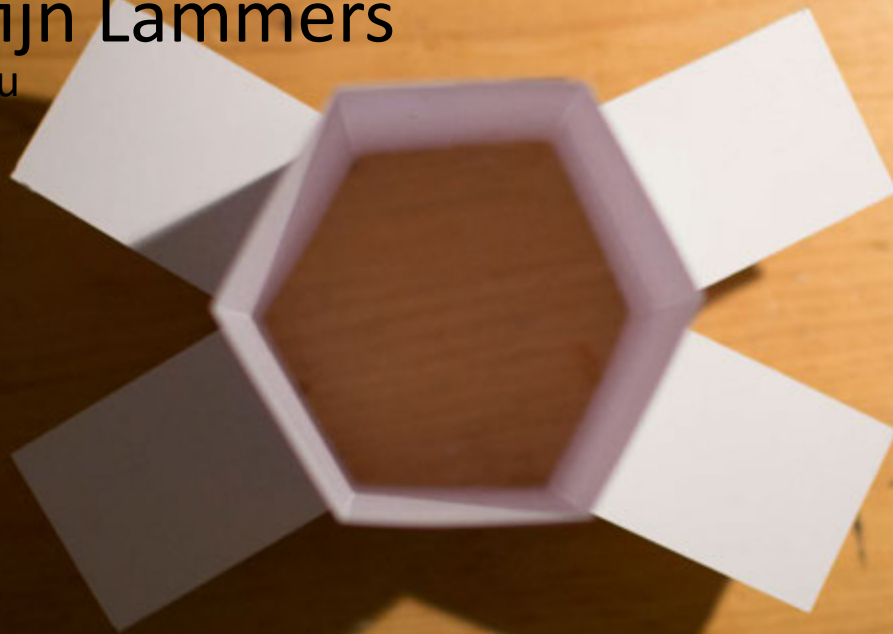


Speakers Panels

B3.2 Project

by **Martijn Lammers**

coach: Jun Hu





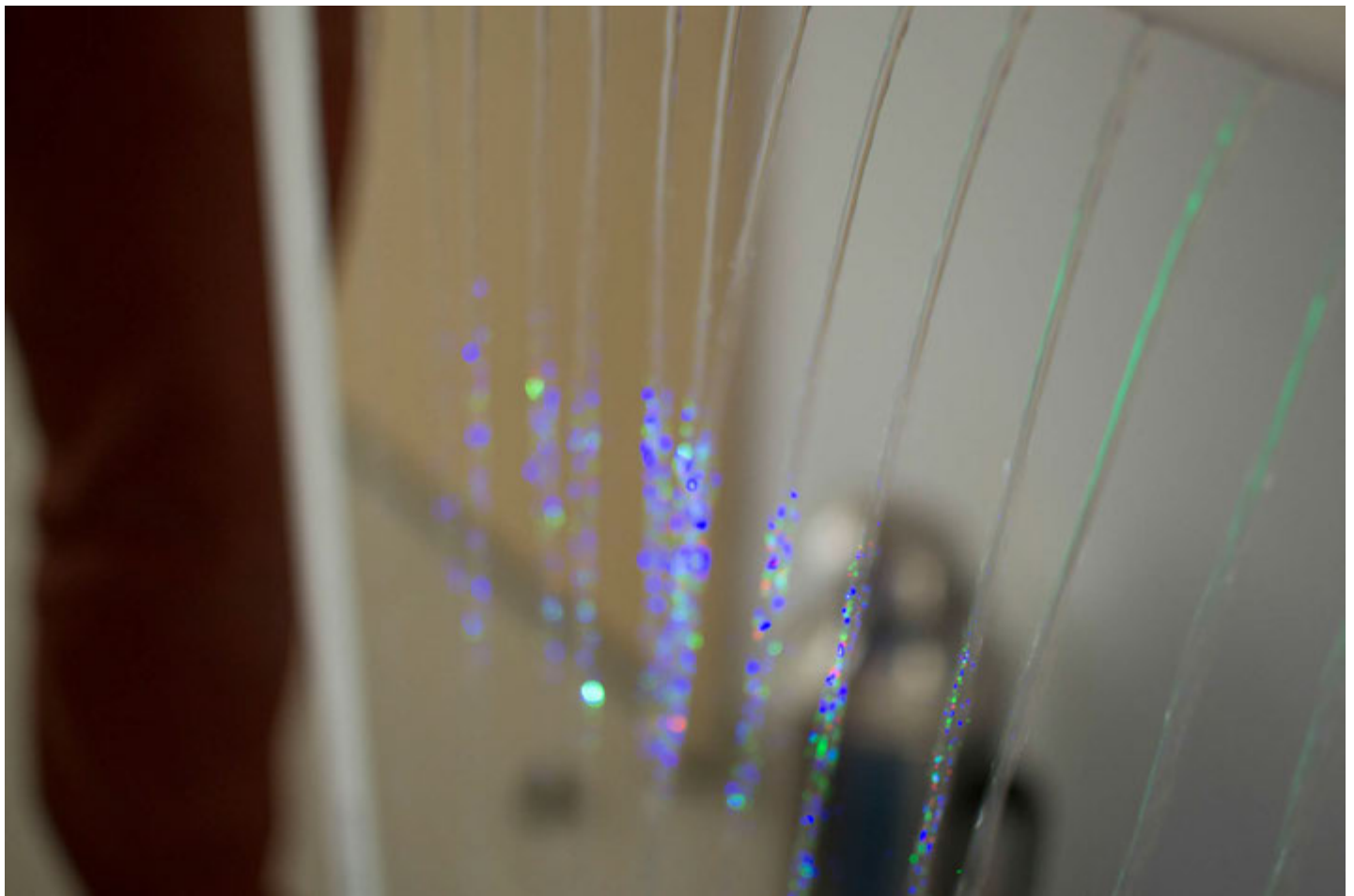
Intro

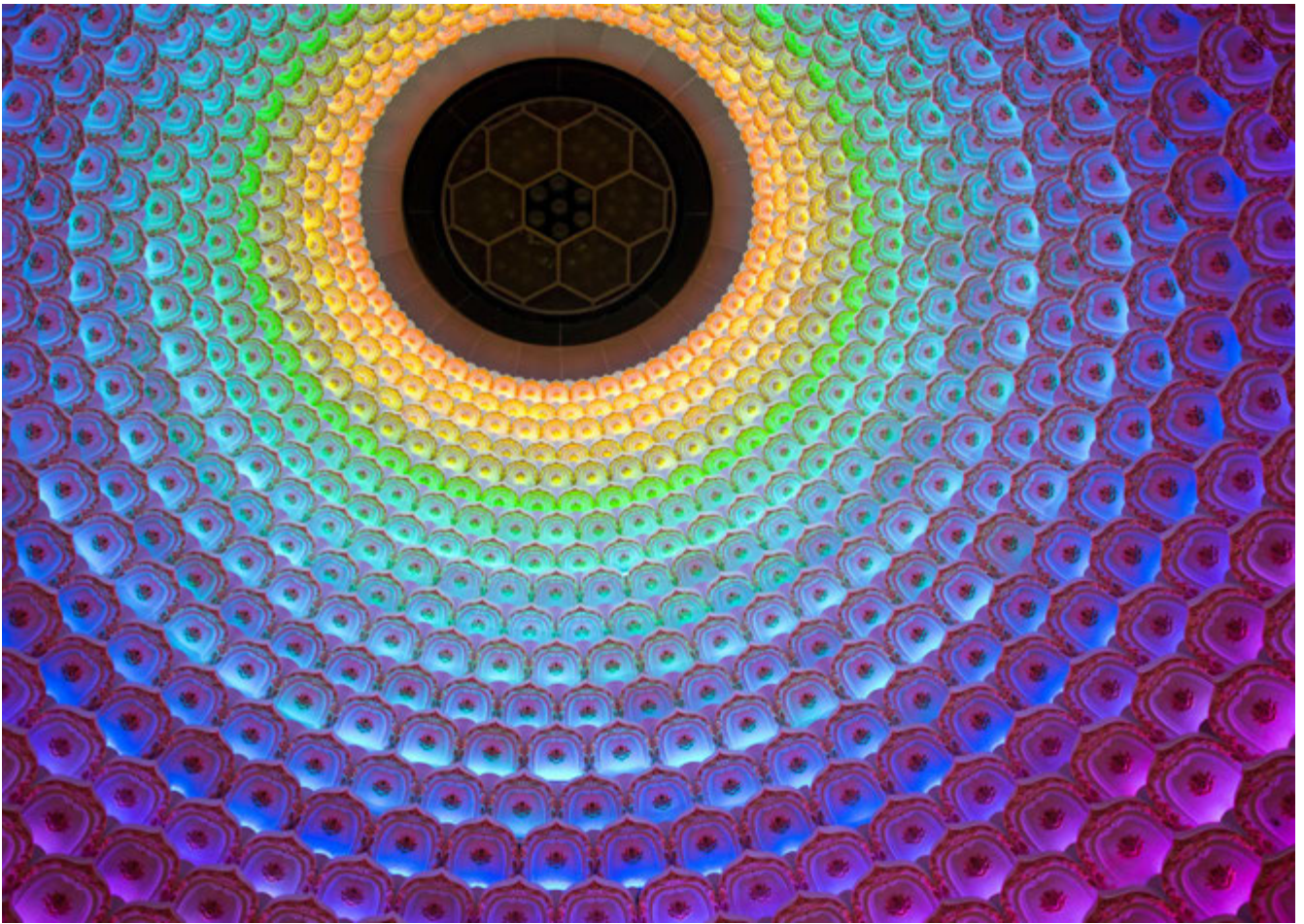
The project Growing Systems was conducted at the Industrial Design department of Eindhoven University of Technology as a bachelor graduation project by Martijn Lammers. The Design brief (1) stated the general context to be 'the city'. Therefore, the overall goal of this project was to create a growing system in the context of a city.

A growing system builds on the old, is ready for the new and is open for appropriation by its users(1). In this project, a growing system is coming together with a city. The two players in this scope are quite the opposite. Cities are perceived as big, slow moving creatures that do not allow for mutual interaction whereas their individual citizens adapt to (and sometimes reshape) the urban community (2). This is taken as a starting point to try and bring these

concepts together to create one meaningful concept.

Part of the project brief also was the notion that cities are becoming more alive in the digital space as well and that this has an influence on the daily lives of inhabitants of said city. To consider this, the internet of things was taken as another starting point. More specifically, Bruce Sterling's' views on the internet of things as he describes them in his book Shaping Things. The three starting points of this project have led to a design brief from which the final concept of this project was developed.





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The interface of a City

An interface is an environment where two systems can adapt to each other(2). In combination with a city, an interface can be placed at different places in a city. The main notion that the interface should be designed with is that people in a city are in most cases 'on the go' which means they have a certain goal they are moving towards the interface will be part of an object that is that goal. The design challenge that was set is; create an object for the public space that becomes a goal for people to come to. and that engages them to use and think of the city in a different way.





The Internet Of Things

In his book *Shaping Things*, Bruce Sterling discusses the future of products and product design. He argues that there are different stages in industry that bring forth different kinds of products (see figure 1).

Interesting is how Sterling distinguishes the most recent two developments in products. Most of the products used today are gizmos. For example a smartphone's memory capacity, it is too large or too small for many of its users but it is cheaper to include a standard memory size than to have many different models of phones with different memory sizes. This makes Gizmos unstable and of short life expectancy. What Sterling is proposing with Spimes is more or less the concept of the first stage of products, the artifact. Artifacts are crafted by the user themselves and they do exactly what the user needs and requires. So Spimes adapt themselves to their users, their users

are therefore no longer called users but they are called wranglers. Wranglers are no longer just users of a product, they define the product and every spime adapts as soon as it is in the hands of a wrangler.

In the scope of this project, this is an interesting viewing angle as cities are, as mentioned, slow moving and cumbersome. While on the other hand, citizens move fast around a city as does the data that they are interested in. This data is mostly kept private which is in most cases a very good thing. But in transforming traditional cityscapes into places that have that data also integrated in them there could be some data that can be shared, that people want to share. There are, in the scope of the internet of things many opportunities to develop an interface that brings data into the physical world in a meaningful way. This means the feedback (in the form of meaningful data) the system will give adds value to the place, time and circumstances the system is placed in.



Physical Space

Interface

Feedback

Growing System

Feedback

Interface

Digital Space

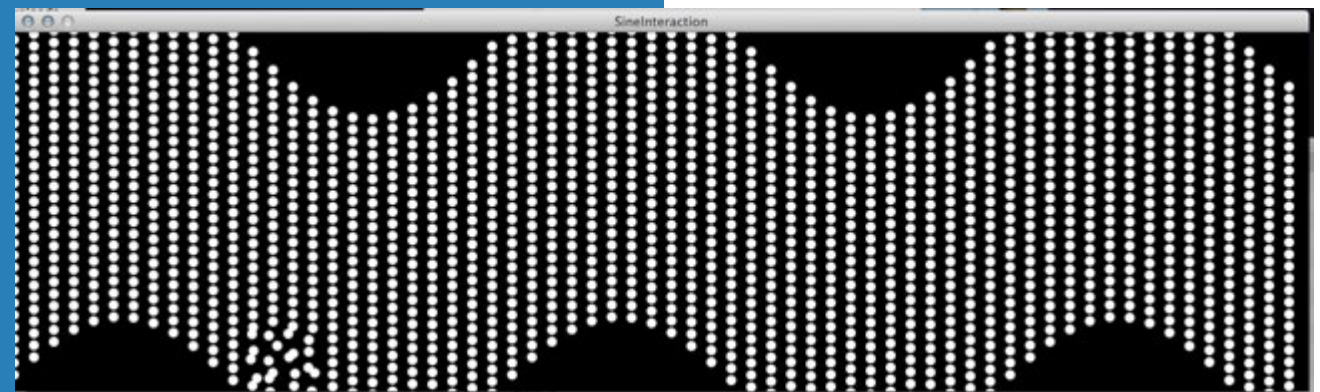
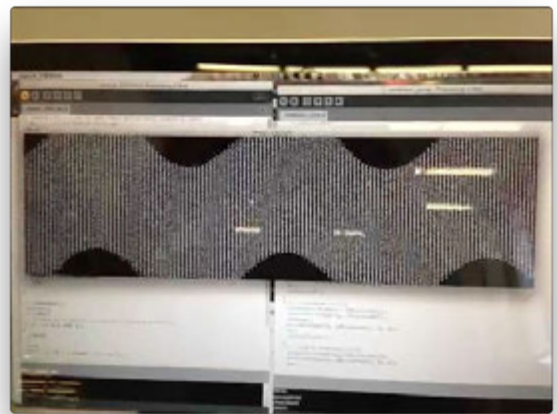


Exploration: Hidden sensors

The goal of this exploration was to find out if sensors that are build into, for example, a wall can help creating an interface for a city. Because the sensors are hidden the goal is to create a simple installation that reacts on people in front of it and have these people discover how to interact with the system themselves.

The setup consists of two parts, a projector screen with a projector and a self built capacitive sensor. The setup was placed in a place where there is some 'traffic' of people walking past and it was observed how they react to the installation. When somebody passes, they left a trail of 'chaos' in the projection, and the goal was to find out whether this was noticed and if subjects tried to find out how to manipulate the projection.

From the exploration it was taken away that when it was noticed that the projection was reacting, the interest of the subject was caught and the projection was played with. Further investigations on this subject will be conduted.



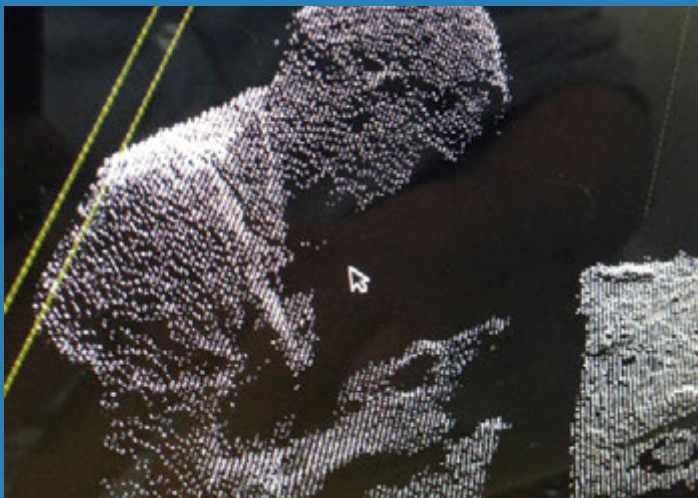


Exploration: Interactive Fountain

During the project, the opportunity was taken to participate in a workshop conducted in china with the goal to create a piece of public art. During this workshop a first exploration was done into public a public interface. The result was an interactive fountain that is placed in a residential area to add an extra dimension to the Chinese social tradition of having an evening stroll after dinner. The fountain is a canvas on which a game is played that requires teamwork. Users interact with the system by manipulating the fountain's water. As the goal of this workshop and the goal of the ongoing project were both to engage people in an urban context although the fountains goal differed from the

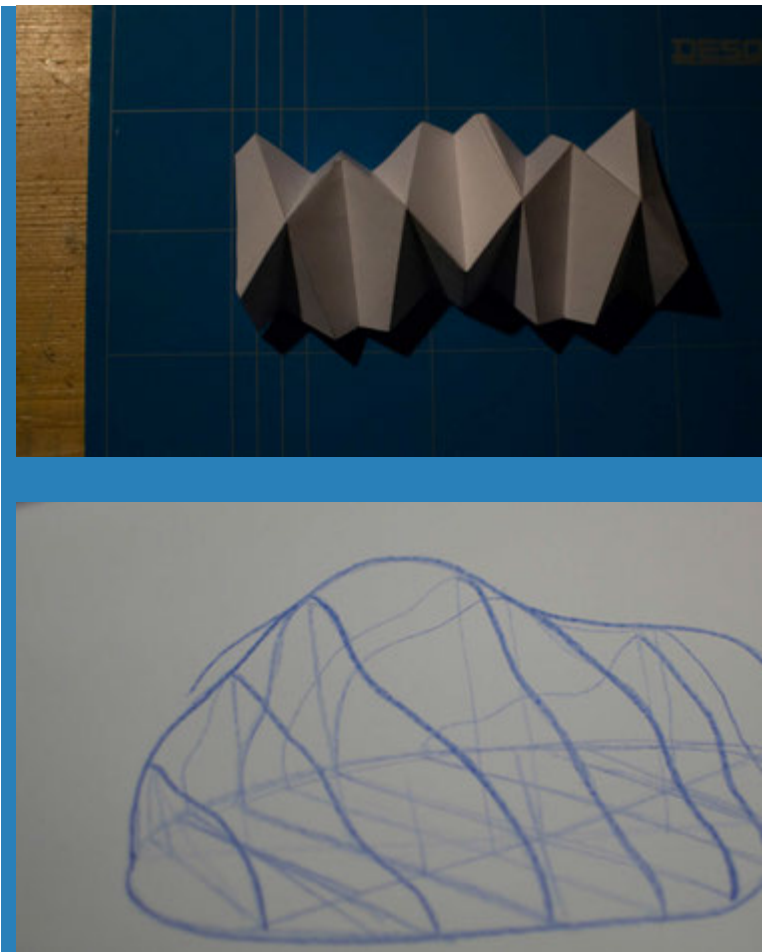
goal of the main project, the observations were valuable to the ongoing project in the sense that the object does not have a clearly visible mode of interaction. This means it is not directly visible for the user that the fountain is an interactive installation until they see it reacting to them. This discovery has been seen to spark people's interest much more than it did in the previous exploration (the chaos wall) it has been argued that is because a fountain is more culturally defined to normally not have the option of two way interaction.

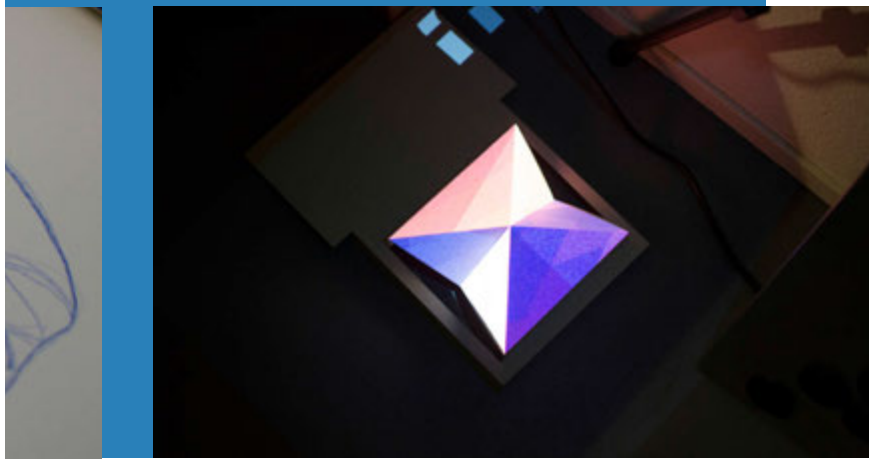
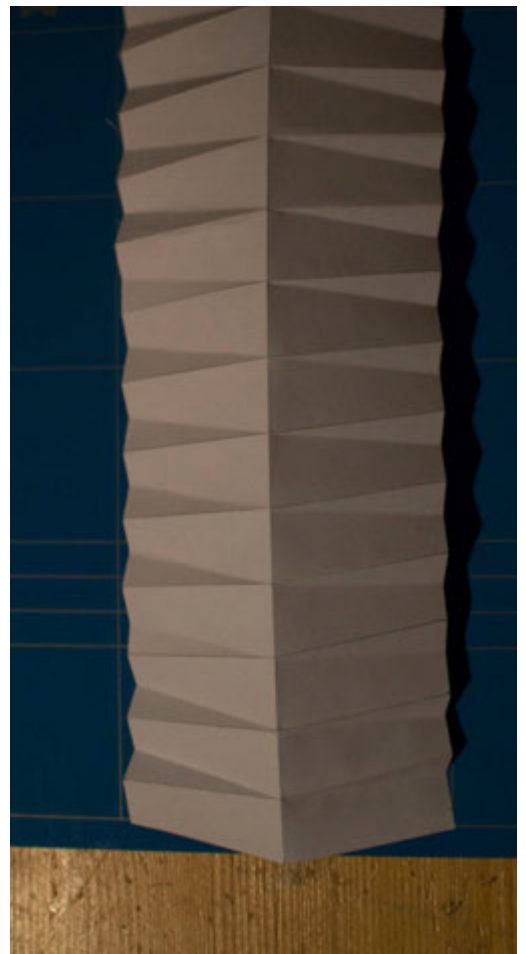
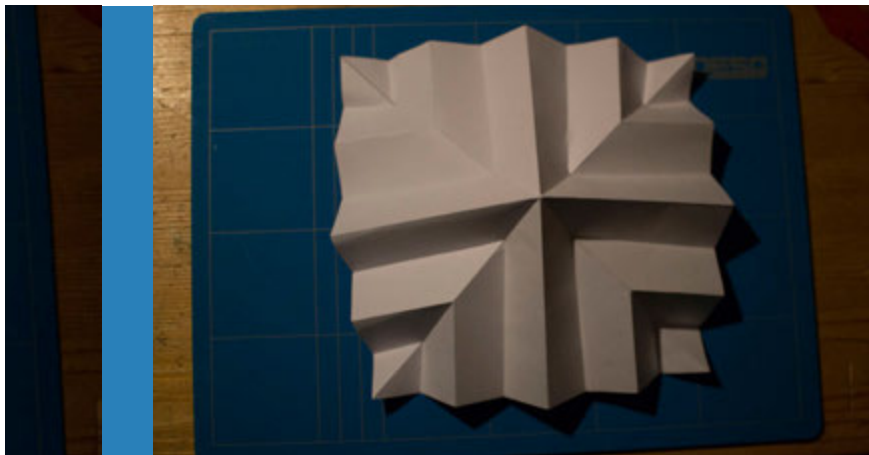
The interactive fountain was built using a Kinect to detect the user's hand movements for the fountain to react on.




Exploration: Shape.

In this exploration it was researched what shape or shapes would be suitable for the piece of public furniture. There were two starting points, first the shape had to be interesting to display on so the furniture piece would not just become a canvas or screen but has aesthetic qualities of its own as well. And secondly the shape had to be able to controllably change shape. Starting from a completely organic shape there was worked towards a 3d shape that would work on the furniture piece.







Exploration: Information decoration.

To combine the invisible sensors with meaningful displaying meaningful information, this exploration towards information decoration was done. The goal was to find a way to display news messages in a way that the focus shifts from an overview that can be seen and understood in the blink of an eye to an in depth covering of the message that requires more time to take in. And to see how that is picked up by the people interacting with the installation. It was found that this installation attracts attention in the same way as happened in the installation with the invisible sensors. People were attracted to the installation if there was an interesting message showing and when a person was close to the screen and there was only text displaying it caught the attention of others and in

a few cases even sparked a conversation.





gle zet data van opgestuurde schijven on



ogle zet data van opgestuurde schijven on

het mogelijk harde schijven naar Google te sturen, waarna het bedrijf de data erop online zet. Wanneer het gaat om heel veel data, kan dat goedkoper en sneller zijn dan alles zelf te uploaden. Het bedrijf heeft hiervoor een programma in de Verenigde Staten. Na ontvangst zal Google de data uploaden naar zijn cloudplatform 'Cloud Storage bucket'. Google hanteert een vaste prijs van 80 dollar (60 euro) per harde schijf, ongeacht de grootte. Concurrent Amazon heeft voor zijn S3-dienst een soortgelijke kopieerservice voor eveneens 80 dollar (60 euro) per harde schijf, ongeacht de grootte. Wanneer het gaat om heel veel data, kan dat goedkoper en sneller zijn dan alles zelf te uploaden. Het bedrijf heeft hiervoor een programma in de Verenigde Staten. Na ontvangst zal Google de data uploaden naar zijn cloudplatform 'Cloud Storage bucket'. Google hanteert een vaste prijs van 80 dollar (60 euro) per harde schijf, ongeacht de grootte. Concurrent Amazon heeft voor zijn S3-dienst een soortgelijke kopieerservice voor eveneens 80 dollar (60 euro) per harde schijf, ongeacht de grootte.

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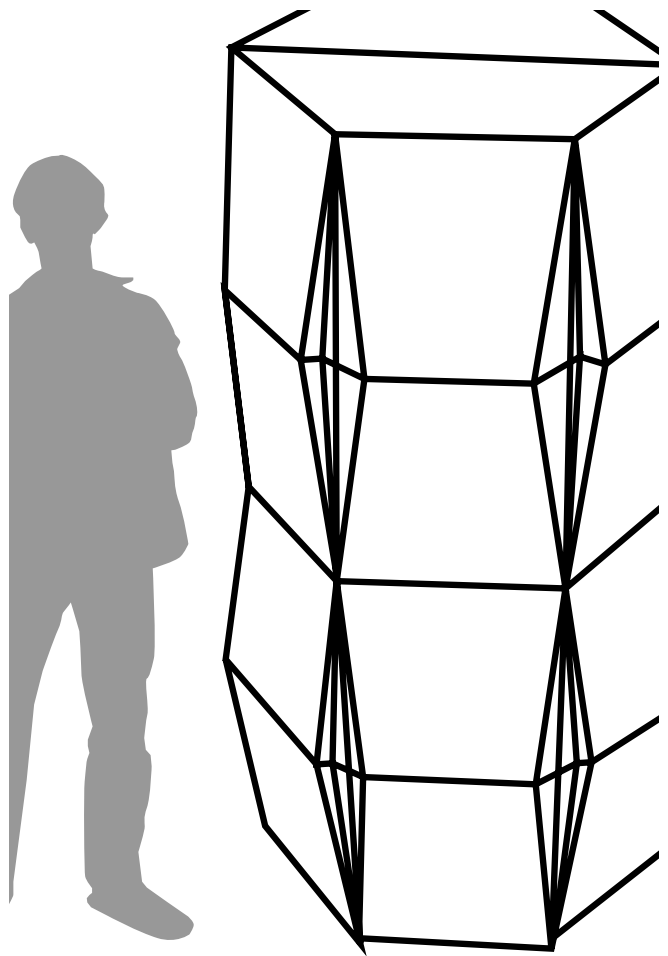
The concept

The three exploration directions come together in one product. The Speakers Panels, the Speakers Panels are modular panels that, alone or together, form a piece of street furniture. Once they are placed in an urban context, they show a message. This message is a local news message that is getting commented on in the digital space via social media.

Placing this message in the physical space gives an entirely new dimension to a discussion that was until this point only going on online, digitally. This is what Speakers Panels is based on, reinventing discussions among people on the street, as has been happening in places such as speakers corner in London (UK).

But to really bring the physical and digital interaction space around these discussions together, it is not enough to just display a news

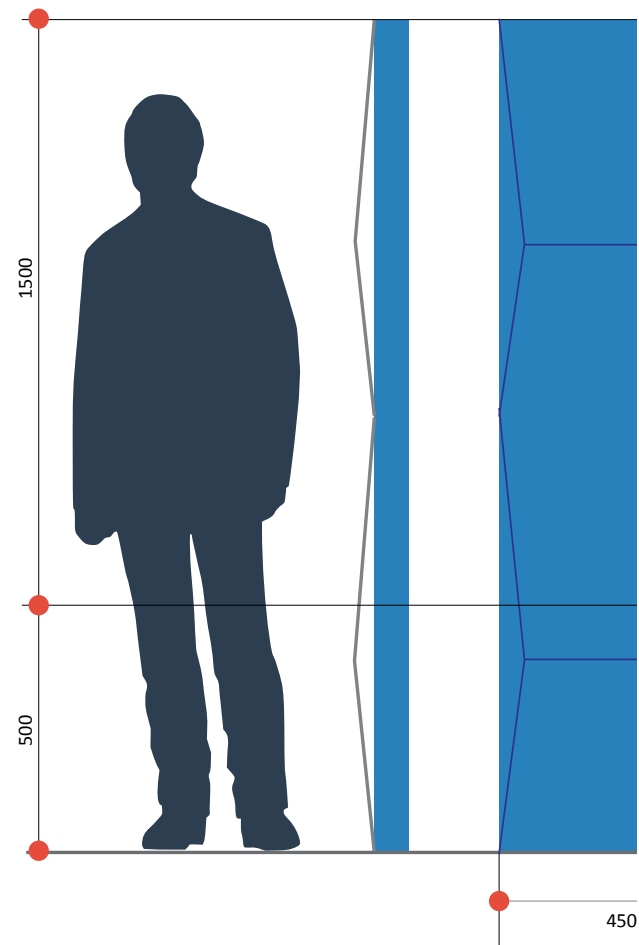
feed. The object itself has to engage people too. It therefore has the ability to offer a seat to passers by. This enables the Speakers Panels to also be a place where its users can join the conversation in the digital world if the physical world is not giving them any people to talk to. In its neutral state the Speakers Panels show news items that are generating attention in the digital space. These news items are also a piece of information decoration that interacts when people walk by. From afar, the panel shows a headline and an image that goes with it. When a persons interest is grabbed, the picture changes into the text of the news item as the Speakers Panel is approached ending with showing the entire message and parts of the conversation that is going on about it.

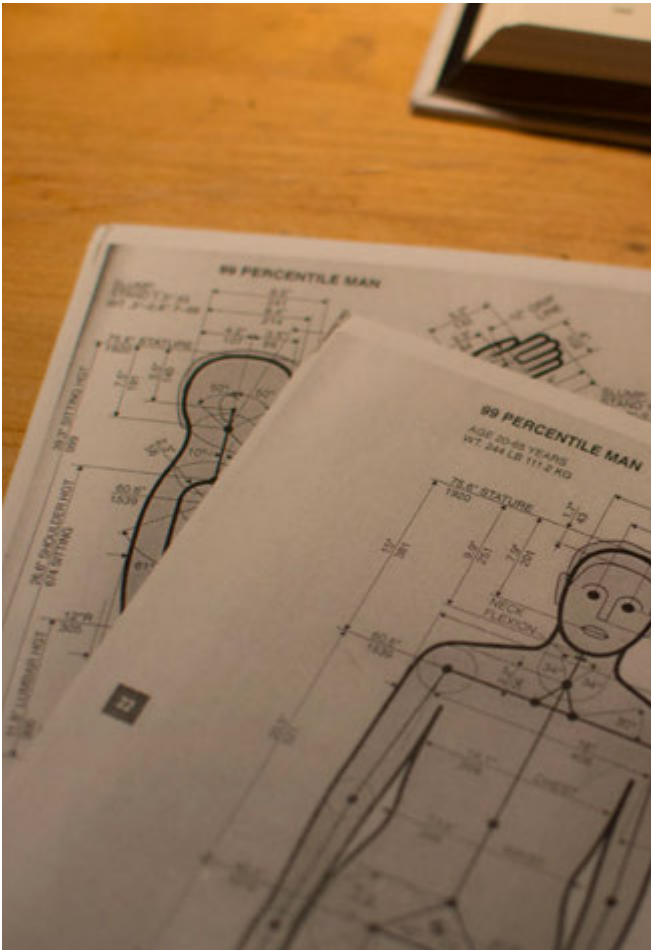
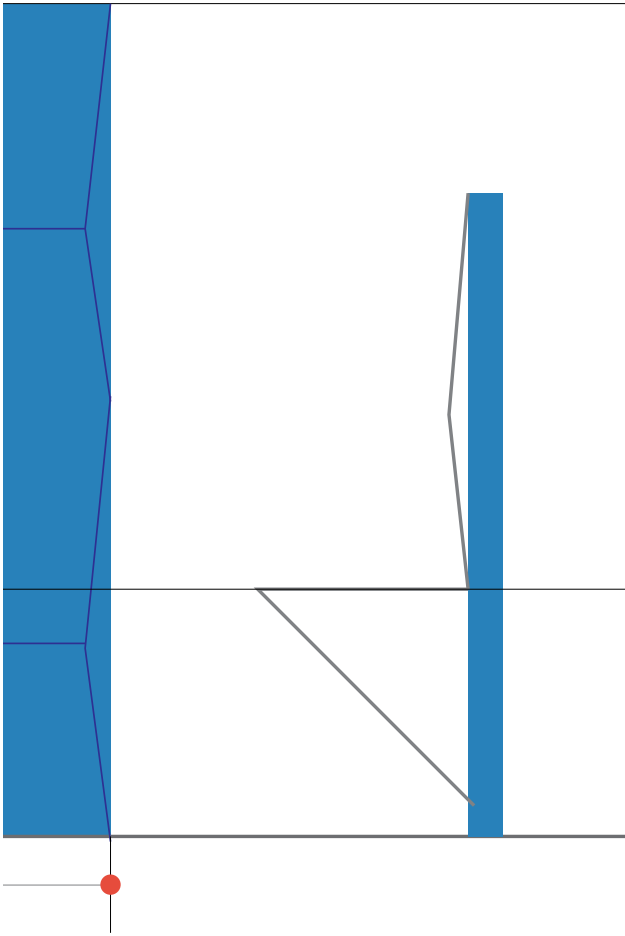


Human factors

The dimensions of a piece of public furniture are determined by the people making use of it. The size of the speakers panels are therefore defined by “the 50 percentile man” as is usual for public furniture.

As was decided in the explorations to the shape of the public object, a defined shape is chosen for this object from the perspective of prototyping feasibility. This makes the use of a 50 percentile person necessarily although it does not fit with the notion of having a fully flexible product. In the future, a speakers panel could be even more adaptable by being able to change in more dimensions.

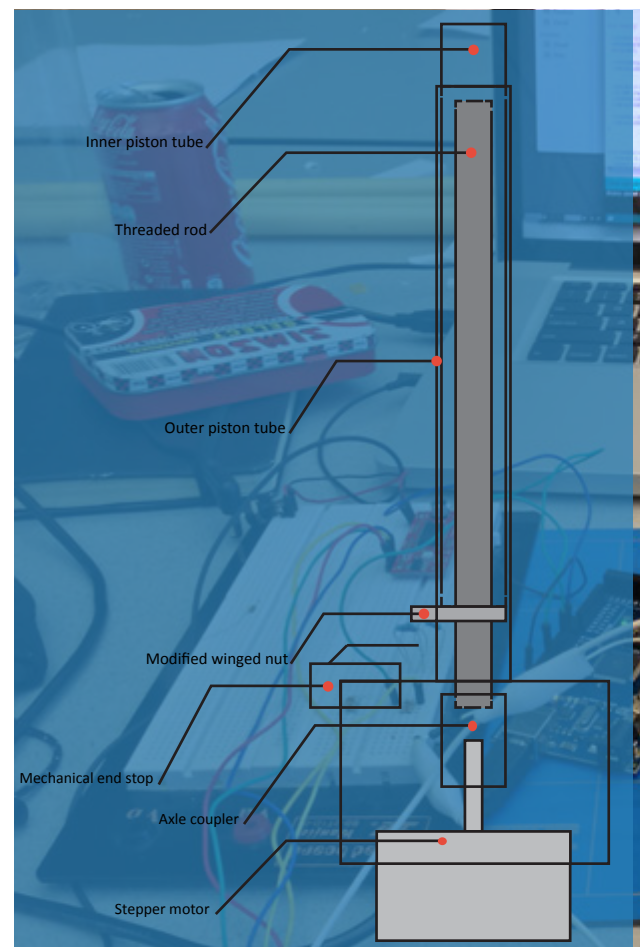


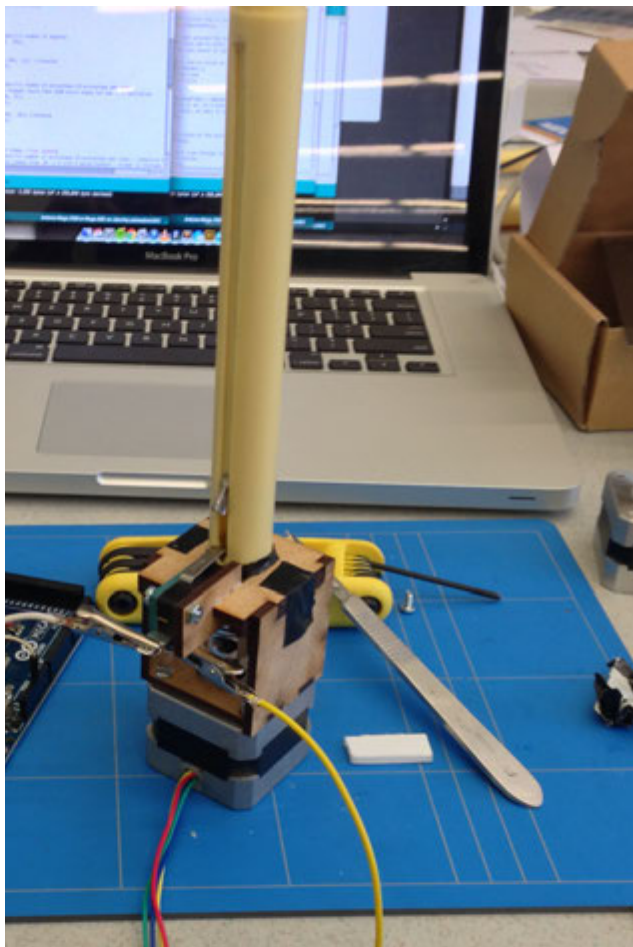


Scale model

For concept presentation purposes, a scale model of Speaker Panels was created. The goal for this model was to be able to show the kinetic part as well as the projections part. This meant first to build a linear actuator to make the Panel move up and down. It was decided to make a durable actuator so the scale model would be able to run for a an extended period of time as it was going to be used in different presentations. The actuator has an mechanical end stop that is used for calibration at the startup of the system. The rest of the actuator consists of a piston made of PVC tubing, a threaded rod and a winged nut that is modified by cutting off one of its wings. Next to durability, stability was important too. Meaning that the individual parts of this piston should are fitting snugly to avoid play.

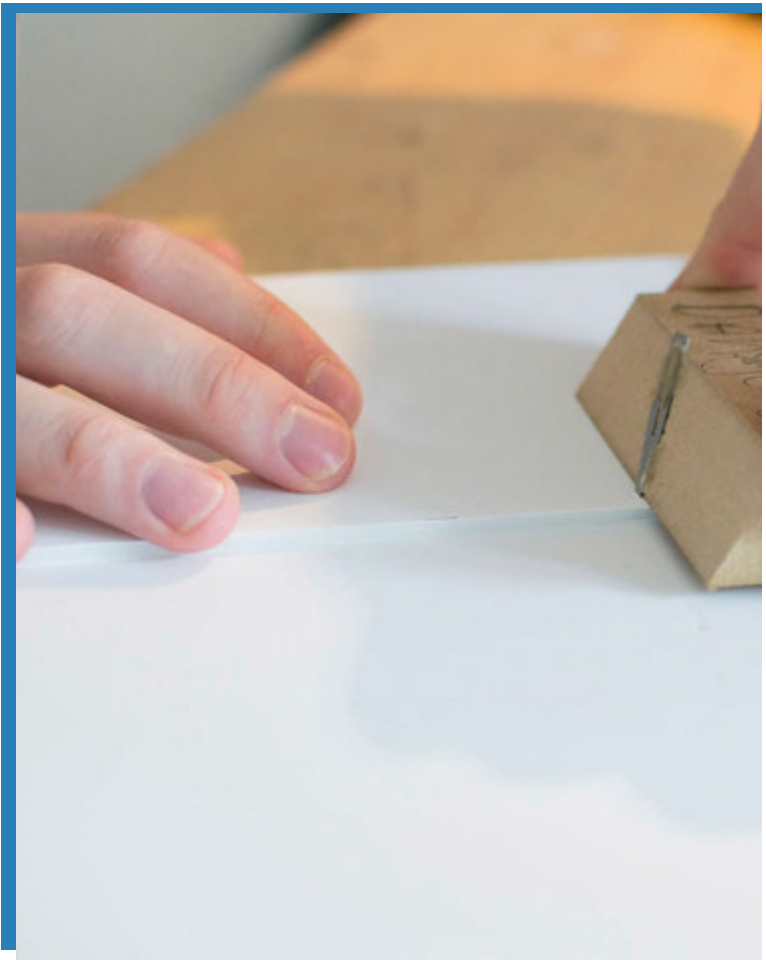
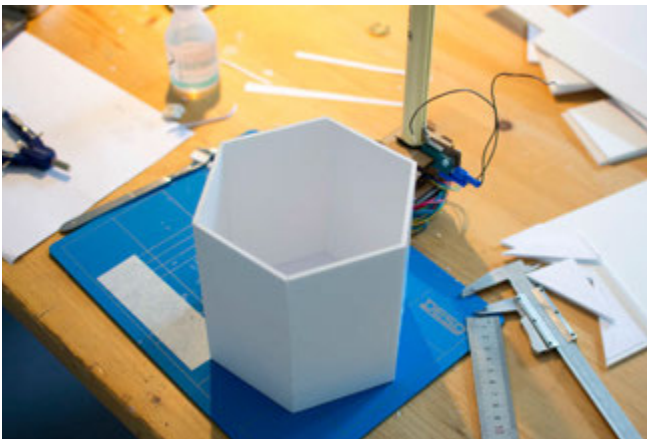
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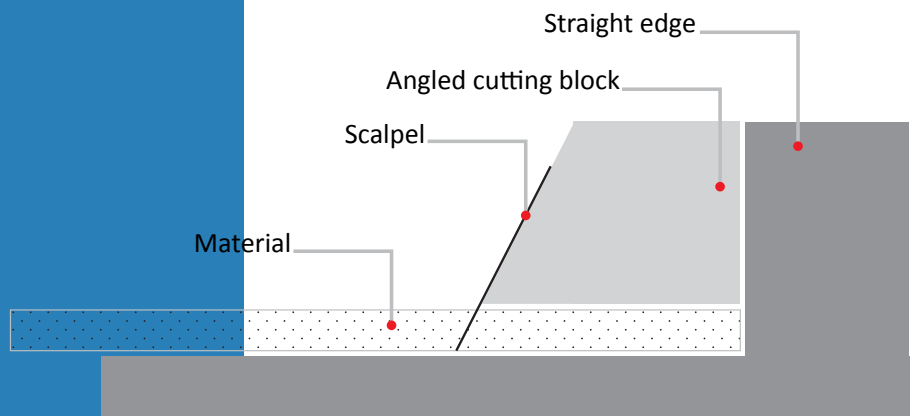
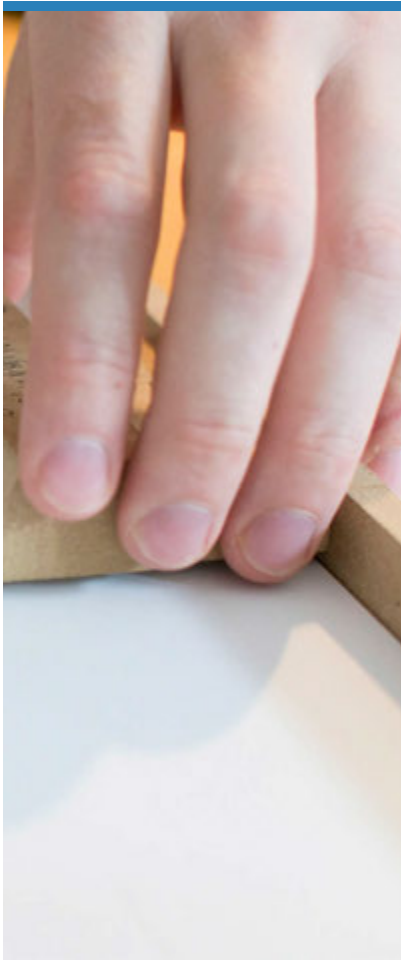




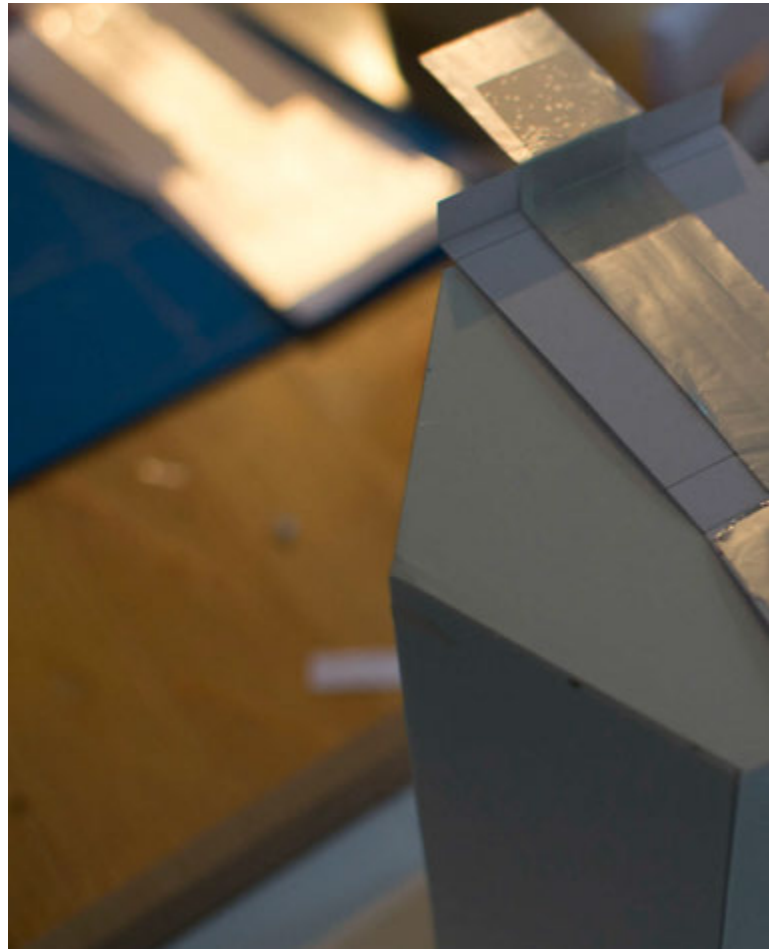
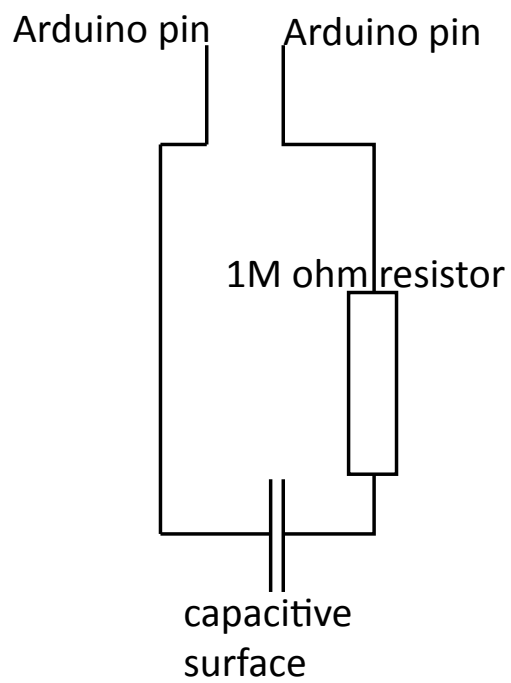
The body of this scale model is made out of foamboard and paper both materials were chosen for their clean looks and the fact they are easy to work with.

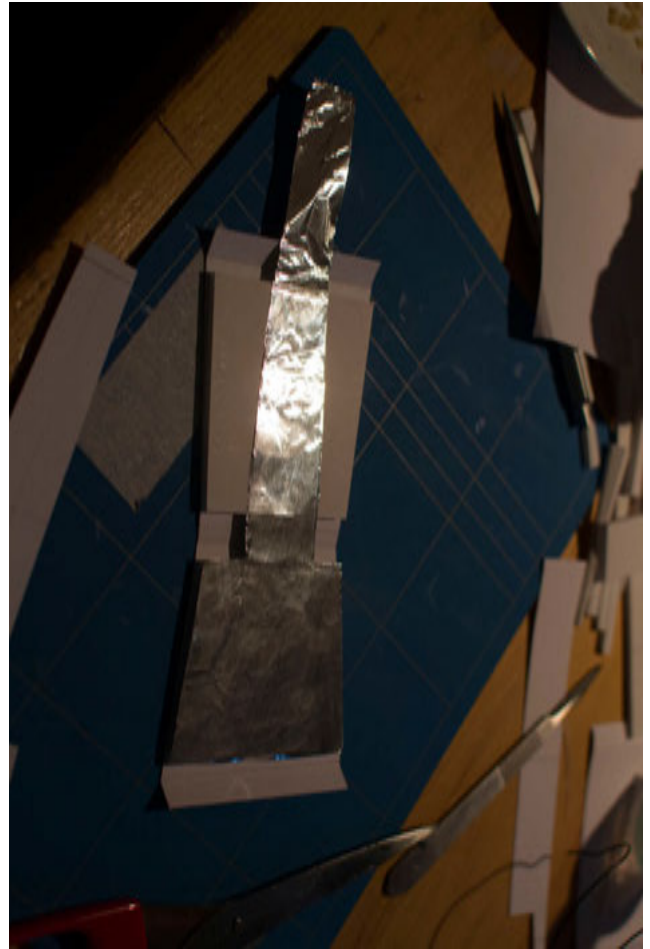
The model shows Speakers Panels arranged in a hexagon shape, this meant cutting the edges of the foamboard with an angle. A special tool was built to reliably do that so the panels would fit together perfectly.

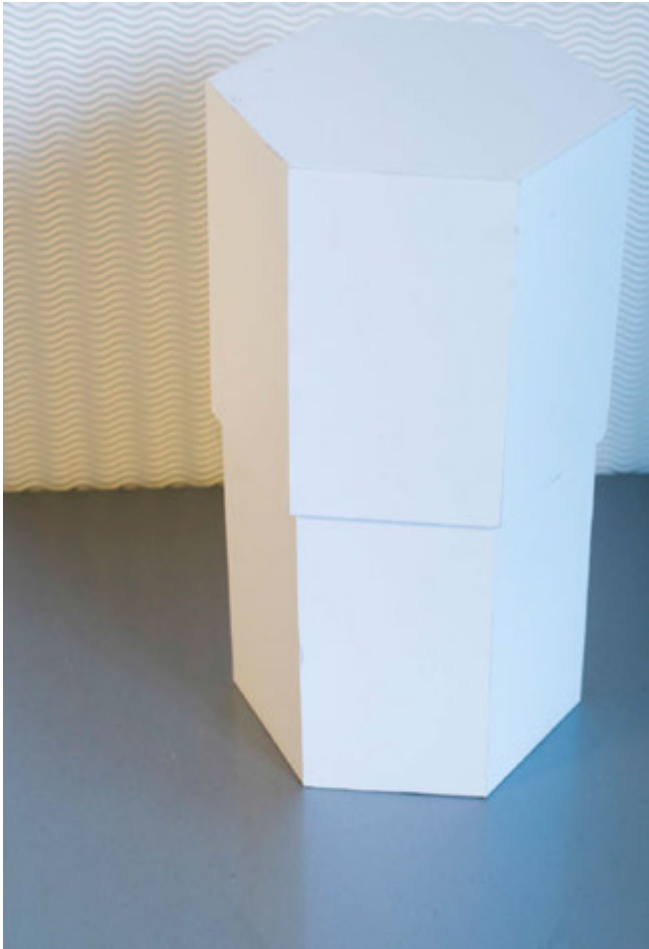




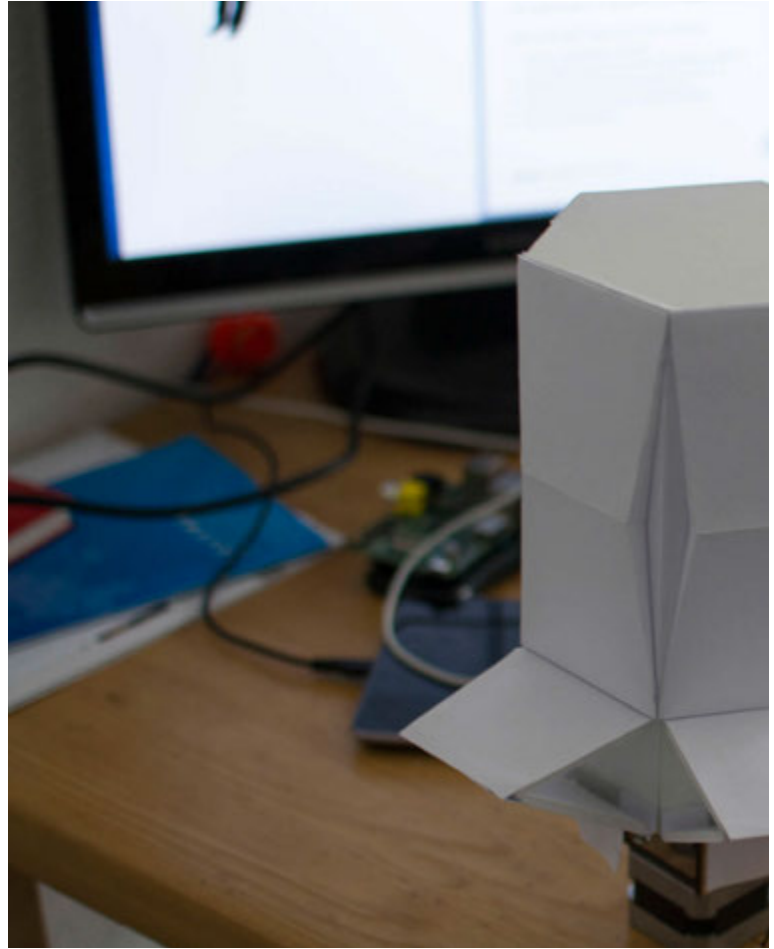
The capacitive sensors are also built into the seats of the model. They are laminated between two pieces of paper so they are invisible.

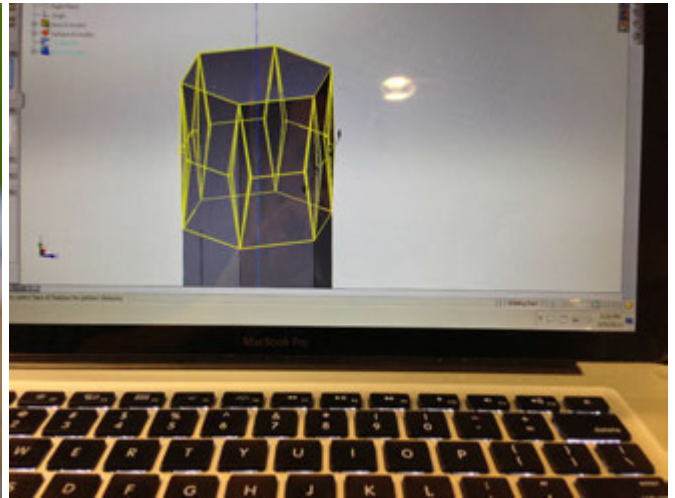






28







References

1. Project Description; Growing systems
– making the virtual city accessible in the physical(A DESIS Project*) Appendix 1
2. The city as Interface, Digital media and the Urban Public Sphere. B.G.M. de Waal
3. Shaping Things, Bruce Sterling

* The DESIS Project is a European Union funded project (FP7-258181) that aims to develop a new generation of digital interfaces for the city. The project is led by the University of Amsterdam and involves a consortium of international partners.



Appendix 1

Out of Control

DPI42

Proposers / coaches

Joep Frens
Jun Hu
Mathias Funk

Clients / stakeholders

TU/e DESIS lab

Experts

Growing systems – making the virtual city accessible in the physical (A DESIS Project*)

* Partially to be executed in China, in cooperation with students from Jiangnan University
* Students are expected to travel to China during the SDL weeks.

Introduction and background project

Systems design is a new challenge in the field of Industrial Design. It breaks the 'one person – one product' dictum in favor of a system of (interactive) products consisting of many 'nodes'. The systems under investigation are woven into the social fabric of our lives and form, more than ever before, an integral part of it. Societal relevance is not optional but a necessity for this new field of design.

The systems that we envision grow. They build on the old, are ready for the new and are open for appropriation by their users. The design challenge is an open one and is best tackled by an experiential approach.

Currently the city around us is coming to life in the digital world. How this digital city becomes meaningful to us remains to be seen but the first signs point towards visual solutions like augmented reality (e.g. Iayar) or SMS-messages. Imagine and go beyond scenarios like a cinema that contacts you with a deal on the last tickets to the movie that is about to start when you walk by, or a grocery store that advertises their vegetables that are about to expire. While these examples illustrate part of this project, the project is not just about location dependent advertisement or location based services per se. You are encouraged to find new areas for this system to grow in, within the limits of the design challenge.

One of the ways to approach it is for example interactive public art installations. The current development in digital public arts involves a significant amount of new carriers in not only material, but also in technology, resulting in new dynamic and interactive forms that require the artists and designers to construct their work from a system view and with a good understanding of human-system interaction and related interface technologies. It is no longer about carving stones and casting bronze; it is time to sculpture the interactive experience.

Design challenges / research questions

The design challenge in this project is to find ways to design a physical locus of interaction, a specific, physical device that opens the 'digital' action possibilities of a city to the physical. While the context is the city, it is up to the designer to focus the design challenge within that context.

The big challenge of course is to let a 'generic' device grow into different meaningful forms and shapes dependent on the context of use, or the specific location in a city. Operationalize the concept of context dependent action-possibilities.

Inspired by the theory of affordances (ecological perception) and phenomenology that identify that the (physical) world is a meaningful place and that focus on the lived experience we want you to focus on meaningful and rich interaction. Think 'morphing' shape rather than changing graphics; think physical controls rather than touch screens; think specific rather than generic;

Out of Control

DPI42

Stakeholders

This project is expected to be executed in cooperation with students from School of Digital Media, Jiangnan University, at the Center for Social and Cultural Computing in Taicang, China. Selected students will be travelling to China during the SDL weeks, working together with their Chinese team members. The travel cost will be partially funded, and the accommodation will be fully covered.

Center for Social and Cultural Computing
Science and Education New Town, Taicang, China

School of Digital Media, Jiangnan University, Wuxi, China
DESIS Network. www.desis-network.org

TU/e DESIS Lab. <http://www.desis-network.org/content/tue-desis-lab>

Joep Frens is an Assistant Professor in the DQI group. He is interested in designing for growing systems and in design in general. You might know him of the cardboard models that he makes.

Jun Hu is an Assistant Professor in the DI group, and a Guest Professor at School of Digital Media, Jiangnan University. His current research activities are directed towards Design Research on Social Computing.

Mathias Funk is a Postdoctoral Researcher in the Designed Intelligence group, focusing on remote data collection and adaptive systems, but enjoys working 'out of control' with technologies from sound/video processing to the web. He is also co-founder of the TU/e spin-off UXsuite. In this project, he is most interested in the way people interact with and take ownership of a growing device, but also how the device has an impact in a network or system of such devices.

Development theme

Recently we have connected to the DESIS (Design for Social Innovation and Sustainability) network by setting up a TU/e DESIS lab within Out of Control. The DESIS network promotes design for social innovation and sustainability and consists of 'a constellation of autonomous but interconnected DESIS Labs. Given this system architecture it offers the very unique possibility to integrate local and global points of view and to promote open design programs where a variety of projects converge, tackling complex problems and generating larger scenarios'. In our lab we wish to actively contribute to the DESIS vision by opening up the design space towards open and growing systems. We wish to exploit our making skills as a powerful mechanism for design and showcase an experience-able series of design proposal towards a more social and sustainable way of living and working.

Out of Control

DPI42

References / Information sources

Joep Frens & Kees Overbeeke (2009). Setting the Stage for the Design of Highly Interactive Systems. Proceedings of IASDR, Seoul, South Korea.

Feng Wang, Jun Hu, Matthias Rauterberg (2012). New Carriers, Media and Forms of Public Digital Arts. Proceeding of Culture and Computing 2012, Hangzhou, China

DESIS Network. www.desis-network.org

TU/e DESIS Lab. <http://www.desis-network.org/content/tue-desis-lab>