGHTS

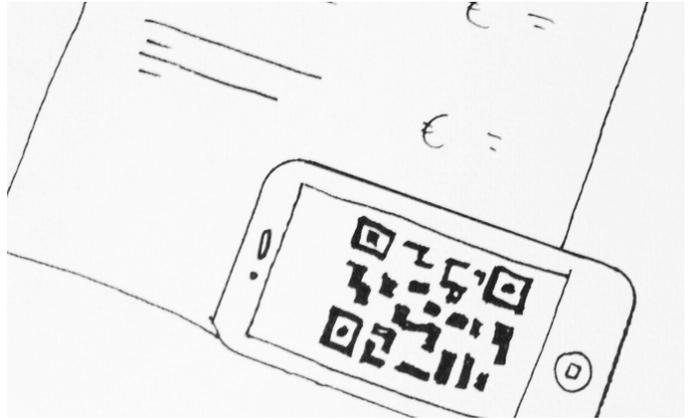
Our research phase involved desk research, meeting and interviewing our stakeholders, and a co-creation workshop with them. With the help of our wide research we gathered a number of insights based on which we developed a few concepts. We primarily focussed on the facts that our target audience use the internet when searching for information related to their work, they use smartphones and most importantly that they like personal contact and casual information exchange and interaction with STIHO employees and other people from the field. Bearing these interests in mind we proceeded to the concept phase.

## 2 CONCEPT PHASE

We had brainstorming sessions, discussions and as a result came up with a number of interesting ideas. We then narrowed down the important aspects and compiled the ideas that adhered to our research findings. We decided to pay attention to personal contact, information storage, gamification and simplicity. Our three concepts were built on some or all of these theories.

### 2.1 Interactive bill

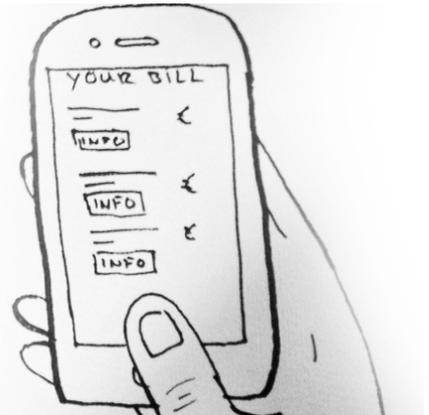
For our first concept we came up with the idea of making a digital bill which allows the customer to search for more information about the products that they purchased. The bill is provided with a QR code. When the QR code is scanned with a smart phone it will convert the bill into a digital bill and the customer has to possibility to search for more information about a particular product that he or she bought. This information consists of video, text and pictures.



The customer scans the QR-code that is displayed on the footer of the bill.



The customer purchased materials and products at the STIHO Bouwplein



The customer gets a digital version of the bill. Per product you can access information about the product.



The STIHO Employee hands over the bill with the customers purchases.



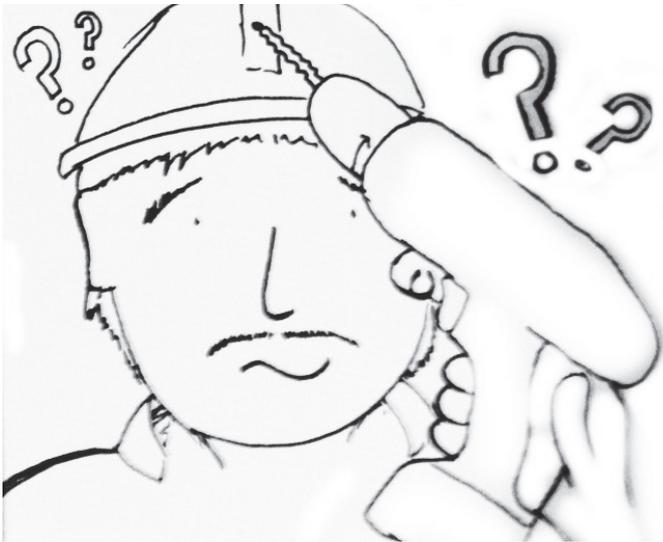
The customer clicks on a product and gets a detailed information page about that product.

## 2.2 The walky talky

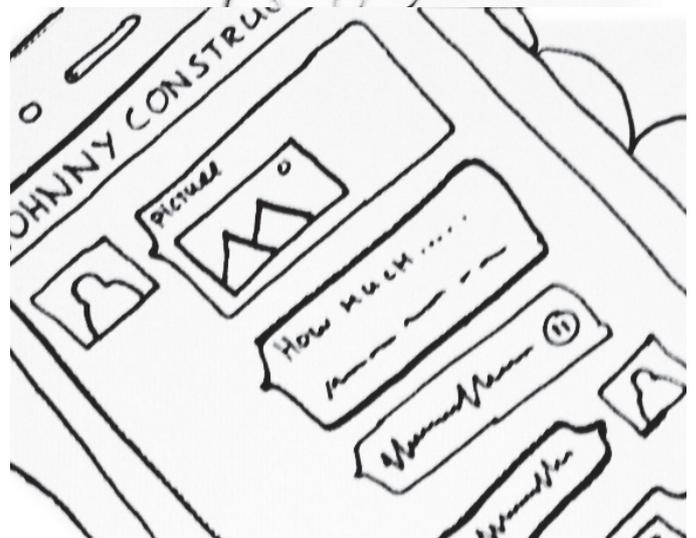
As an inspiration we looked at Voxer and Whatsapp for our second concept. It is really easy and fast to communicate with these apps and besides that, our some members of our target group uses similar already. Voxer is an app that use speech to communicate like a walkie talkie. Whatsapp is an app that use mainly text to communicate. With this in mind we thought of a concept that the construction workers could use in the context of their work.



Within this group he asks the question by speech.

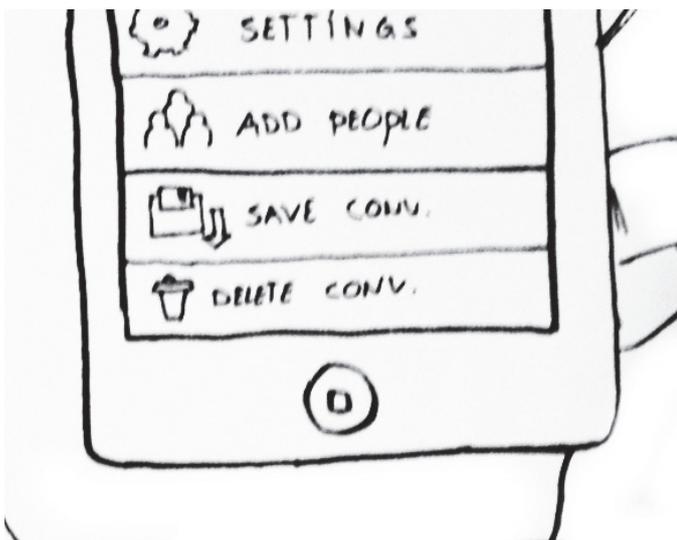


A construction worker does not know how to work with a particular tool.

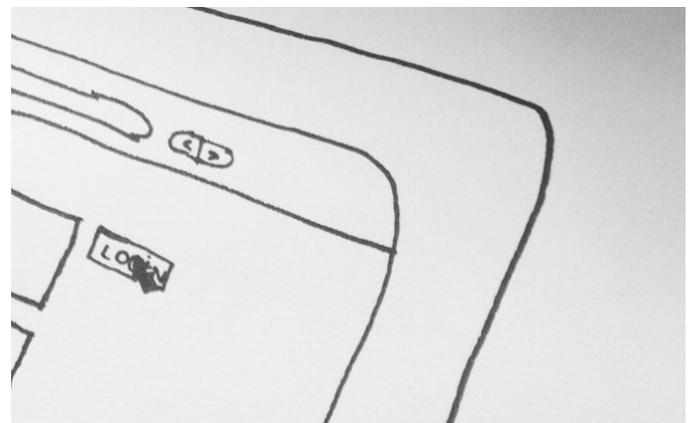
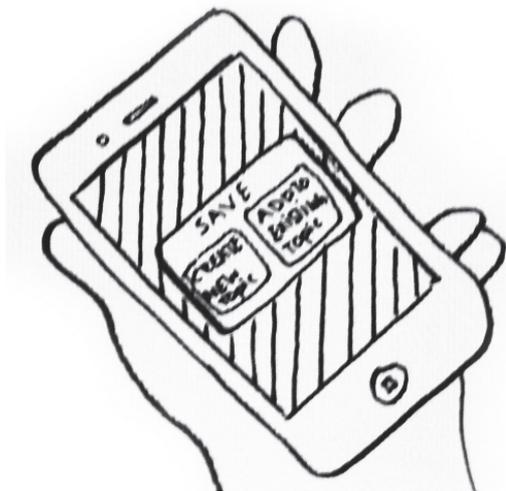
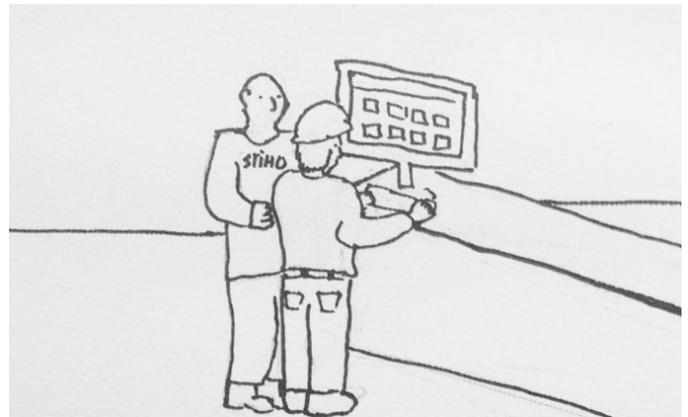


He goes to the group 'Drills' to ask a question about the drill he is been using

Someone else in the group sees the message and replies on it with a picture and speech.



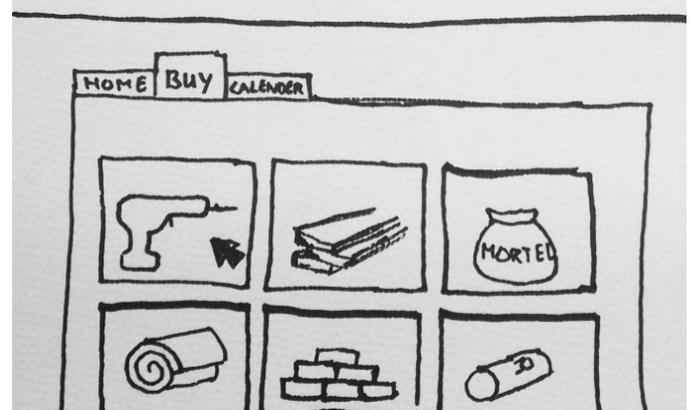
overview as the one who created the digital project space.

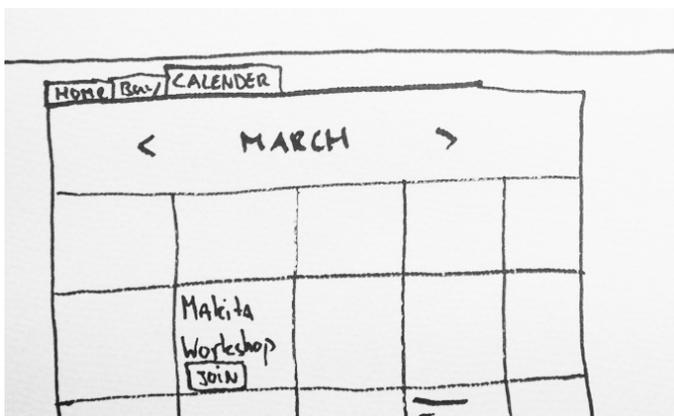
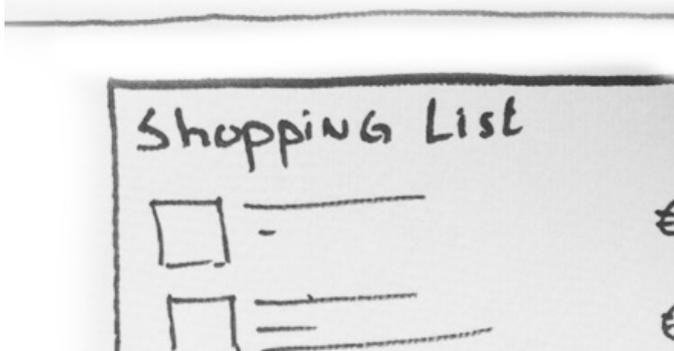


The man that asked the question now is satisfied with this answer and is going to save it.

### 2.3 Webshop

Our concept of the webshop is a combination of a webshop and a digitized invoice. When doing a purchase online, the digital invoice can be added to the account of the customer. This account can contain multiple projects. The projects include information on where the customer works and what the job entails. In this way the customer can store information about all the materials that he needs for a particular job. This information can be added to this digital project space and contains information about the tools or material. By clicking on the object the user can get more information. In addition to this function there is also the possibility to add other people working on the job to the project so they have the same





## 2.4 The final concept

Our assigner was particularly impressed with the voice chat application(2.2). The strong points of this concept was its simplicity and the fact that it got the users in touch with relevant people at the moment they had a problem. Although the structure required further detailing at the time, this concept strongly appealed to our assigner since it focussed on helping the users and ensured the exchange of experience among people of the construction industry. Strong points about it is that it reflects the current most dominant modes of interaction between STIHO and construction

workers (casual chats, phone conversations, whatsapp like apps). Other benefits are that a voice app doesn't require typing and allows the user to quickly explain their problem and illustrate it with a video or image.

After finalizing our concept we tweaked our problem to read as follows.

To digitally capture the exchange of information among people working in the construction industry and to make it available to all the members of the construction community.

We then began to develop this raw idea into a concrete concept while ensuring that it takes into consideration the important findings from our research.

### Formal Concept description

The app will help to bring people from the construction field together. It is based on a digital community of people that are using the app and are categorized by profession. The app can be used by construction workers, STIHO employees and the suppliers. It is useful for getting answers and starting discussions with others from the field. In this app it is easy to find the right person for every genre of questions. The questions and answers can be exchanged by voice, text and/or picture/video messages. The user can choose to share the conversation so as to help others find information about various topics, or they can make it private if they don't wish to share it. By adding keywords/tags to a saved conversation, the shared conversations can easily be found in the archive. Users can add keywords to a conversation before they start one, during the conversation or when they save/close it. Once the user is satisfied with the answers he got, he can close the conversation/ topic.

### How is our research reflected in the concept we developed?

When a construction worker wants more information it is important that he gets this information from someone who is experienced and someone he trusts. Personal contact is of great importance within this community(Research doc. 17). The relationship between STIHO employees

and the end users is built on a trust(workshop, Jasper). It is based on this trust that they share more information with each other (Research doc. 17).

The sharing is important when STIHO wants to know something from the end user. The end-user is careful when sharing information with other parties to protect their commercial interests(workshop, Jasper). Within the construction field, end-users are sharing and helping each other with different cases. When someone has a question they call someone they know from their own community of construction workers which they create themselves(workshop, Jasper and Rik). Not every construction worker creates his own community so a lot of them may have a hard time getting information when needed. They will probably call someone from STIHO or someone who teaches them how to do things (workshop, André and interview Weber). In this arrangement, they can only get in touch with their immediate acquaintances but with our app they can be connected to people in their extended network.

Our concept will help to bring people together to get an answer to a question or to start a discussion where they can exchange knowledge in a way they are doing now. They can create a new conversation with people they already know who can further add people as well. They can choose if they want to have a private or shared conversation based on their need for discretion . Another advantage of this app is that even if the person being contacted is unavailable at the particular moment he can respond to the message once he gets the opportunity. Based on our research we found that most of our stakeholders use smartphones(Research doc. 17) and such a digital medium of communication will prove efficient and cheaper than making phone calls. Our focus on speech stems from the fact that pressing/holding a button and talking into the microphone is easier and quicker than typing a long question and more so an elaborate answer. A “play all” feature may be useful since the user can go through the entire conversation without dedicating exclusive focus and also leaving their

hands free to do other work.

Construction workers often learn new things from the workshops and trainings that are conducted by the suppliers. Here they get to learn by doing. When they want to get more information it is good if they get this information in an interactive way (Research doc. 17). With our concept they can ask questions by voice, text or picture/video message and they get response in the same interactive way. The voice message is easy in use when they are at work and want to ask a question or respond on a question. With text they can send a link or other information that has to be written. The picture/video message is good to add for more information and to make it visual. They are visually oriented and this is sometimes easier than explaining the problem via text.

The reason that we developed a concept wherein information easily can be exchanged is because we found out that construction workers prefer to share knowledge in an informal setting without the feeling of being “taught”. End users who will use the app can start a conversation whenever they want to and can control who will see the conversation and reply to certain questions. This way they are part of exchanging the information. (Research doc. 12)

Because we want to keep all this information in one place we have to store it where all the users can find it as well. That is why we implement an archive, based on the conversations that are saved by the users. We hope to have question-answer snippets from a group conversation saved in the archive. Each question-answer cluster will have a different color which helps to keep it organized. Tags may be added to the cluster which the users can later use to search for something in the archive. However, not every user has the same privileges. The role of the suppliers needs more analysis. We need to make sure that all the stakeholders involved get their due importance.

One of our concerns is that the archive needs active participation for it to sustain. If the users do not save question clusters to the archive often enough, the archive may not have sufficient

entries and the purpose of it is not served. Another aspect that requires a large number of users involved is the app's contact database. This contact list helps the users build their professional network and hence requires a significant number of people registered with the app.

Implementing the color coded structure of the question-answer cluster and tagging might be challenging at a prototype level due to the time constraints, but we hope that when STIHO pursues the development of the app these concepts can be easily incorporated.

## 3 THE CONCEPT

We used various methods, i.e. storyboards, flowchart, paper prototypes, card sorting and concept testing with the user, while developing our concept. With the help of these methods we were able to systematically build each aspect.

### 3.1 Functional Aspect

In this section we describe the prominent features of the application we are going to develop.

#### Profile

The users must create a personal profile with a picture and their company name. They can add skills, expertises and profession. This information can later be used to create personal advertisement based on expertises and as input for the contact list. The user has the option to set his profile as private or public. A public profile is visible to all users in the app's database.

#### Contactlist

The contact-list is divided into two sections. One section is the personal contact list based on phone numbers from the phonebook which also use the app. The other section is comprises the details of the app-users who set their profile as public. You can search in this section by profession.

#### Create Groups/communities

The app provides a system that allows users to create a group. For instance a user can create a group for each project that you are working on. Within this group one can have all their project members in one place. Also one could make a group with your personal contacts so they can easily share contacts and recommendations with each other. A user can ask for an invitation to join a group or invite others to their group.

#### Asking and answering questions

It is possible to ask and answer questions within the group/ community via speech, text, pictures and/or videos. Other people in the group get a notification and can reply to the question. It is possible to link an entry from the existing archive to the question cluster.

#### Question Cluster

When a user asks a question, others in the group get a notification and can reply to the question. All the specific media files within this conversation are clustered (and maybe saved in the archive). The question clusters are supplied with tags and a category so others can easily look in the archive and find the relevant question cluster. When someone closes the 'conversation' it becomes gray. Users can still reply to that question.

#### Archive

In the archive one can explore previous questions by searching for tags and/or categories. This archive consists of clustered question files and contains speech, text, pictures and videos. You can search through the archive by searching for tags or browsing through the different categories. The archive is user generated.

#### Tagging

When starting a new question cluster the user has to add tags so the archive becomes a structured information database and others can easily find previous questions.

### 3.2 Information structure

A method to segregate the various question-answer sections within a group conversation is to give each cluster a different color and allow the users to save each cluster separately. This ensures that within a group conversation the various topics do not get mixed. The topics of relevance are separated from the casual exchanges.

We spoke with our colleague, Niall, who is an information architect. He explained to us that when creating the information structure we should be careful with the options that we give the user.

There needs to be a balance between the existing

structure and the extent to which it can be altered by the user. In our archive, we intend to have categories for various question-answer clusters to be organized in. The levels of freedom need to be appropriately defined so that while the users don't feel restricted by the app's functionality, they are not given too much freedom which may result in a chaotic information structure. With Niall's help we established that the categories could to be predefined so that the archive is not cluttered with multiple user-defined categories. The naming of the categories would be difficult if it is left to the user and might lead to a less organized structure.

We concluded that it would be best to set the categories but give the users the freedom to add multiple tags to the question clusters. Users will now have the option of browsing through categories as well as searching with the help of keywords/ tags.

To understand the most logical classification of the categories we spoke with two independent contractors Rik, from Polderbouw and Jasper from Bucabouw. Using the card sorting technique asked them to tell us what they thought might be a good structure when they would use such an app(Details of this meeting are in Section4). We gathered from them that categorizing based on the kind of work or project, such as, kitchen or bathroom would be favorable.

### **3.3 Interaction Concept**

We have quite a few functions in our app that need to be structured. To structure all these functions and to get a better view of what needs to be where we made a flowchart. A flowchart is a diagram that shows the steps the followed by the user while using app. All the options that are in the app are shown in a flowchart (*Appendix 1*).

With the help of this flowchart we created a paper prototype of our concept. We used the paper prototype to see if all the functions were necessary and whether the steps the user has to

take were logical. To test the concept we put the paper prototype in Protosketch. Protosketch is an app that allowed us to make a digital prototype of our paper sketches. We discussed and tested our concept with two independent contractors, Rik and Jasper. This concept test will be elaborated later in this document(Section 4). We learnt that some options needed change or addition to the concept. Rik and Jasper mentioned that we have to keep the app as simple as possible and recognizable for the users. This is something we have to keep in mind while designing the app. We are going to look at designs of apps that the users already use, to ensure simplicity and familiarity (*Appendix2*).

We then created a new flowchart (*Appendix3*) since the old one needed updation. We added some options and steps to make it complete. With this flowchart we started making the wireframes of our concept in Axure. In Axure it is easy to create a prototype of the app and test to see if everything works fine. The functionality is subject to editing while making the wireframes which may result in more changes for the flowchart. Once we have a final logical flow of activities in the app we can start designing the app to make it visual.

### **3.4 Visual**

We want the app to be easy to use and very user-friendly. Therefore we chose to create a clean look with a clear interface so the user won't have any trouble while using the app. The app needs to enhance the feeling of coziness and should be familiar for the user so it is more appealing and easy for them to start using the app. Important keywords for our design: familiar, cozy, simple, functional, easy (*Appendix4*).

### **3.5 Technical aspects**

We have decided to build our prototype(Beta version) for Android which can be further developed. The app may be developed for iOS at a later stage. We chose to develop for Android since it may be easier to find affordable programmers for Android than for iOS. Android

application programming is done in Java which is a language taught as part of the Computer Science curriculum. Thus, we hope to hire a fresh graduate or someone who is willing to dedicate a few hours each day for a couple of months towards developing our app.

We will be providing the interaction design (.psd and .ai) and the information structure for the archive. We expect to have a fully annotated code which is documented and shared on GitHub.

The developer will be working in close collaboration with us. This is necessary to smoothly convey our design and ensure that our ideas are clearly understood while being implemented.

We will finalize the number and order of priority for the features that will be implemented in our prototype after discussions with the developer and our assigner.

## 4 USER TESTS

We met with two contractors (Rik and Jasper) at Haarlem to test our concept. We explained to them our concept and showed them an interactive prototype. With an application called Protosketch we converted the paper sketches into an interactive prototype to be used on the iPhone. They liked our concept and thought it was a good idea. Although at first they didn't grasp all details of our concept but with a little more explanation they were able to get a clear idea of what we wanted to convey. Besides that they had a clear idea of our app, they added some details and options we really can use.

When developing the information structure we faced some difficulties. In our discussion with a colleague, Niall, we decided that it would be best to predefine categories in our archive. To understand what the most logical classification would be for the people working in the construction industry we conducted a card sorting session with Rik and Jasper.

We took a set of cards with various categories

and subcategories that we could think of to them and asked them to tell us what they would prefer. For example, the category materials had subcategories like wood and cement. Another category was the kind of work/ project with subcategories like kitchen, bathroom, etc. Both Rik and Jasper thought the latter was a good method of classification.

They also told us about an existing standard called STABU using which they structure their projects. It is an in-depth documentation of the particular project with the material and tool requirements, dimensions and other such information required for the contractor and workers.



# 5 EVALUATION

## 5.1 Peer Evaluation

We presented our detailed concept and the methods we used in this phase to our peers at the MediaLAB. The students appreciated our storyboard and thought it helped a great deal in explaining our concept clearly.

As for our concept, people liked the fact that we emphasised 'keeping it simple' and focussed on functionality. Since our target audience may use this app on site and where they may not be able to use their hands freely, the use of speech was recognized as a fitting solution.

Our idea of color coding/ clustering was not very clear to the audience. They suggested that a visual representation might help explain it better. Feedback suggested that we include with respect to explaining the concept i.e. more visuals. We could use snapshots/ pictures of the paper prototype or include a short video going through the steps of using the app. The archive and color coded clustering needs more in depth focus since they are not trivial.

## 5.2 Assigner Feedback

We accommodated the peer feedback when preparing the presentation for our assigner. We created a stop-motion video based on our paper prototype which went through some of the features of the app.

At the end of this presentation, as like every other, our assigner was very pleased with our effort and had numerous interesting suggestions for us to work with.

Bruno, our assigner, reminded us of the STIHO mission "thuis in de bouw". They want their clients to feel at home with them and our app tries to reflect this. The STIHO employees would be an integral part of the networking. They can connect users who have questions to experts and recommend people who can solve various doubts.

Bruno raised an interesting point to specify the maximum duration of the an audio message which will help to keep the questions and answers precise and to the point.

He was inclined towards the inclusion of the suppliers as part of the community that uses this app. Their involvement is something that needs to be detailed based on their role as primarily information conveyer. Integrating the suppliers within this loop will also need to be looked at from the business model point of view. This is something that will require more thought and analysis to make sure that all the stakeholders see benefit and are motivated to contribute.

Our next step would be to work on the designing of the app (i.e. the look & feel and the interaction design) and the development. Bruno would like to be involved and updated on the progress through the coming weeks.

## **6 GLOBAL PLANNING NEXT PHASE**

In the next phase we need to hire a developer because we aren't technically adept enough to program the working app.

### **14 May - 16:00 prototype presentation@Stiho bouwplein**

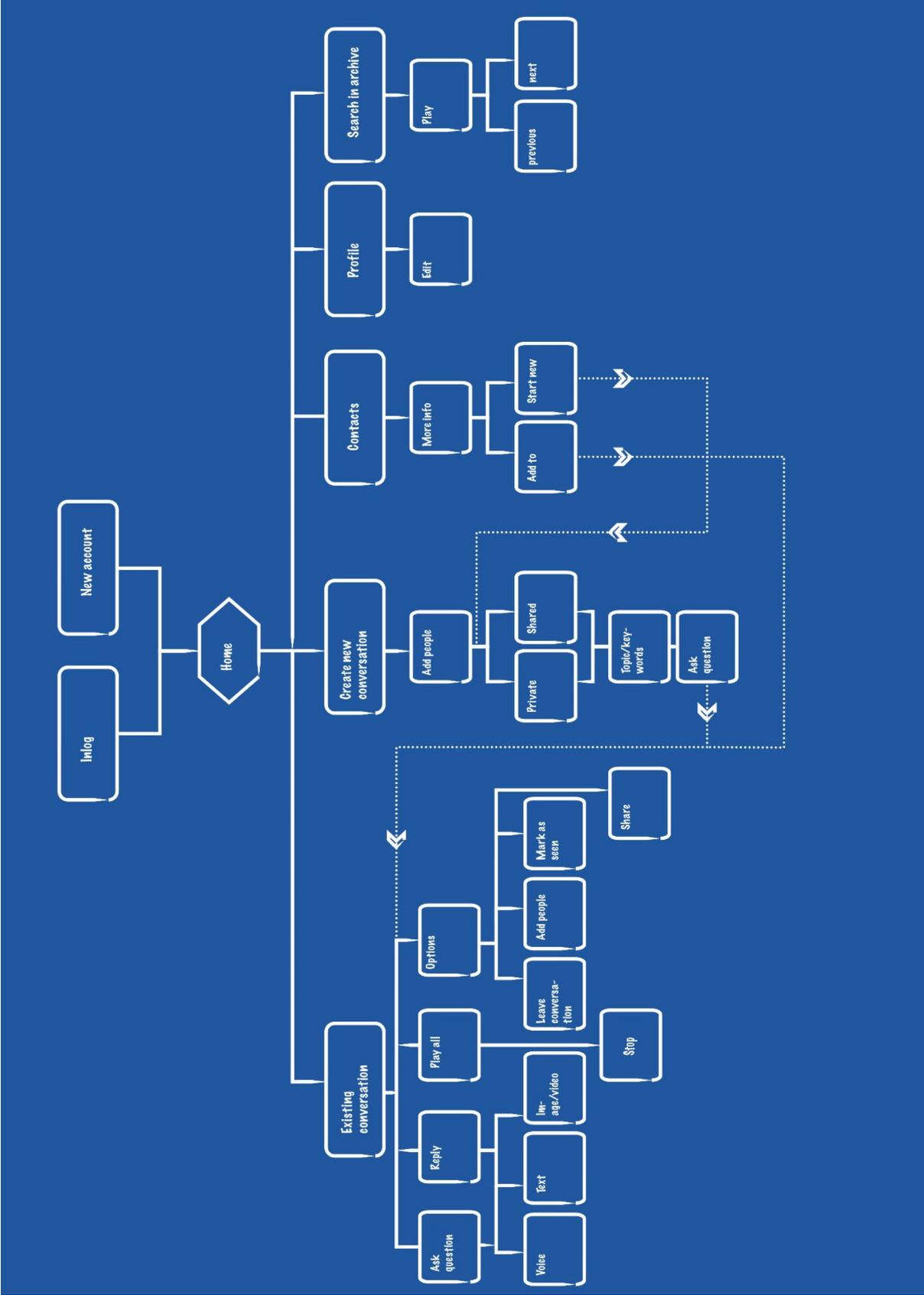
Presentation of our prototype at the assigner.

### **15 May - 26 June definitive prototype phase**

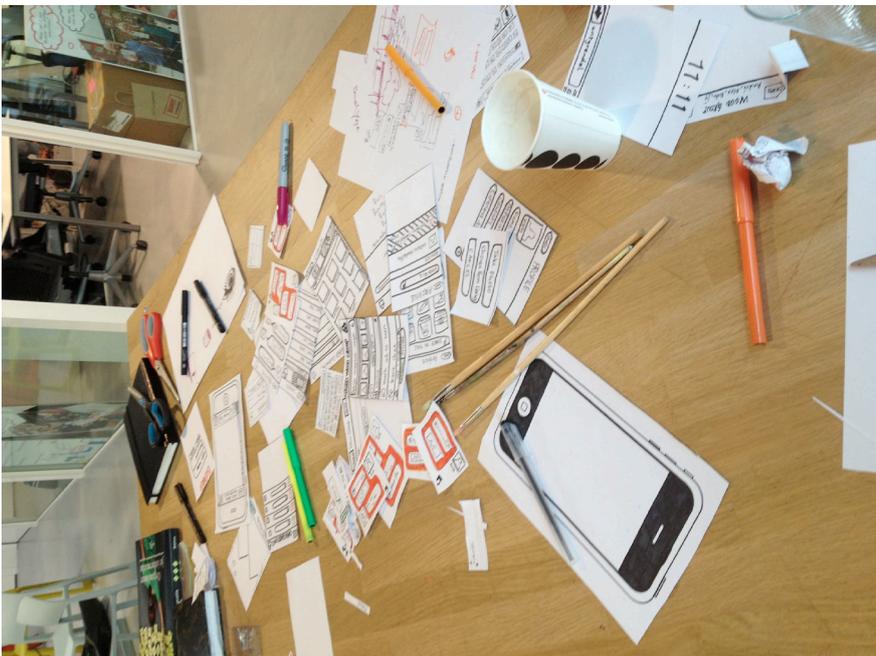
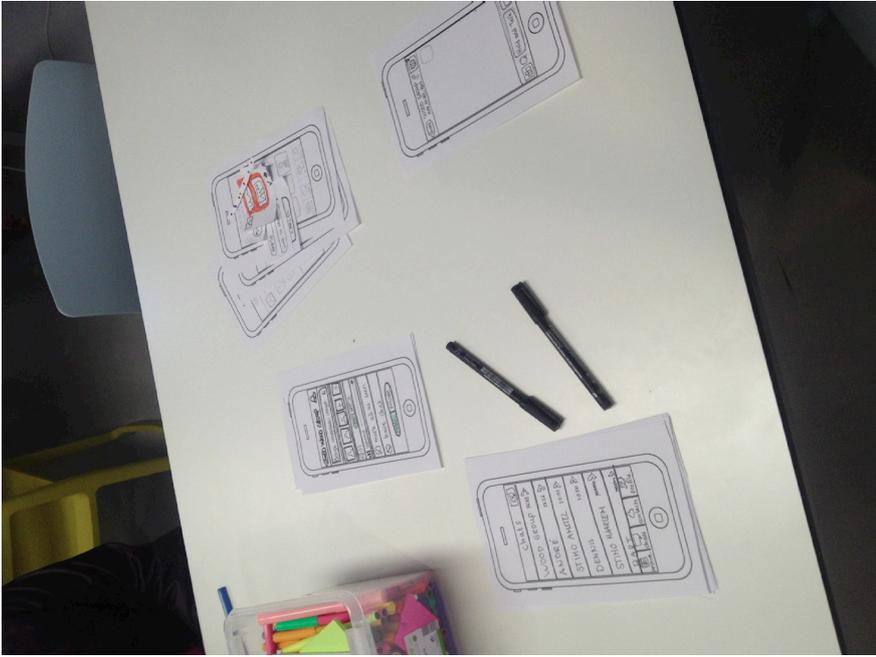
We will be working on our prototype with the developer we hire and on the implementation of the app within Stiho. This integration will involve making advertisements(promotional material) and building an audience.

### **26 June - 14:30 definitive prototype presentation@Stiho bouwplein**

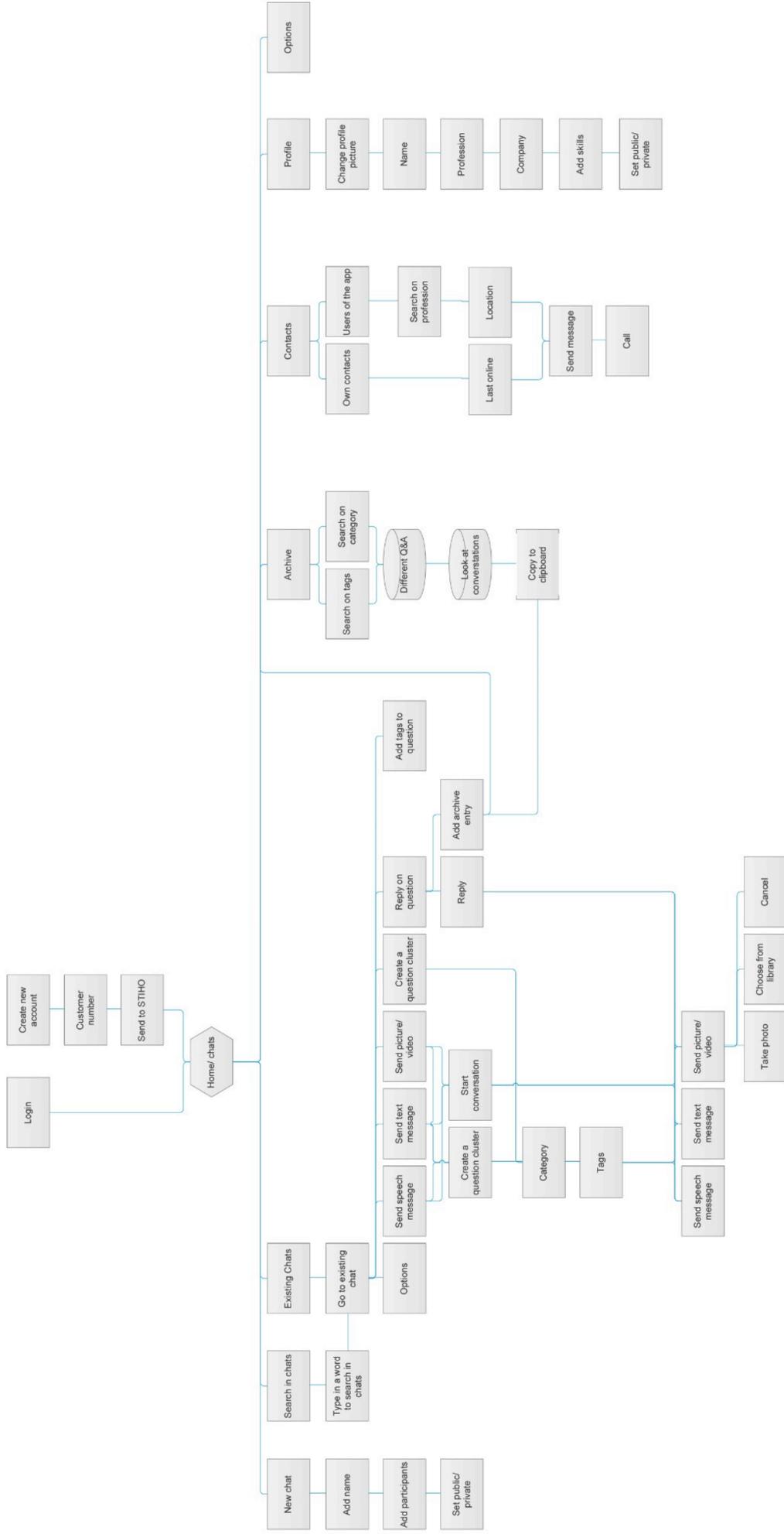
# 7 APPENDIX



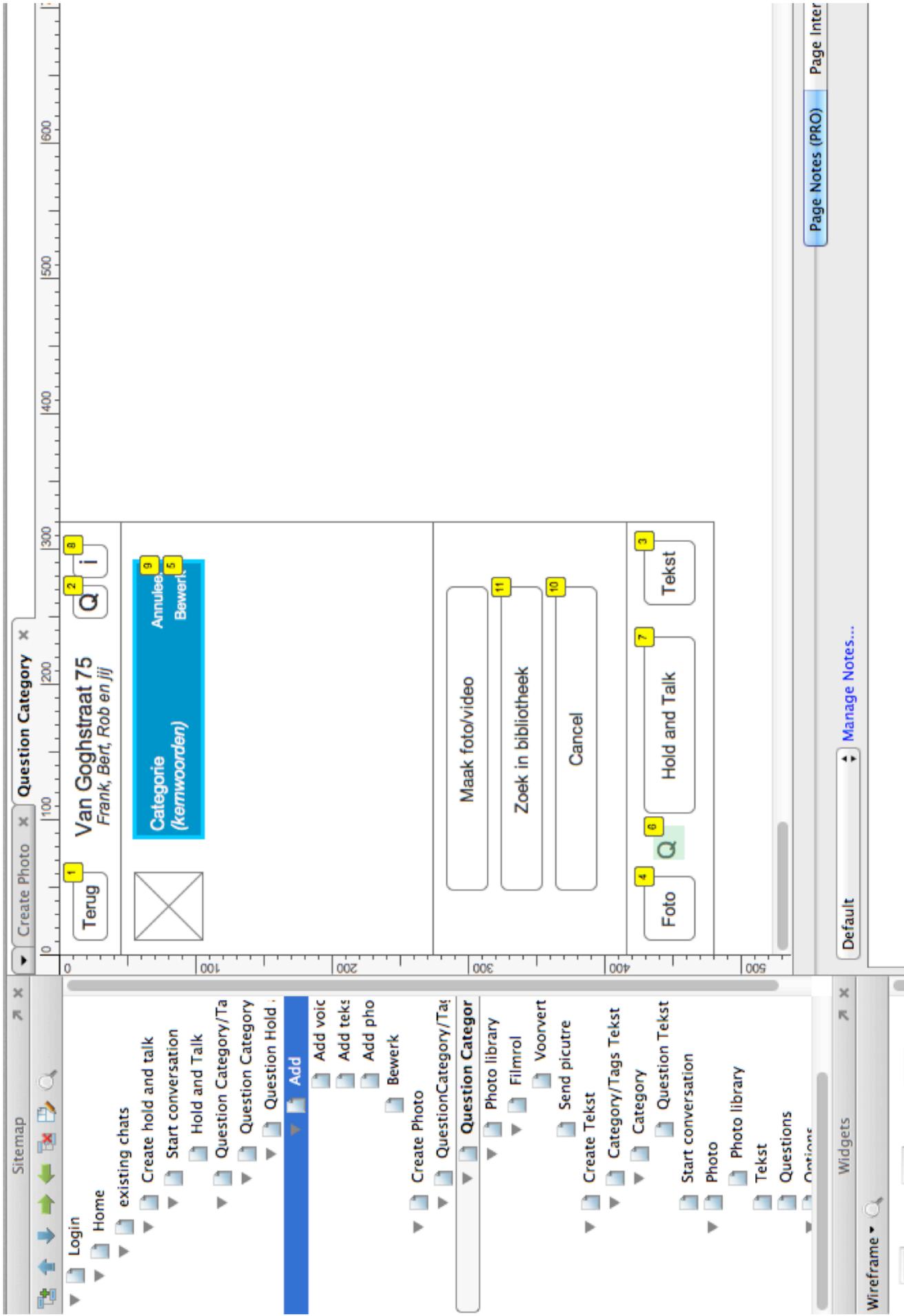
Appendix 1: Flow Chart



Appendix 2: Paper Prototyping



Appendix 3: Flow Chart



Appendix 3: Axure



**The quick brown fox**  
The quick brown fox





Appendix 4: First design



<http://youtu.be/b9Cd0lIXBF8>