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

CITY EXPLORER

Ferdinand Ziesemer | B2.2 | S099071
Coach: dr. J. (Jun) Hu PDEng MEng | 15-01-2013

ABSTRACT

This report is written as deliverable in the project “Growing systems – making the virtual city accessible in the physical (A DESIS Project)” in the theme ‘Out of Control’ within the Department of Industrial Design of the University of Technology Eindhoven.

The project focuses on designing a physical locus of interaction that converts this digital world into a meaningful place for us to (physically) dwell in and to steer clear of the usual solutions.
The personal direction that has been chosen is to design a physical equivalent of, or an alternative to a function of, the digital world. Thereby creating an adaptable system within a city, to enhance the quality of life.
Resulting in the City Explorer - A fun way to explore the world around you.

This report contains the results of the process of the project – in a compact and informative way.

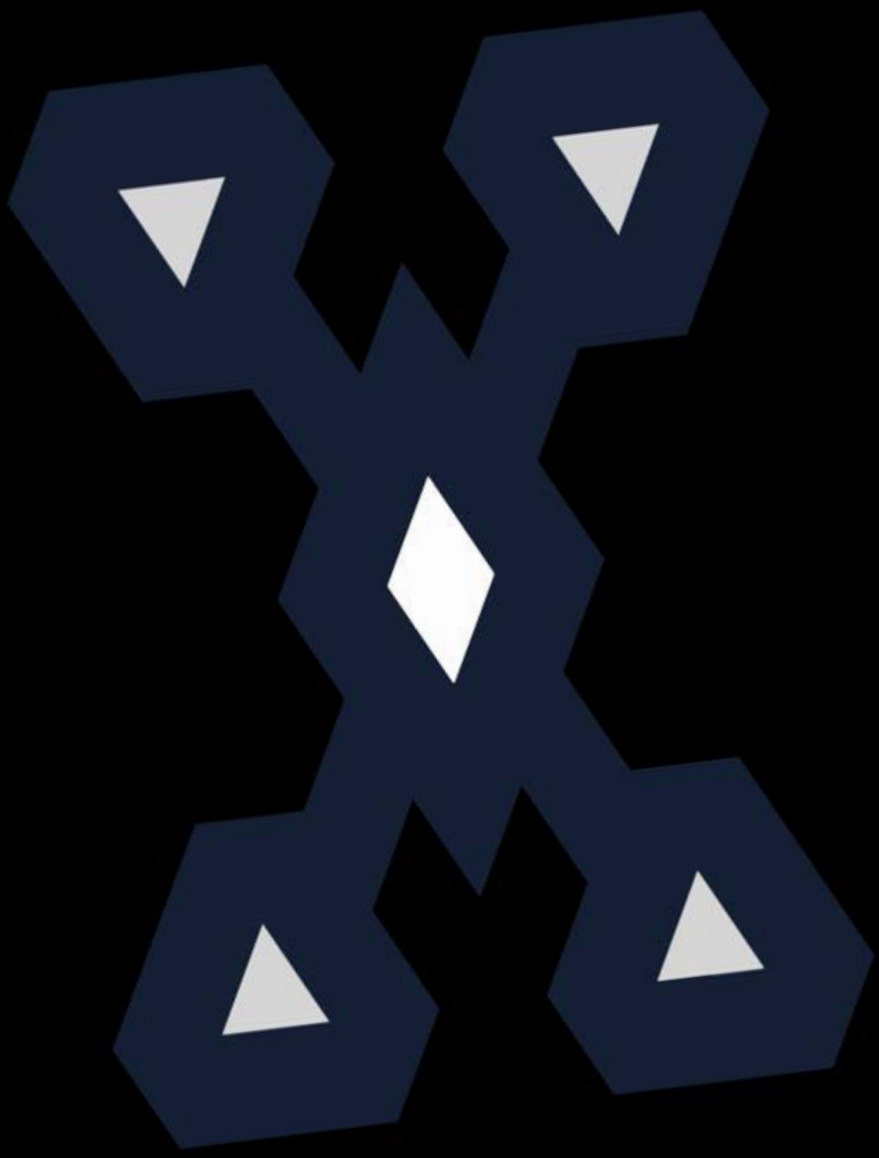


TABLE OF CONTENTS

ABSTRACT 3
TABLE OF CONTENTS 5
PROJECT DESCRIPTION 7
PERSONAL PROJECT DESCRIPTION & VISION ON PROJECT 11
- personal project description 13
- vision on project 13

PROCESS 15
IDEATION 19
- project ideation 21
- ideation on drones 21

RESEARCH 27
- expert talk & research on possible re strictions of drones in city areas 29

CONCEPTUALIZING 31
- wheelchair drone 33
- experiencing wheelchair 35
- prototyping 35

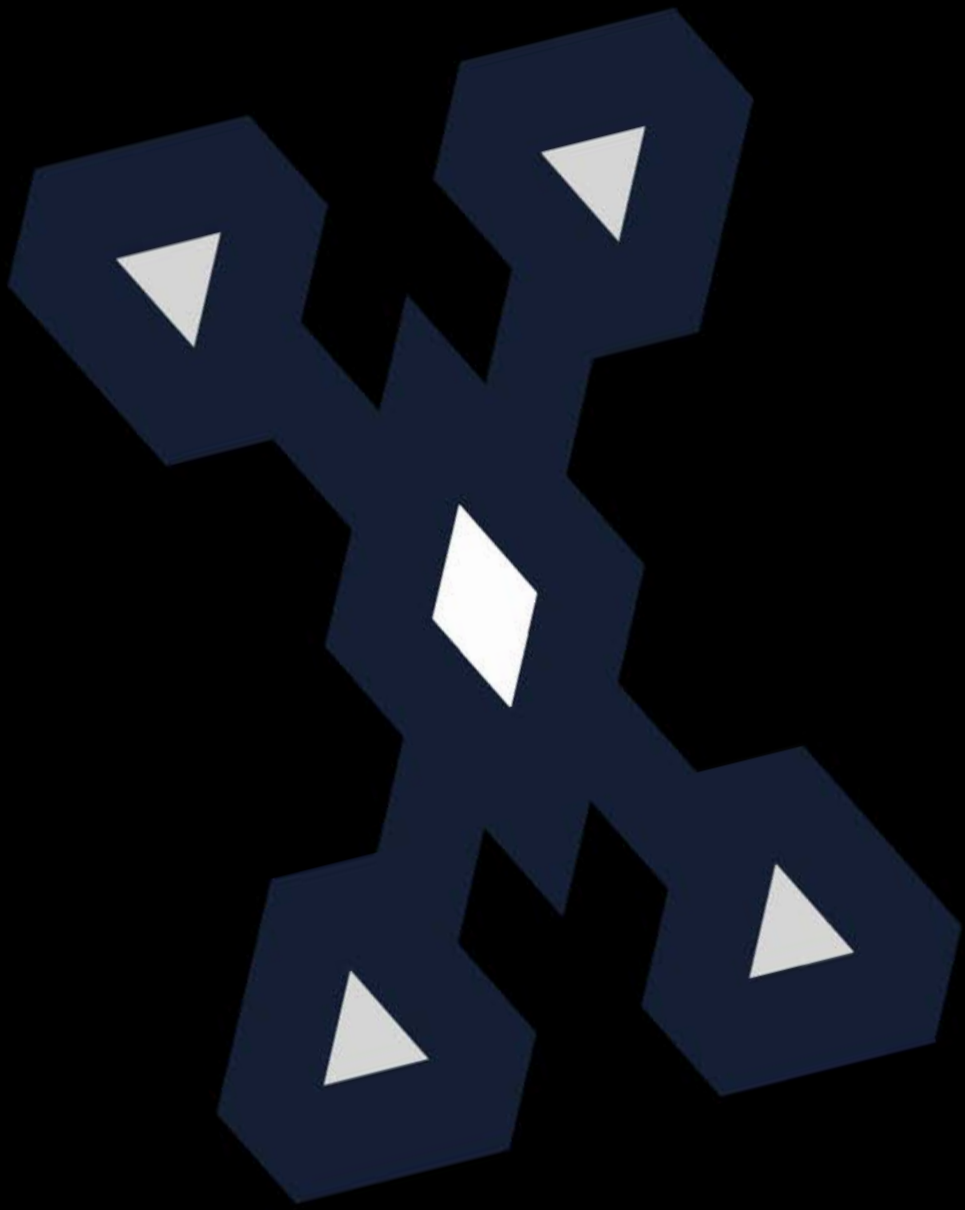
PRESENTATION 39
- feedback on concept 41

CONCEPT 43
- incorporating feedback 45
- final concept 45
- how does it work? 45
- how do I find the posters and thereby the quadrocopters? 47
- user groups 49
- privacy and security issues 49
- prototyping 51
- app mockup 53
- hub 57
- poster 59
- proposal real design 61
- adaptable system 63

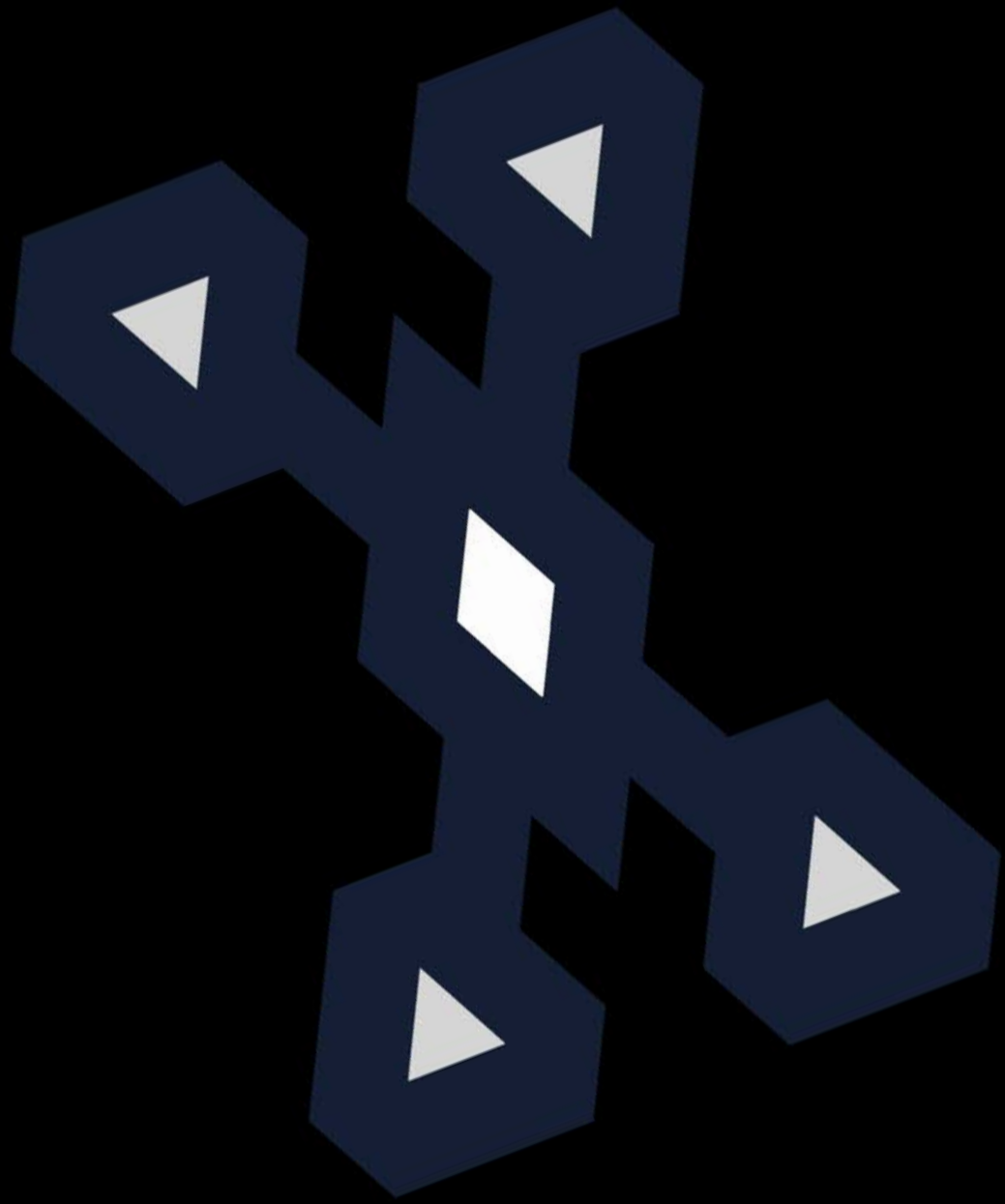
USER TEST 65
- user test 67

BUSINESS MODEL 69
FUTURE 75
- discussion & conclusion 77
- future developments 77

APPENDIX 79
- appendix a 81
- appendix b 89
- appendix c 97
- appendix d 103

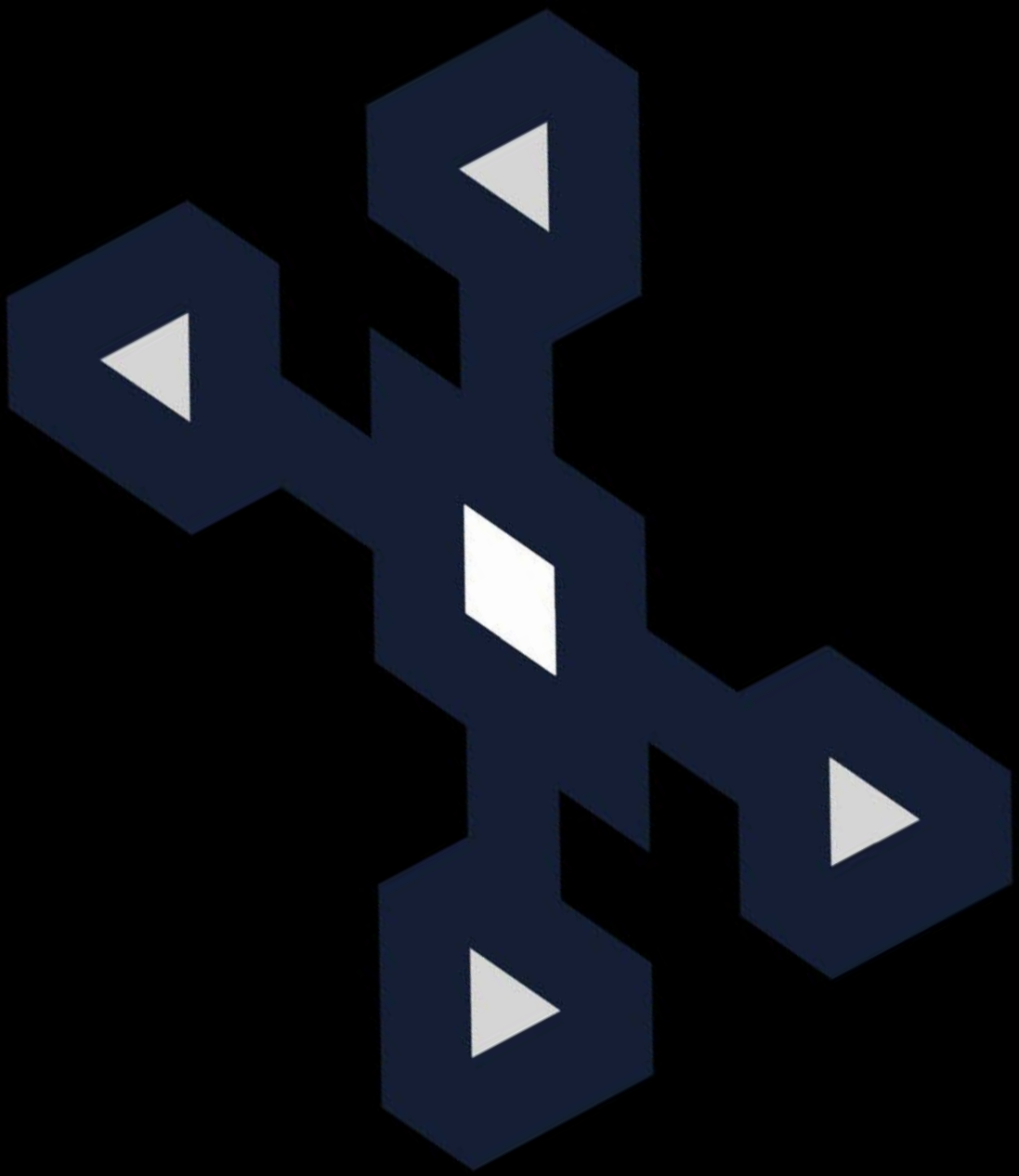


Project Description

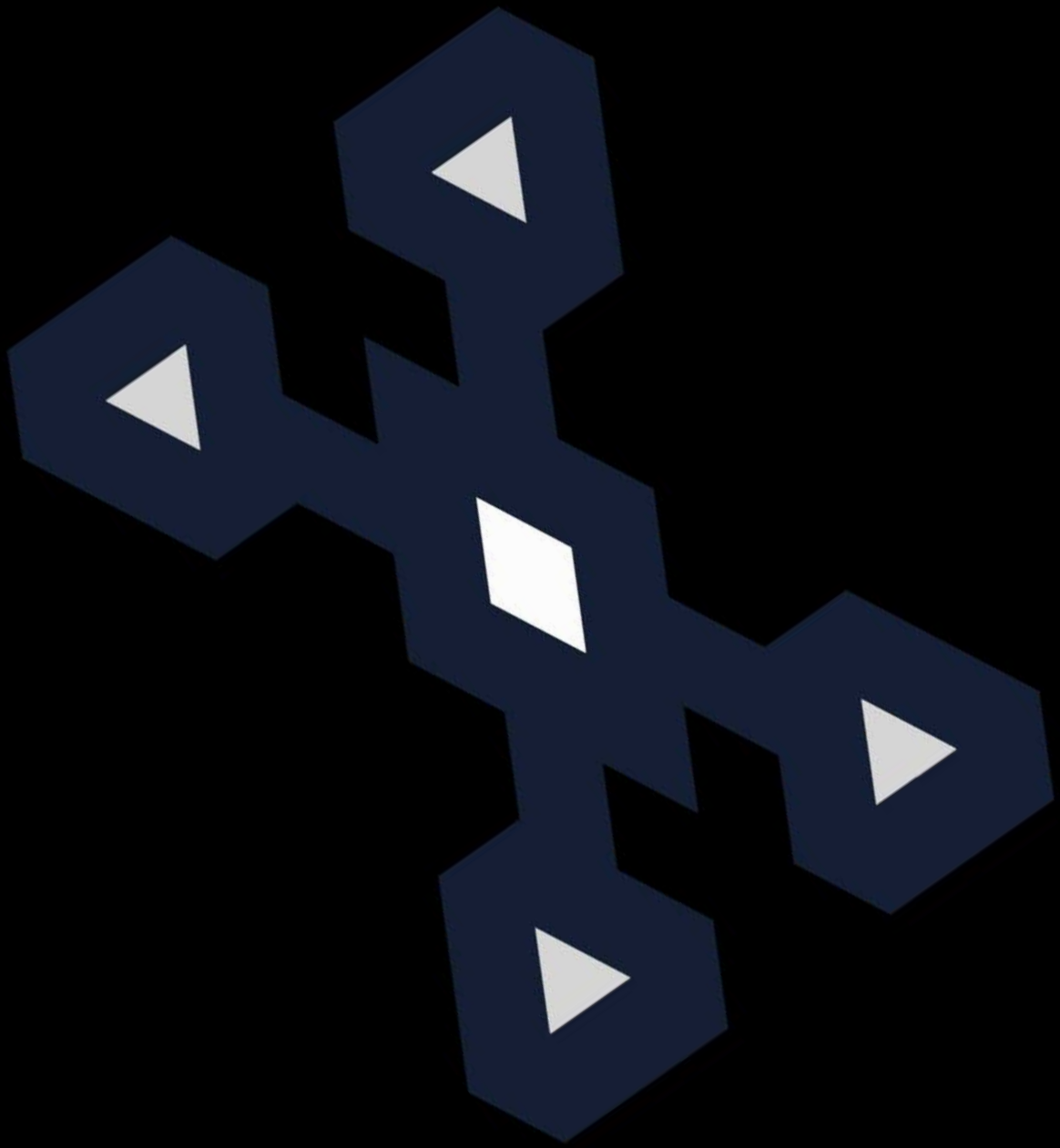


PROJECT DESCRIPTION

‘The design challenge in this project is to find ways to design a physical locus of interaction that converts this digital world into a meaningful place for us to (physically) dwell in and to steer clear of the usual solutions. Operationalize the concept of context dependent action-possibilities.
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.’



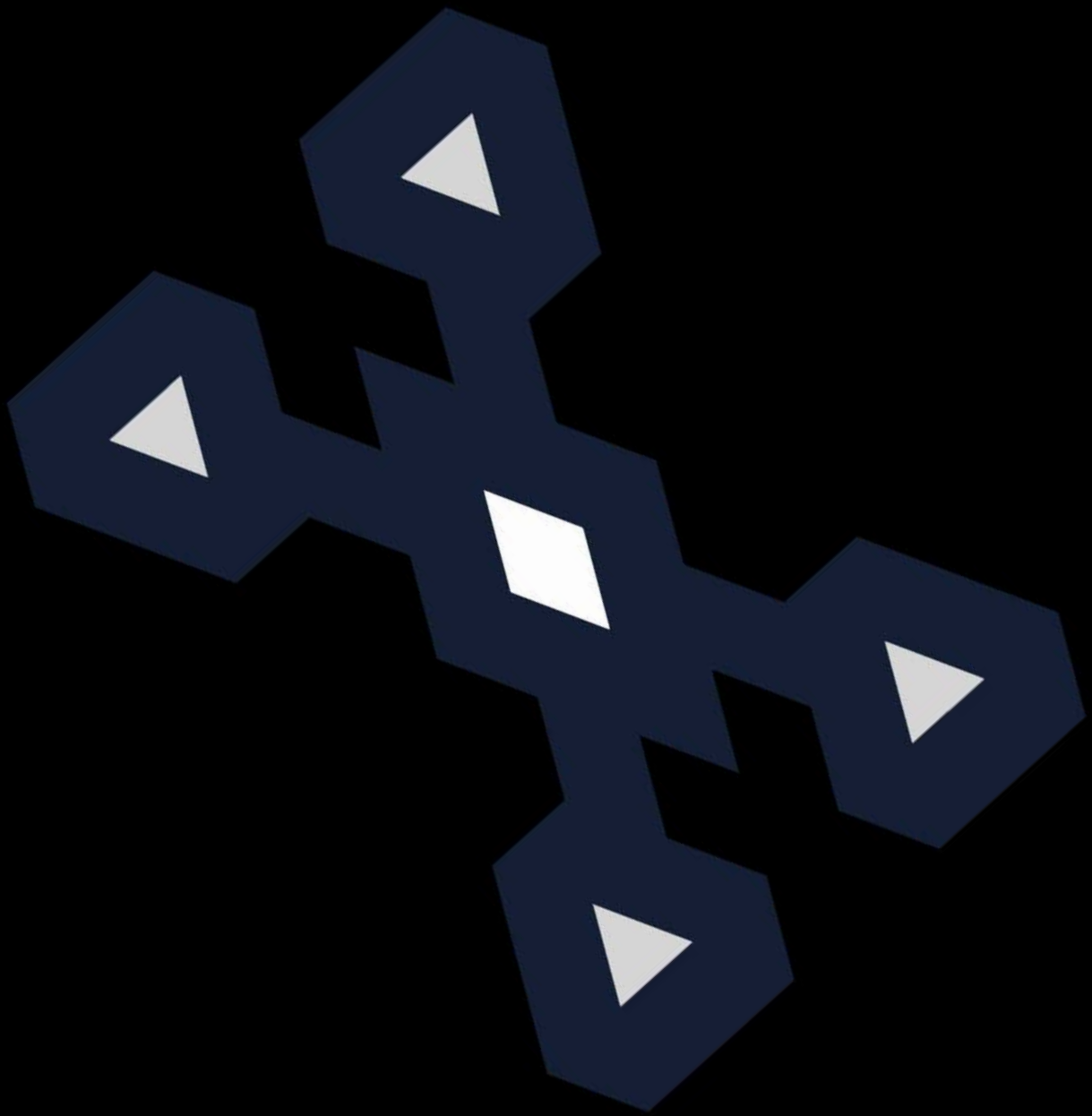
PERSONAL PROJECT DESCRIPTION
& VISION ON PROJECT



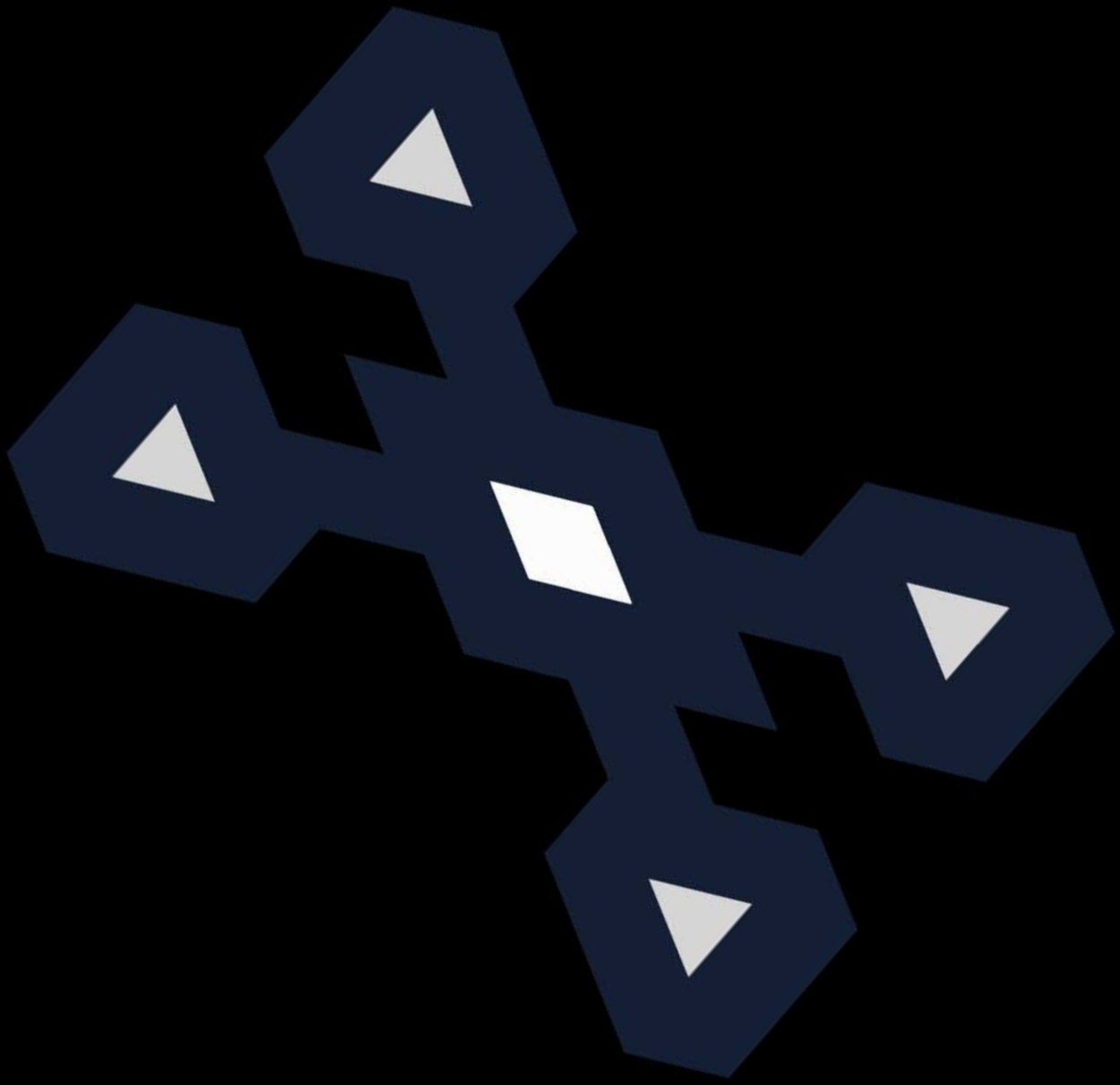
PERSONAL PROJECT DESCRIPTION & VISION ON PROJECT

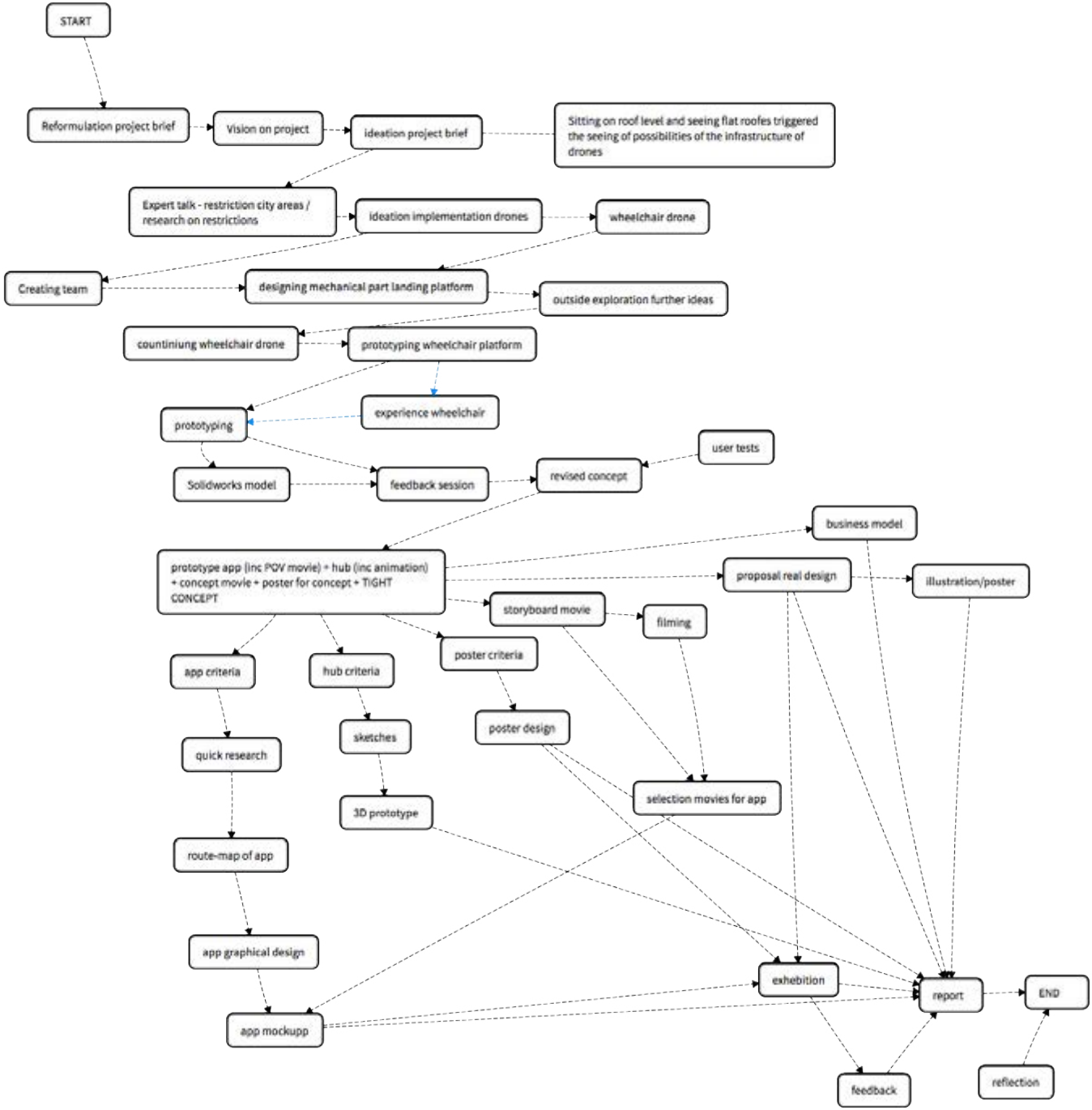
Personal project description
Designing a physical equivalent of, or an alternative to a function of, the digital world. Thereby creating an adapt ¸ able system within a city, to enhance the quality of life.

Vision on project
How to create this enhancement of the quality of life? By creating products and systems that serve and minimally use the users to serve them. Resulting in a more supportive and less restricting environment for innovation. In order to relate this to the project and the future, this physical equivalent of, or an alternative to a function of, the digital world needs to be a serving system that serves the user and thereby creates a more supportive environment for modern and futuristic technologies to be accepted and thereby shape society. This possibly can result in a new era of technological acceptance and action possibilities within society.

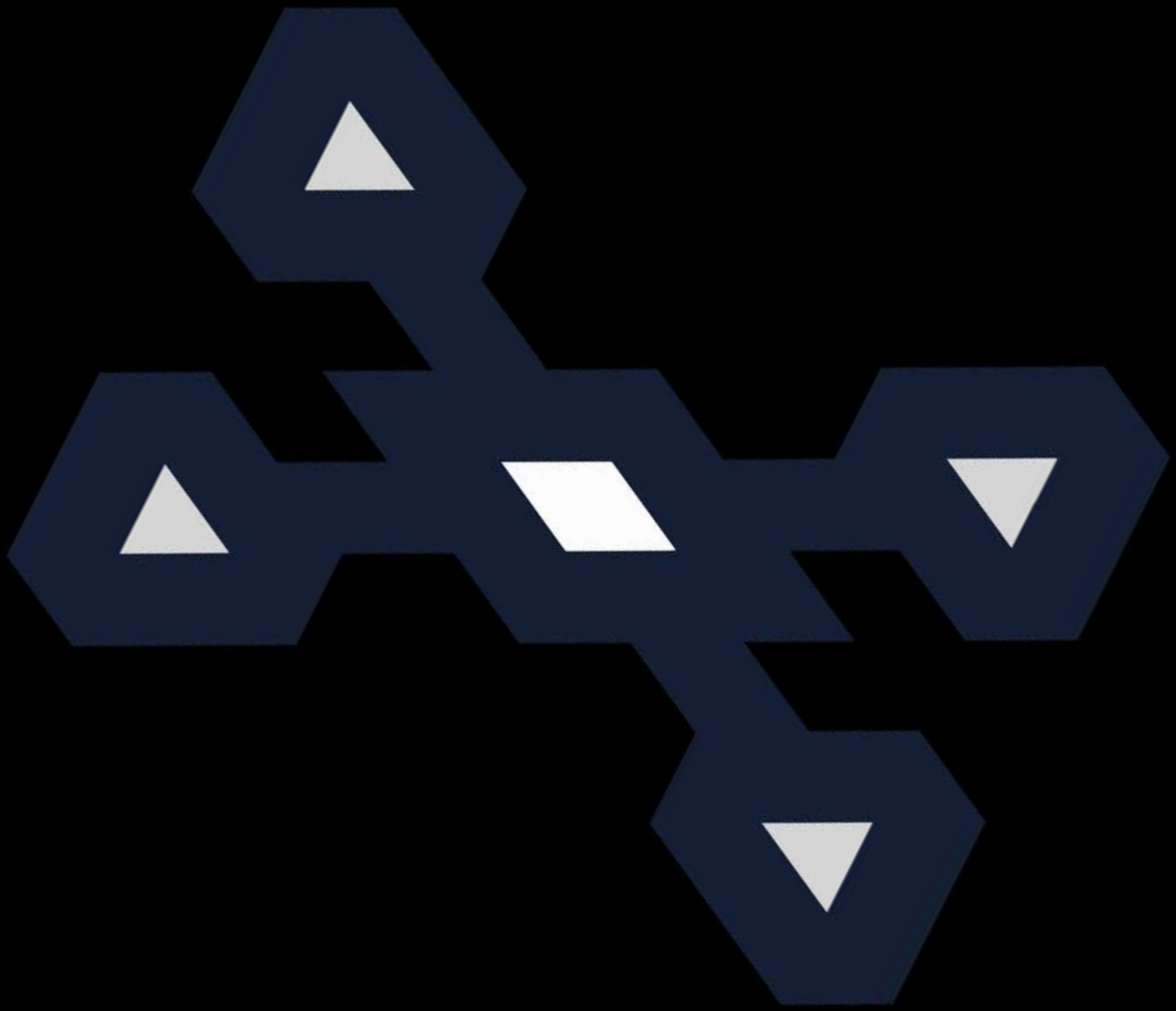


PROCESS




START
Reformulation project brief
Vision on project
ideation project brief
Sitting on roof level and seeing flat roofes triggered the seeing of possibilities of the infrastructure of drones
Expert talk - restriction city areas / research on restrictions
ideation implementation drones
wheelchair drone
Creating team
designing mechanical part landing platform
outside exploration further ideas
countiniung wheelchair drone
prototyping wheelchair platform
experience wheelchair
prototyping
user tests
Solidworks model
feedback session
revised concept
business model
prototype app (inc POV movie) + hub (inc animation) + concept movie + poster for concept + TIGHT CONCEPT
proposal real design
illustration/poster
storyboard movie
filming
poster criteria
app criteria
hub criteria
poster design
sketches
quick research
selection movies for app
3D prototype
route-map of app
app graphical design
exhebition
report
END
app mockupp
feedback
reflection

IDEATION



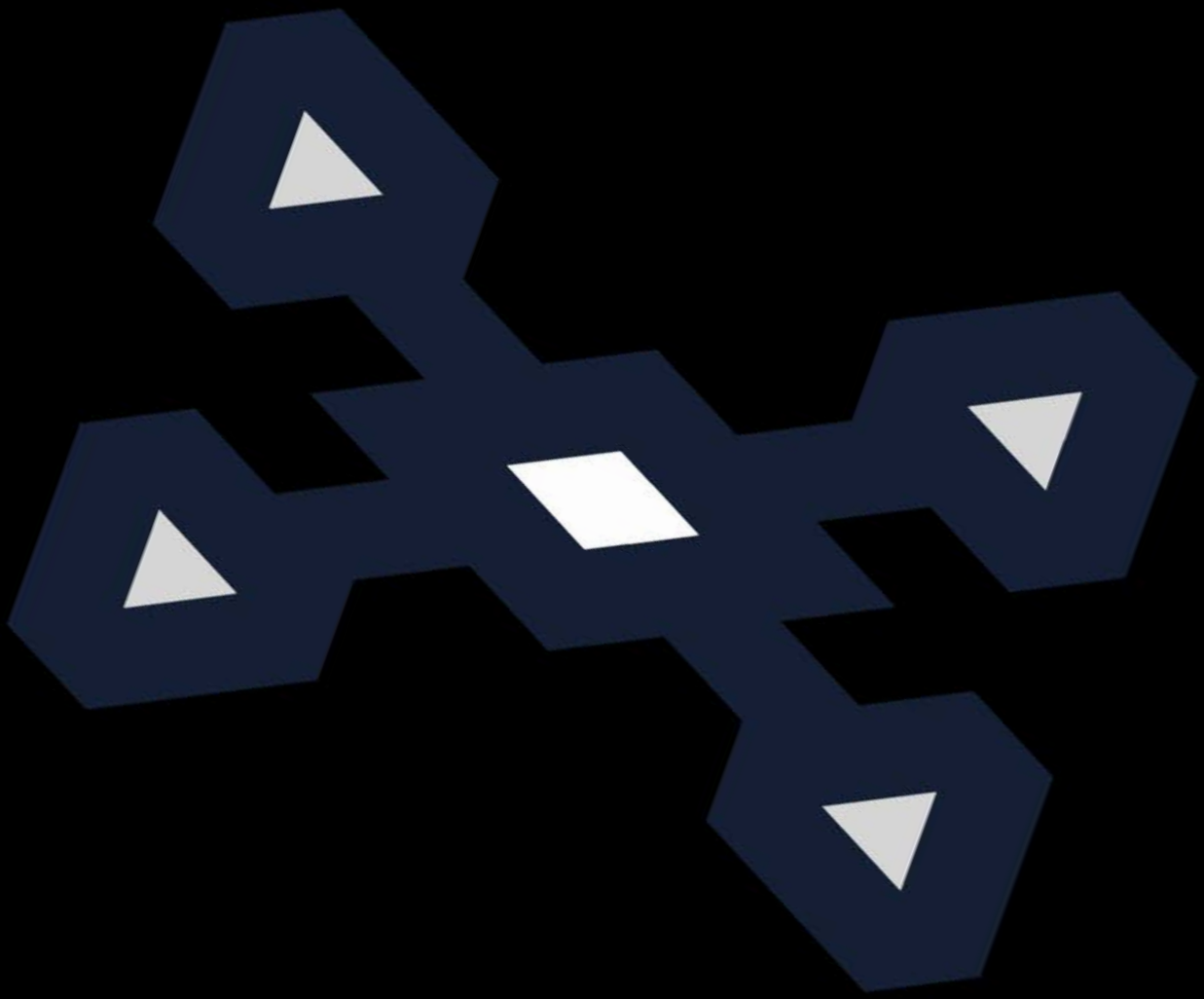
IDEATION

Project ideation

To design a product or system with modern and futuristic technologies was decided to search for unusual spots to ideate in. Looking over the rooftops of Eindhoven imagining the possibilities of the future, helped ideating ideas that have a wild character and fundamental change of the future.
Thinking big is the keyword.
By bringing the digital world to the physical world, was taken a look at what are the fundamentals/ flagships of the digital world and how can this be translated to the physical world.
The flagship of the digital world nowadays is the Internet. But what is the internet? Basically it is transfer of data from A to B. Translating the transfer of data in the digital world to the physical world shows the transfer of goods.
The future transfer of goods can be imagined in very different ways. E.g local production would result in the elimination of the transfer of goods. Introducing small-connected networks for a fast distribution of goods, seems more likely to work in an already deeply developed city area. Searching for a technology that is enabled to operate within the networks resulted in UAV's (Unmanned Areal Vehicles). UAV's seem to be able to fulfill requirements like being able to respond and adapt quickly to new situations that occur within small networks.

Ideation on drones

To broaden the possibilities of UAV's and step aside from delivering goods, a brainstorm on the possibilities of UAV's has been done. Image 1 shows 'What reflects drones / Associations with drones?', image 2 shows 'Ideas with drones.'.
In line with the vision on the project has been chosen to further develop the idea that has the most value for the user and serves the user, the 'wheelchair drone'.



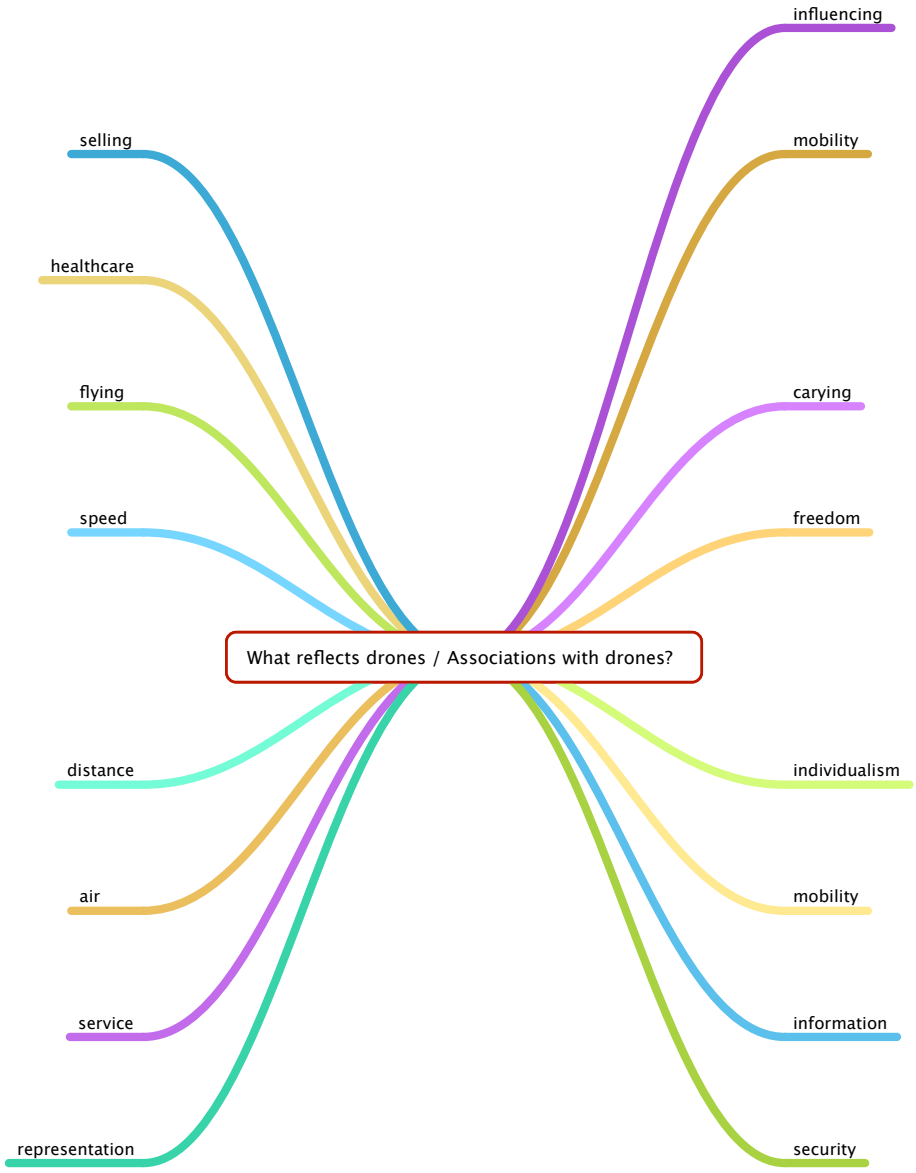


Image 1: ‘What reflects drones / Associations with drones?’

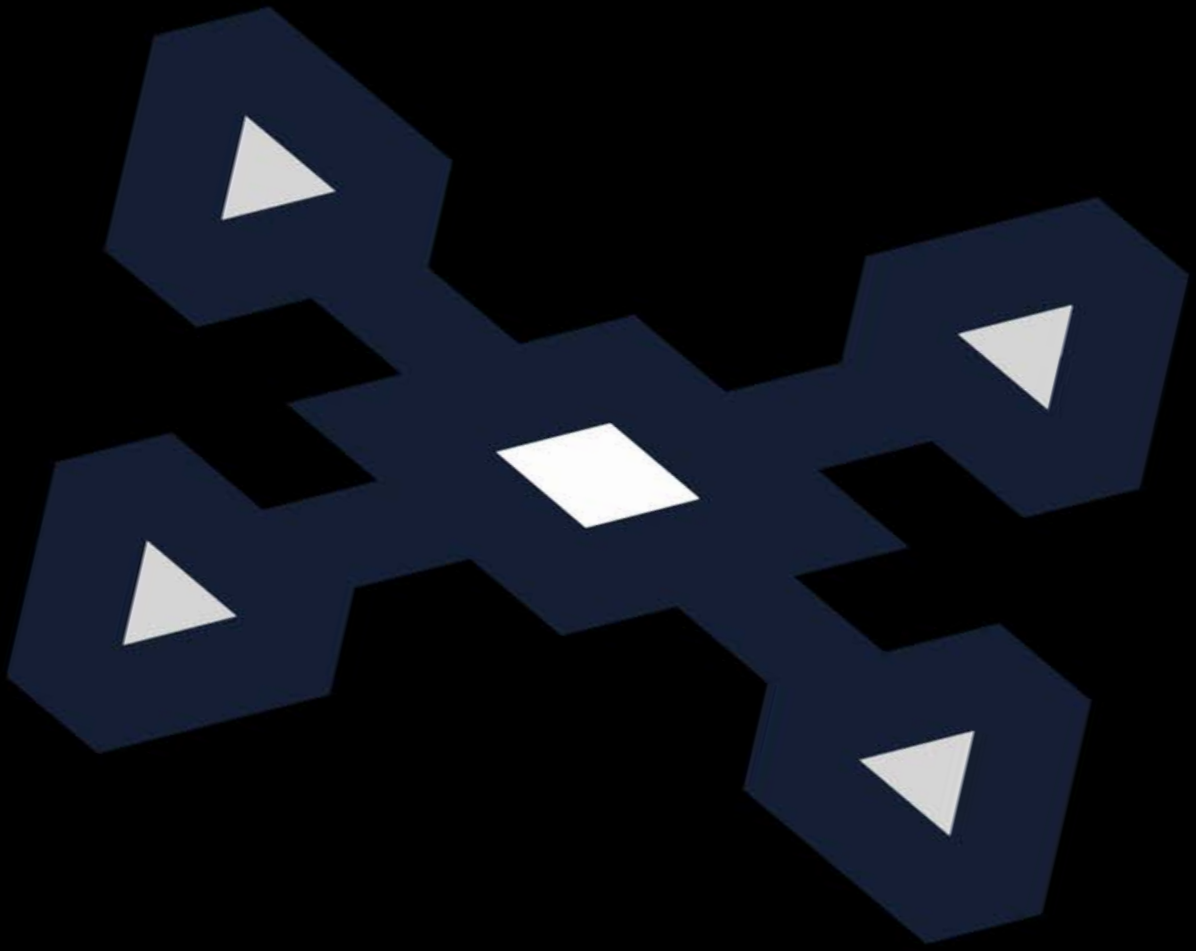
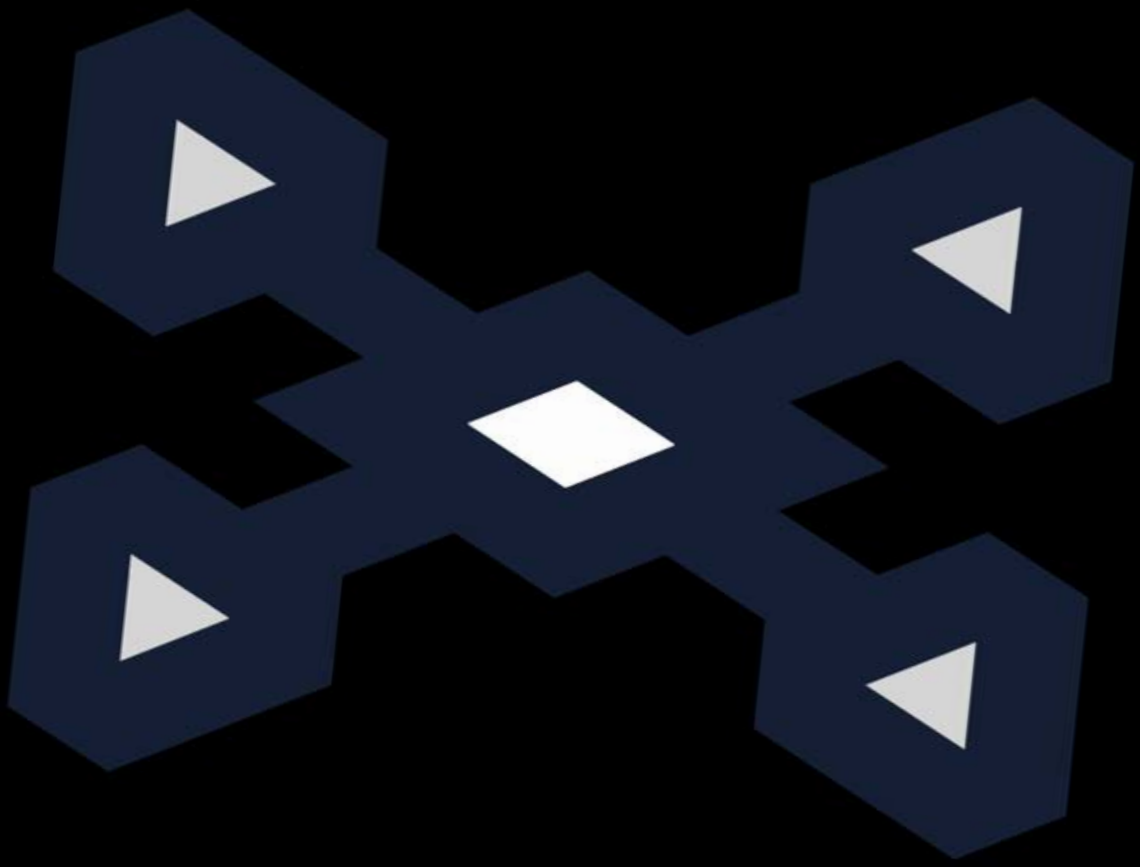
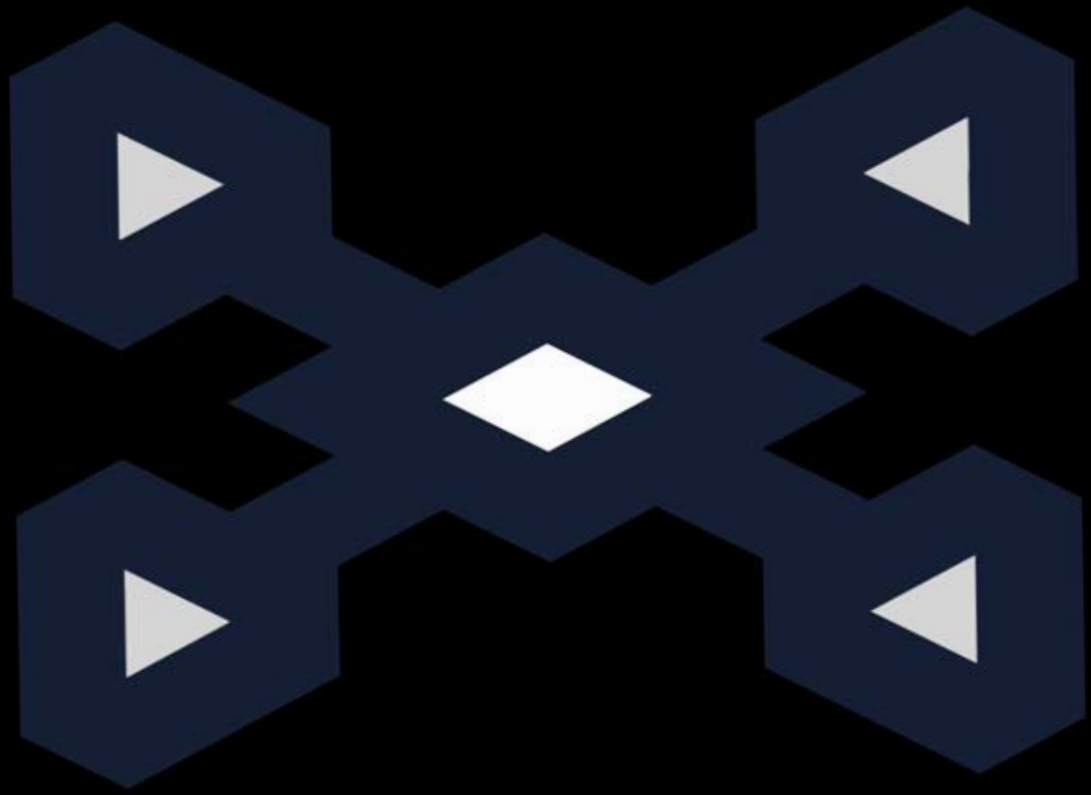


Image 2: ‘Ideas with drones.’



RESEARCH



RESEARCH

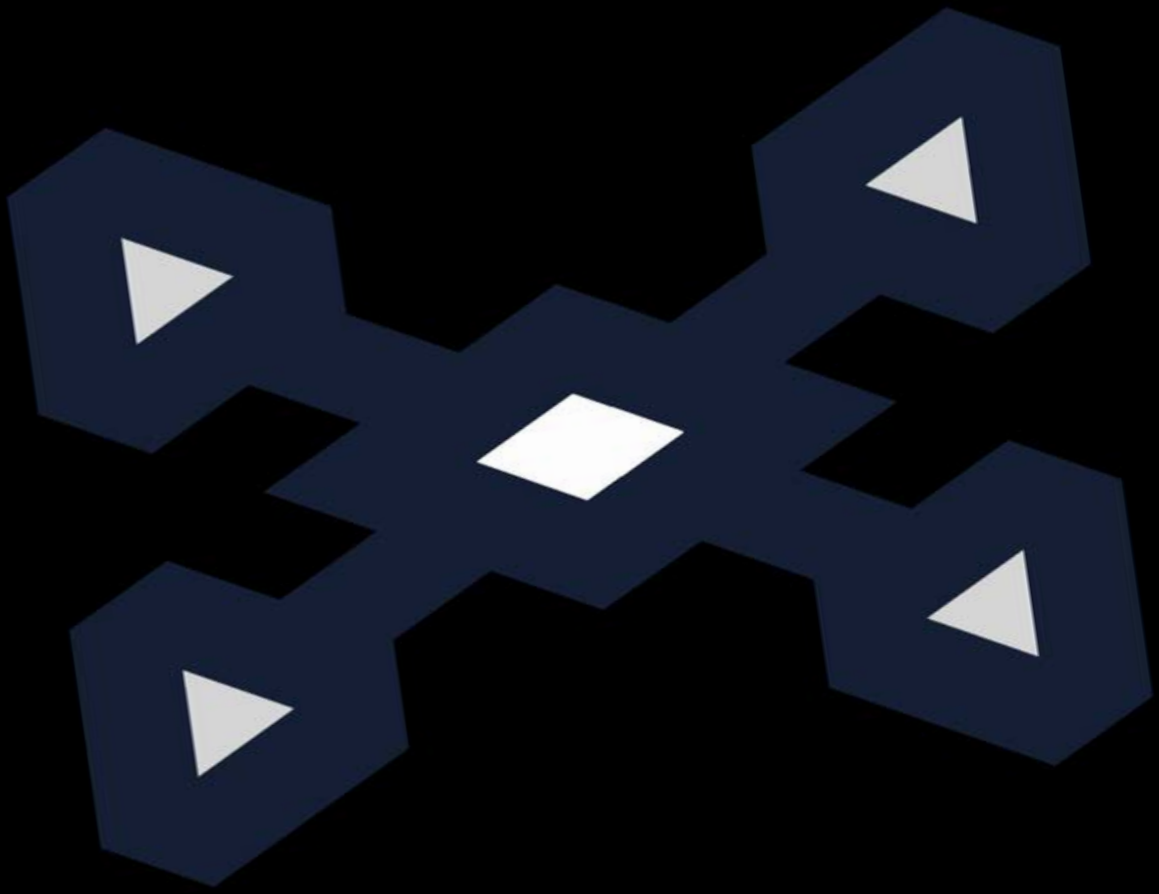
Expert talk & research on possible restrictions of drones in city areas

In order to check the legality of flying around with an UAV in a city area, an expert was contacted and additional research has been done.

Michael Höhne, who did projects with UAV's in relation to city imaging in cooperation with governments and 3rd parties, confirmed my research on governmental sources, which can be found below. There are currently no restrictions in relation of UAV's flying in city areas. What Michael Höhne although stressed is that if accident happen, this probably quickly results in regulations.

- http://www.antwoordvoorbedrijven.nl/regel/luchtopnamevergunning
- http://wetten.overheid.nl/BWBR0017681/tekst_bevat_onbemand%2Bluchtvaartuig/geldigheidsdatum_02-10-2012#_tekst_zoekterm_14
- http://wetten.overheid.nl/BWBR0026570/tekst_bevat_onbemand%2Bluchtvaartuig/geldigheidsdatum_02-10-2012#_tekst_zoekterm_8
- http://wetten.overheid.nl/BWBR0026570/tekst_bevat_onbemand%2Bluchtvaartuig/geldigheidsdatum_02-10-2012#_tekst_zoekterm_38
- http://wetten.overheid.nl/BWBR0005775/tekst_bevat_onbemand%2Blucht/geldigheidsdatum_02-10-2012#_tekst_zoekterm_87
- http://wetten.overheid.nl/BWBR0005555/Hoofdstuk1/Artikel11/tekst_bevat_onbemand/geldigheidsdatum_02-10-2012#_tekst_zoekterm_0
- http://wetten.overheid.nl/BWBR0005555/Hoofdstuk5/Titel51/Artikel57/tekst_bevat_onbemand/geldigheidsdatum_02-10-2012
- http://web.law.und.edu/lawreview/issues/web_assets/pdf/85-3/85NDLR597.pdf

http://www.casa.gov.au/wcmswr/_assets/main/lib100071/uas.pdf



CONCEPTUALIZING

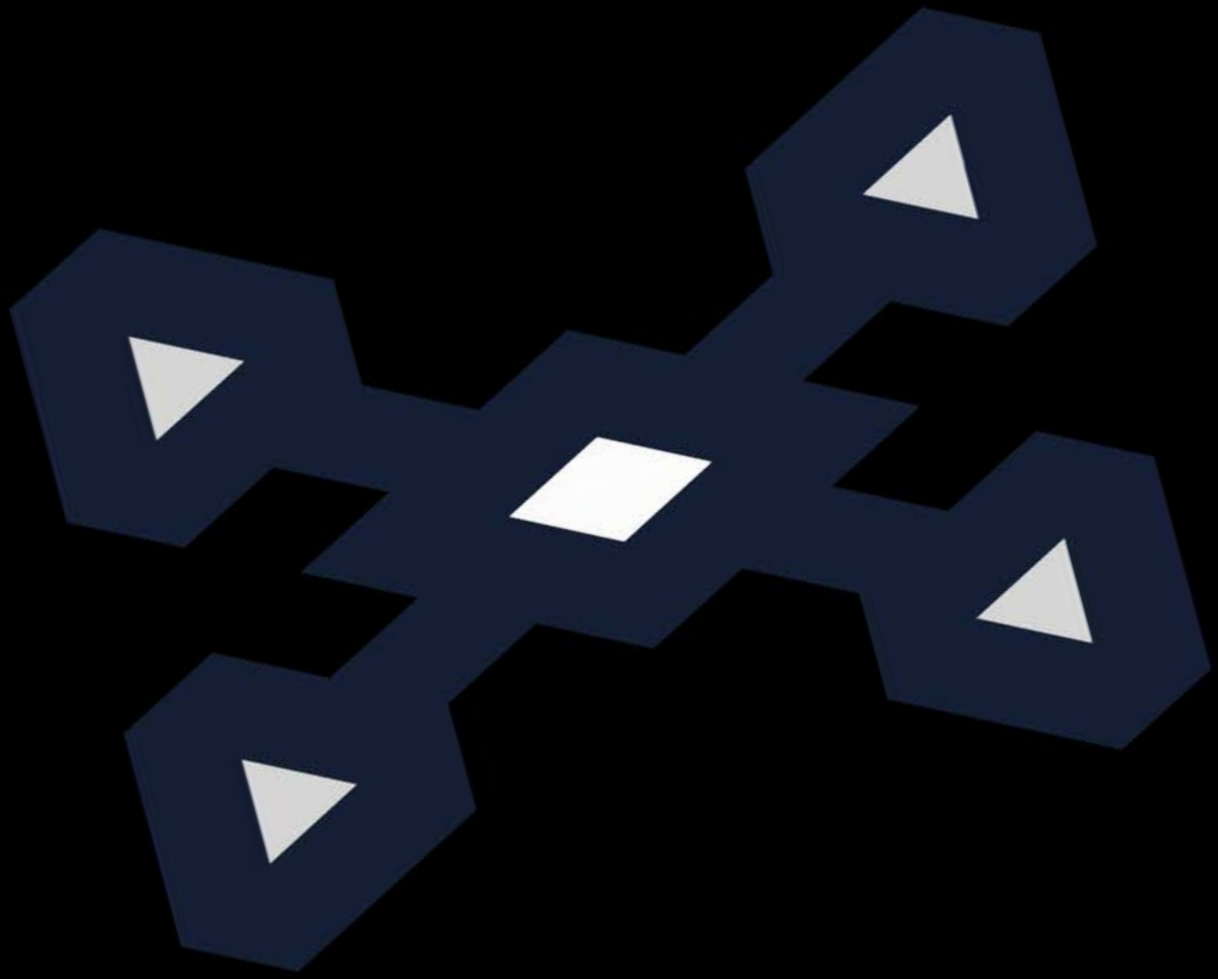


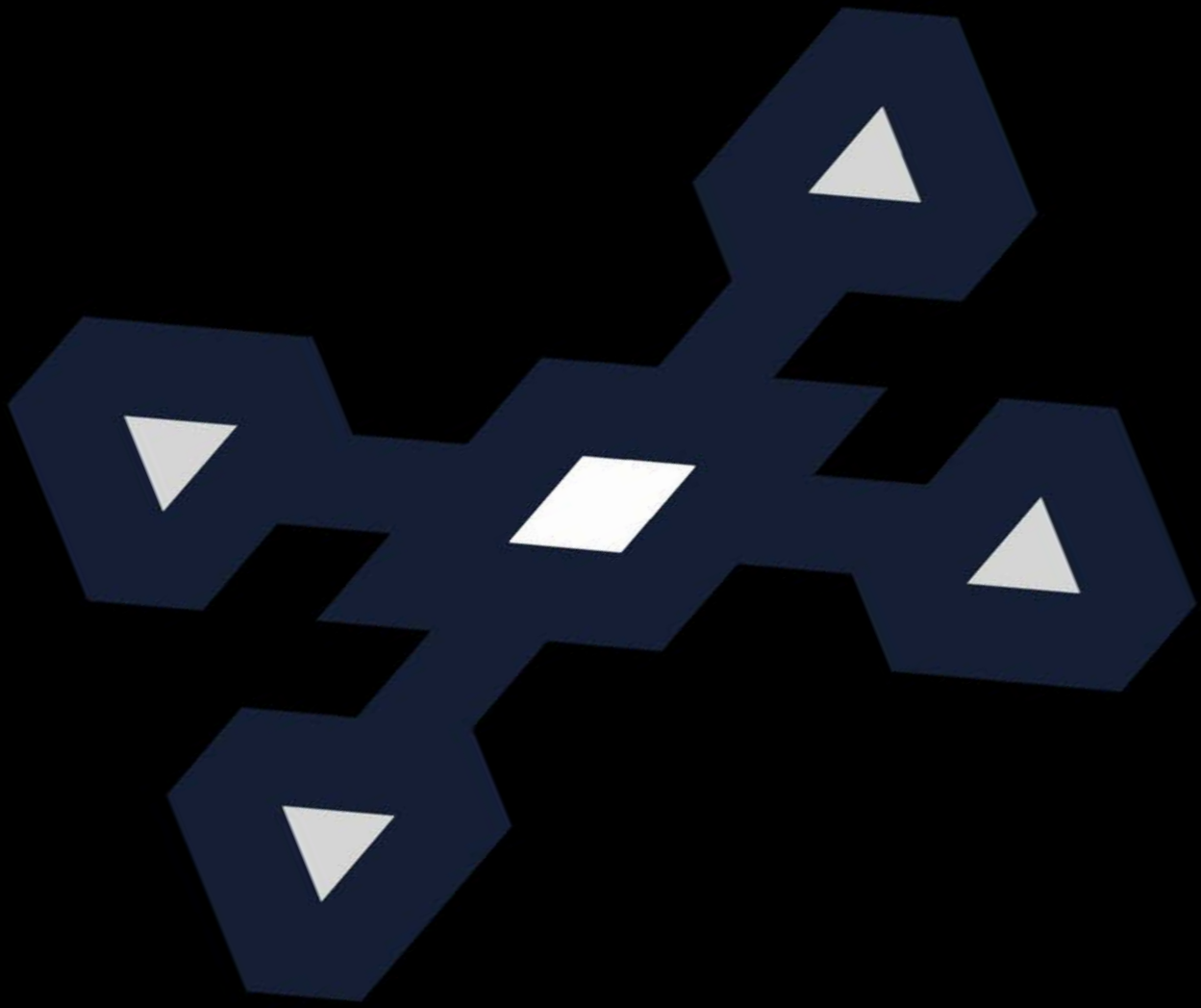
Image 3: ‘wheelchair drone’

CONCEPTUALIZING

Wheelchair drone

The ‘wheelchair drone’, a combination of a wheelchair and a quadrocopter, gives greater access to disabled people in their surrounding world.

See image 3. The big advantage for wheelchair drivers with the ‘wheelchair drone’ is the possibility to access areas that are uncomfortable or physically restricted for wheelchairs. In addition the user is able to make proposals for changes in the city environment to enhance to quality of moving and enlarge the accessibility for wheelchair drivers. This is made possible by using your smartphone to control the quadrocopter. By using the built-in cameras of the quadrocopter the accessibility is widened.



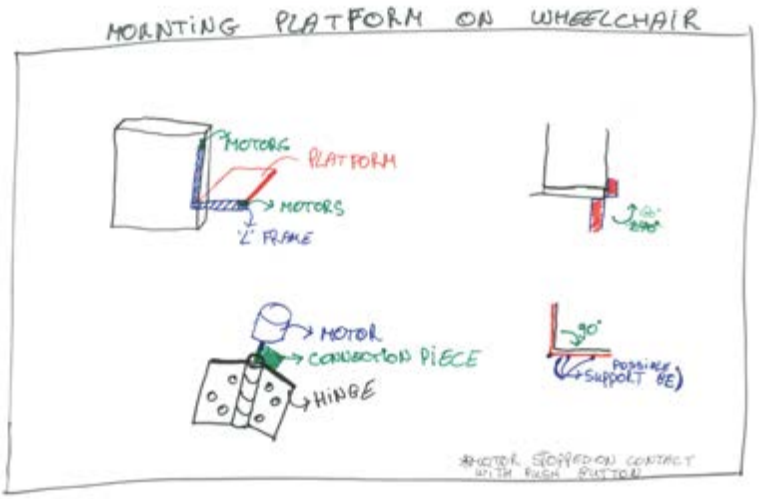


Image 4: global building plan

Experiencing wheelchair

To get a better feeling for the wheelchair driver, a tour through the city has been performed. What was remarkable? As a non-wheelchair driver the driving itself is quite exhausting. Besides that, the walkways are in bad shape (lying under an angle or have gaps between stones), there are quite some obstacles including people and construction zones that prevent you from easy driving; e.g. rough terrain that is not drivable. These are some examples wheelchair drives have to face.

Concluded can be that the quadrocopter would be a welcome addition to the normal wheelchair to enlarge the accessibility for wheelchair drivers.

Prototyping

Having this concept, it was decided to quickly develop a prototype. Main difficulty within the prototyping process was, how to connect the quadrocopter to the wheelchair. By setting up a team of students existing off a mechanical engineer, electrical engineer and two fellow industrial designers the challenge was mastered and a global building plan was set up. See image 4. See appendix A for further explorations. This plan enabled to start building the prototype. During the build several small issues came up. To clear the issues decided was to make a SolidWorks model. See image 5. With the model it became easier to understand how the details connected. Having parts finished of the prototype, see image 6, a midterm feedback moment provided new insides to the projects.

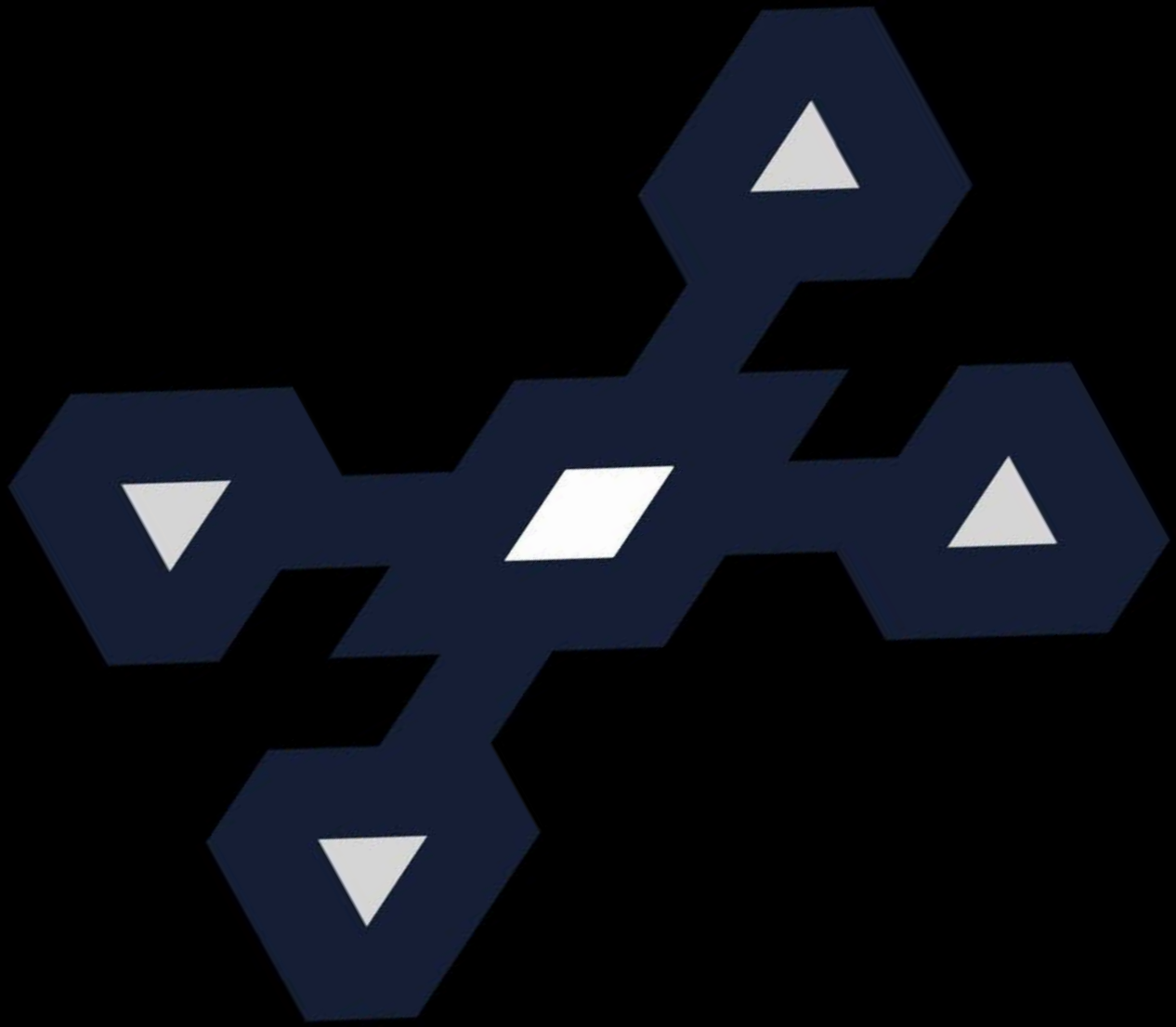
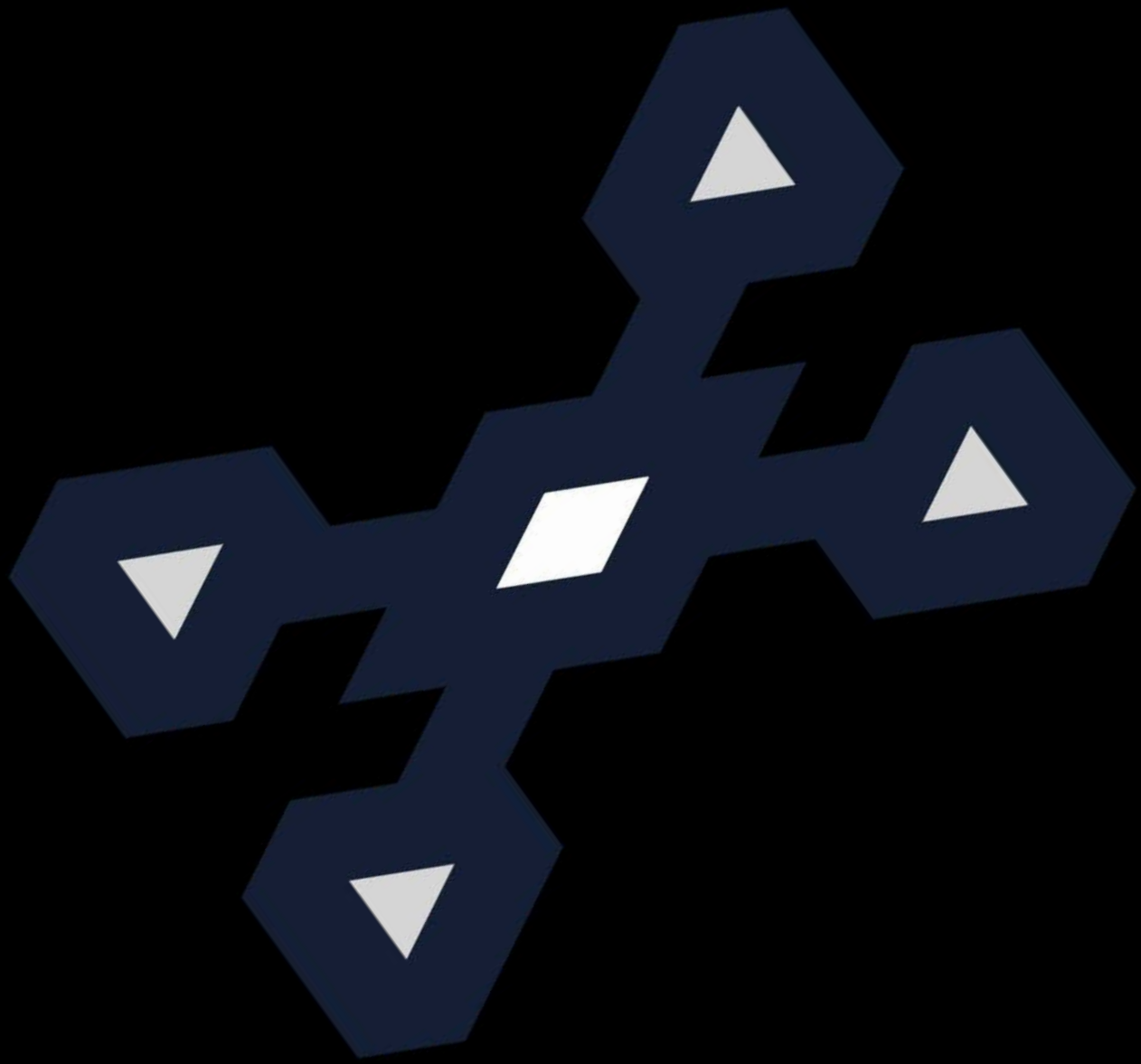
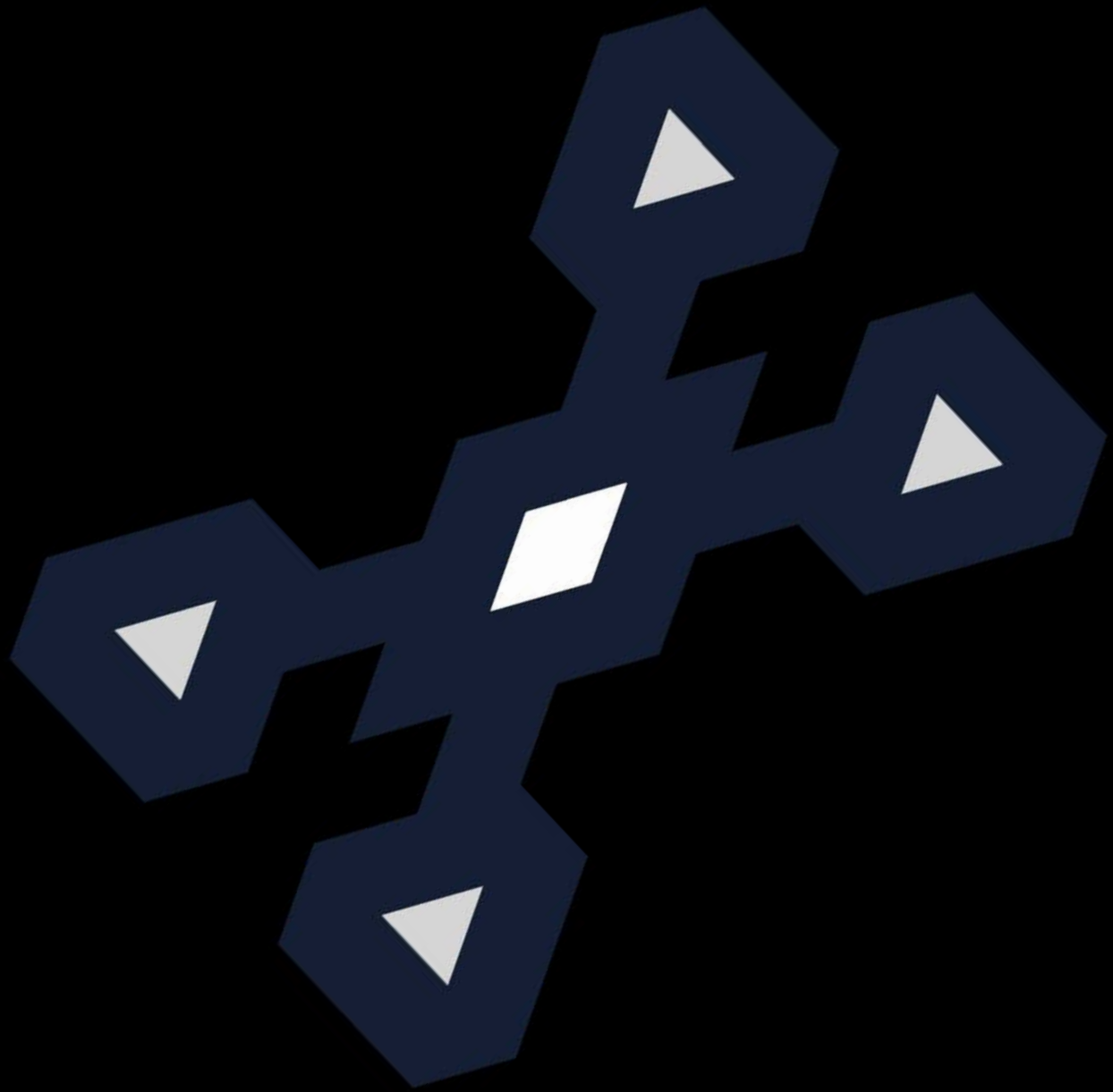


Image 5: Solidworks model wheelchair drone

Image6: Prototype quadrocopter platform



PRESENTATION



PRESENTATION

Feedback on concept

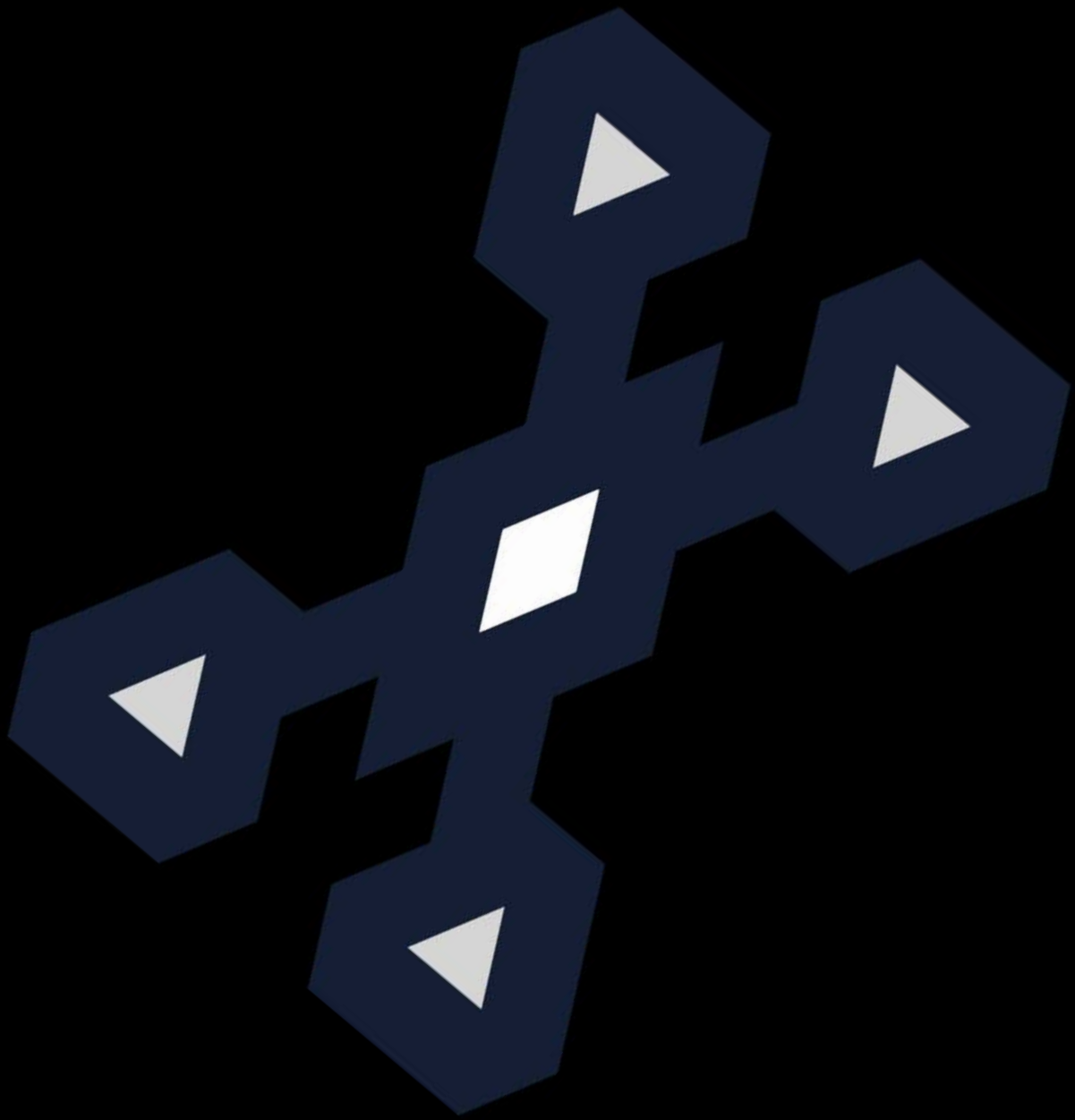
As a feedback moment, a short presentation of the project till this point has been given to parts of the 'out of control' theme-space. The following two questions arose:

Does a wheelchair driver want a quadrocopter on the back of his wheelchair, and thereby standout of the crowd?

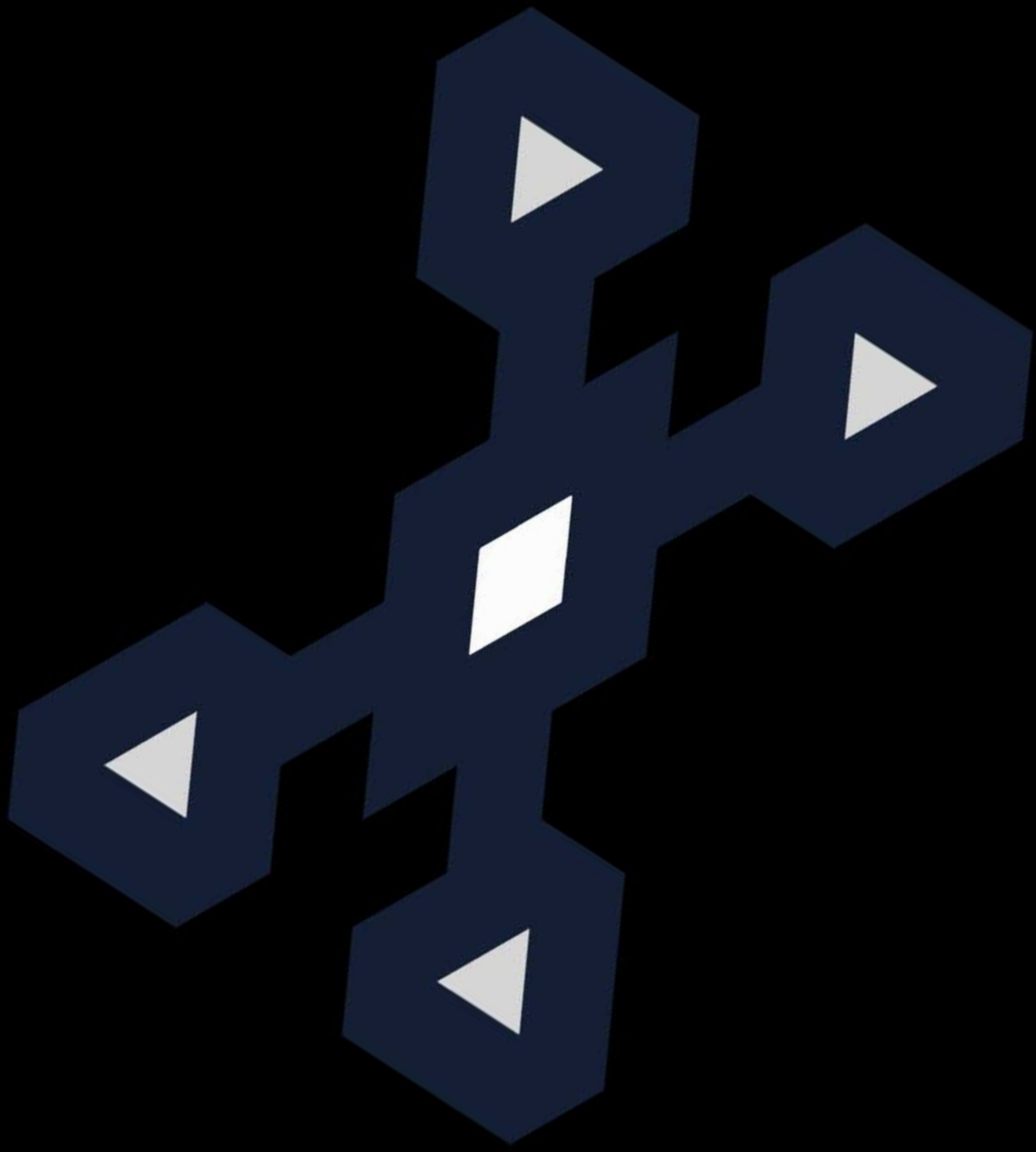
And, why do you only implement this for wheelchair drivers?

To the first question can be said that this is a personal decision that is made by the wheelchair driver. The choice influences the value of the concept dramatically, but the question is rather unimportant in relation to the answer of the second question.

To second question is rather hard to answer. Possible answers would be a reformulation of the advantages of the concept. But possible advantages to make it widely accessible outperform the arguments for keeping it accessible for wheelchair drivers only. This will be further elaborated in the concept chapter.



CONCEPT



CONCEPT

Incorporating feedback
By making the quadrocopter-part of the 'wheelchair drone' widely accessible for all city visitors, more people can be served by the system. In addition new possibilities arise, mainly because of the new stakeholders.

Final concept

City Explorer

A network of quadrocopters, hubs and posters, within a city, to enable city visitors to explore the world around them in a new and different way.

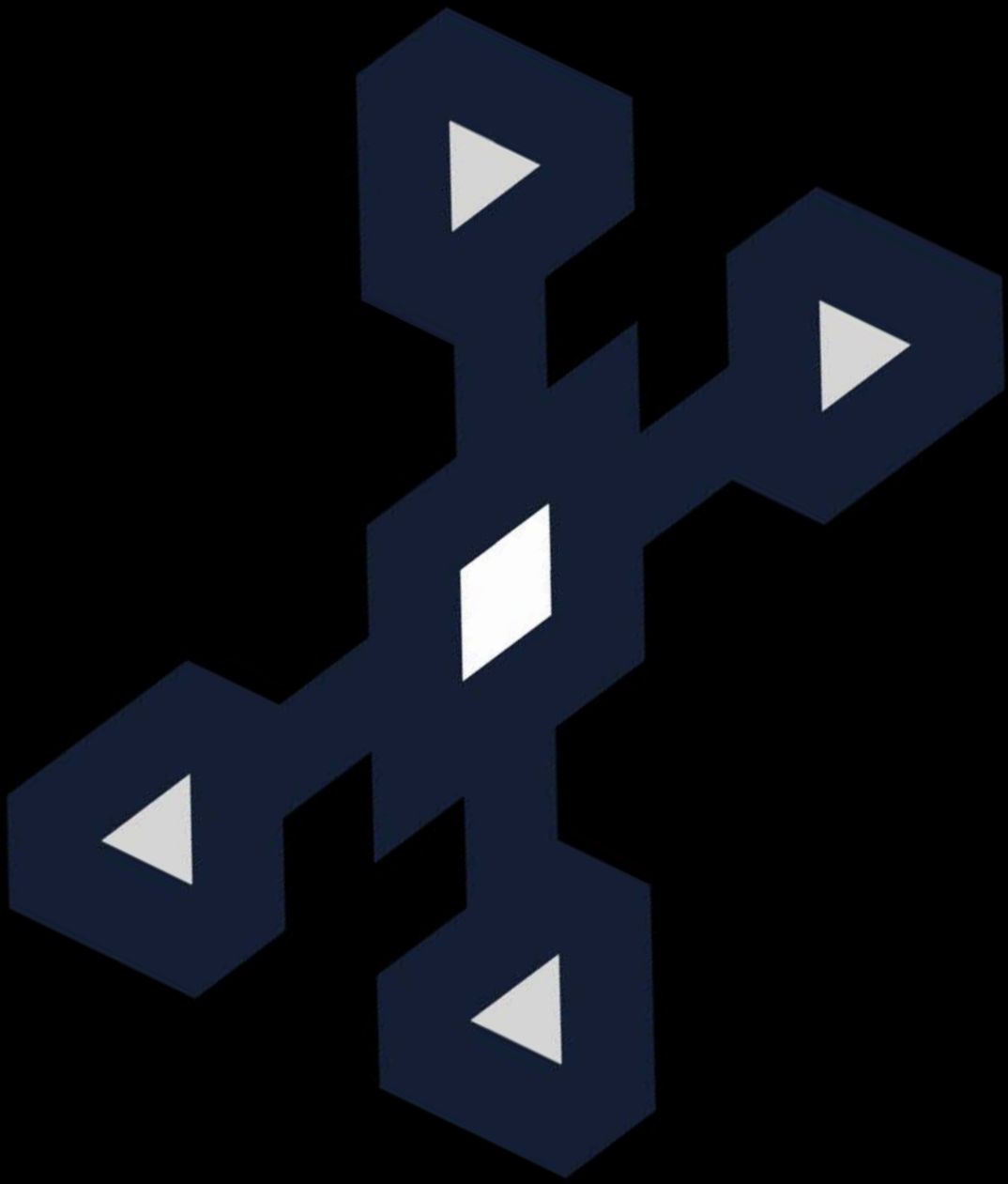
Taking control over one of the quadrocopters in the city enables you to explore the world around you, take pictures, use guidance for Points of Interests or make proposals for city improvements. It is a new and fun way to explore a city without focusing too much on the city explorer itself.

In addition to the local network of quadrocopters, hubs and posters, there is a global overview of all local quadrocopters – 'live view'. This glocal(local + global) network enables people all over the world to visit and get to know cities without physically being present.

A fun way to explore the world around you.

A great city promotion and tourist attraction.

How does it work?
In order to get control over a quadrocopter it is necessary for the user to use his smartphone or tablet to connect to the quadrocopter via the connected poster. An app gets launched that asks the user if he would like to use the quadrocopter. By pressing 'no' the app will close again. By pressing 'yes' the quadrocopter will come towards the user, leaving from its hub. From that point on the user is in control over the quadrocopter.



The app gives the user four different options to perform while being in control over the quadrocopter.

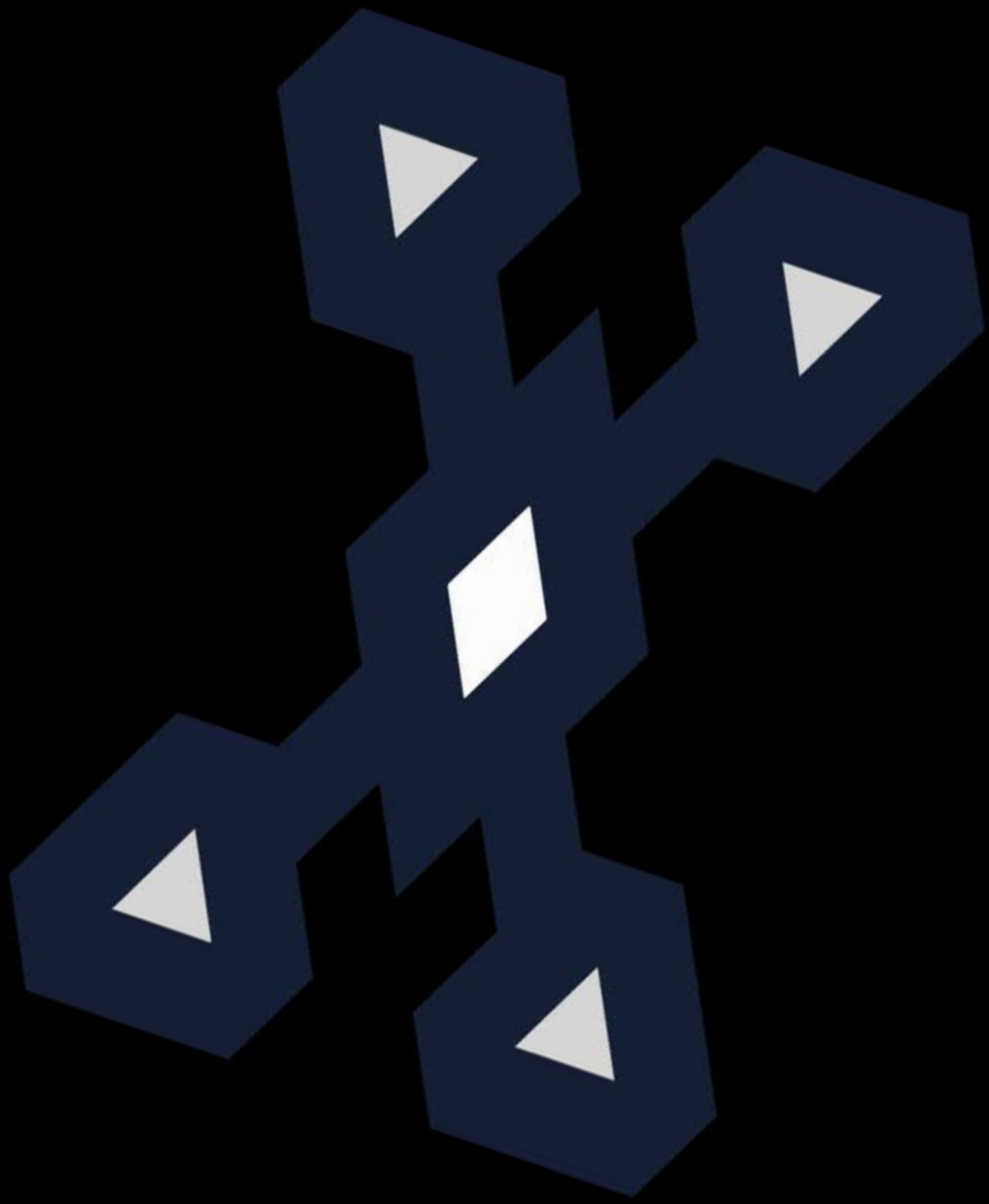
1. Free fly,
flying around and exploring the surroundings.
2. Taking pictures,
being able to make pictures and videos, which will be saved on the smartphone or tablet.
3. Using guidance for Points of Interests,
Seeing information of stores via augmented reality, or search and navigate to a certain place within the city.
4. Making proposals for city improvements,
making a picture of a certain circumstance within the city and provide this with comments enables the user to give feedback and make proposals to the city by simply tapping on 'send'. An email will automatically be send to the city governance.

The user of the quadrocopter can aboard the flight at any time by closing the app. This will result in the automatically returning of the quadrocopter to its hub.
Important to know is that, while not using the flight controls the quadrocopter will stay in the same position and height as when leaving the buttons. This enables an easy and smooth using of the non-flying functions during the flight.

When the battery of the quadrocopter is approaching its critical amount of energy it will aboard the users control and flies back to its hub.

How do I find the posters and thereby the quadrocopters?

In order to prevent people from wandering around and not finding a quadrocopter several media can be used. The 'live view' itself, which displays where the quadrocopters are, an integration into google maps and augmented reality apps like 'Layar'.



User groups

Tourists

The 'city explorer' is mainly introduced as a city promotion tool. Especially for a technology-based city as Eindhoven the 'city explorer' can be a great promoting tool, because it represents Eindhoven's characteristics; innovation, smart, technology and future development. The amount of promotion on blogs etc. and the amount of tourists that would like to test and see it in action would be great for every city.

City visitors/inhabitants

Inhabitants might want to use the 'city explorer' more as a tool to make proposals to the city governance and use it as a tool to enjoy the city more during their visits to the city.

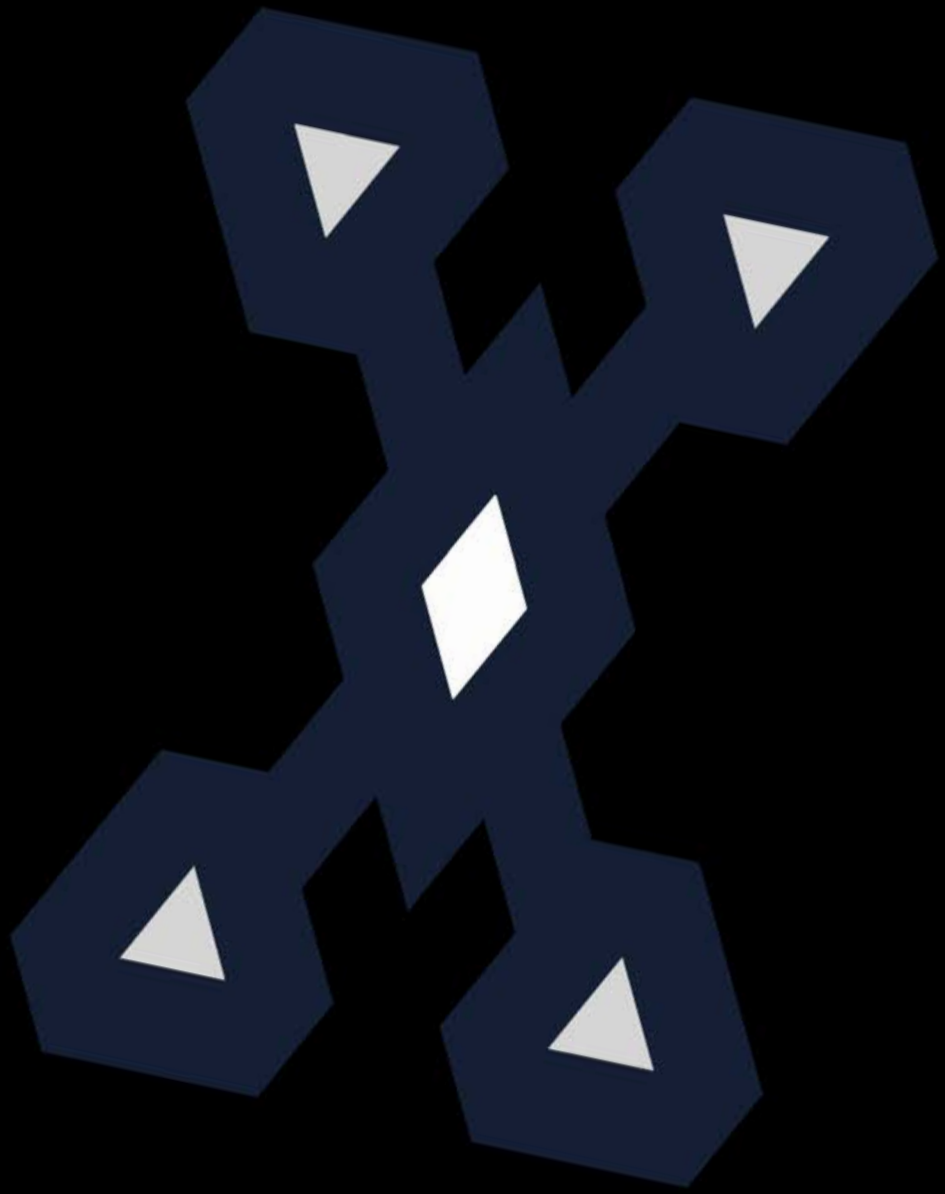
Due to some technical support from the quadrocopter, like an imaginary shield to prevent collisions, everyone with a smartphone or tablet should be able to fly the quadrocopter.

Privacy and security issues

If the concept would be implemented into real life, it would probably come with some privacy and security issues. What would these issues be and how can they be addressed?

How is local privacy prevented from the quadrocopters?
How do you preserve privacy in homes?
How do you prevent the quadrocopters from crashing into objects or people on purpose?
How do you prevent violence on the quadrocopters?

The quadrocopters of nowadays would definitely not be able to address these issues. Some technical adaptions would be needed.
A minimum height can solve parts of the local privacy issue and the violence issue. To prevent on



purpose crashes a virtual shield has to be set up that restricts the drone to come closer than a certain distance to an object.
The home privacy issue can be tackled in two different ways.

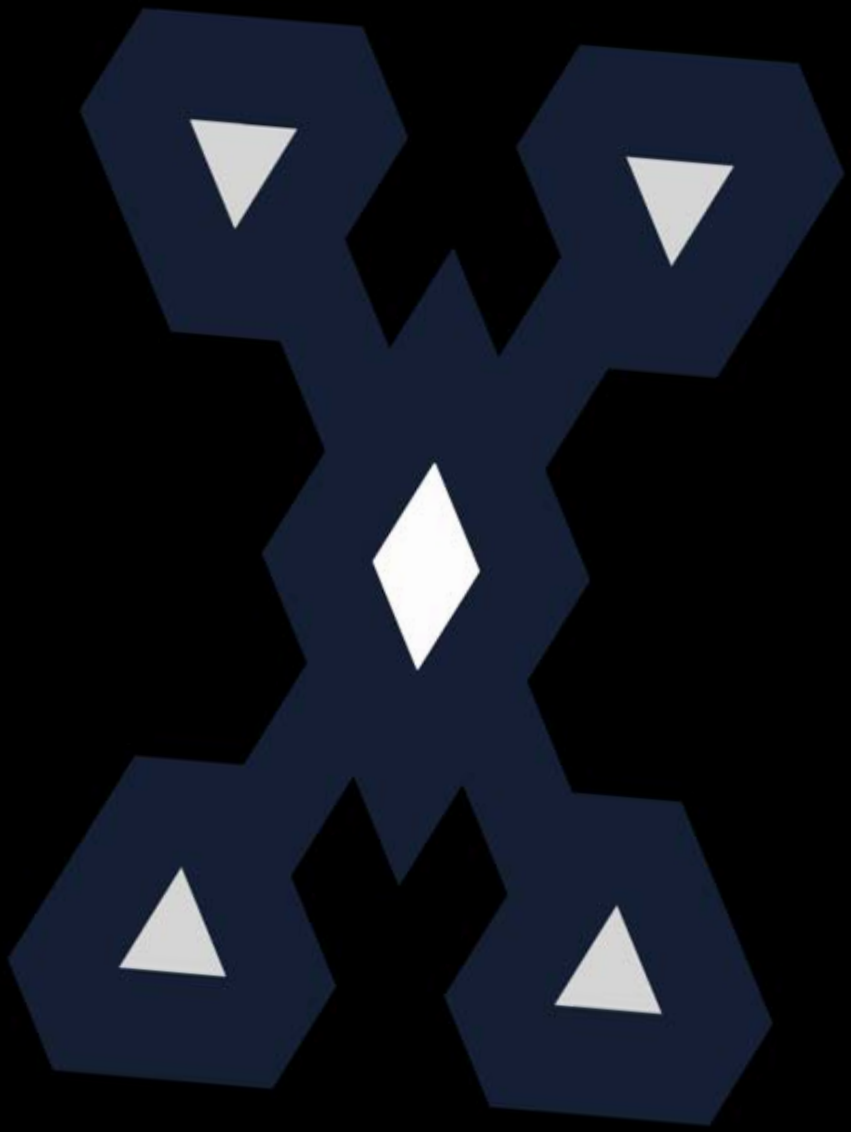
1. Blurring out parts of the visuals when looking at a building that should be protected from the outside. This can be done the combination of GPS, a compass and augmented reality.
2. Restricting the drone of turning to a specific building. This also would require a GPS system and a compass.

Which solution would fit the best has to be tested and discussed with experts of this area.

Completely solving all issues that might occur is impossible, mainly because of the human factor. To make this concept successful, positive cooperation of people is needed.

Prototyping

Decided was to visually prototype the hub, the concept poster and the app mockup to be able to demonstrate how the concept would work. All three prototypes started with setting up design criteria that also were consistent between the three prototypes to create a holistic visual look. The three prototypes were developed simultaneously to create form cohesion between them. The form cohesion can mainly be found in the futuristic origami style triangle shapes and the cool blue futuristic color pattern.



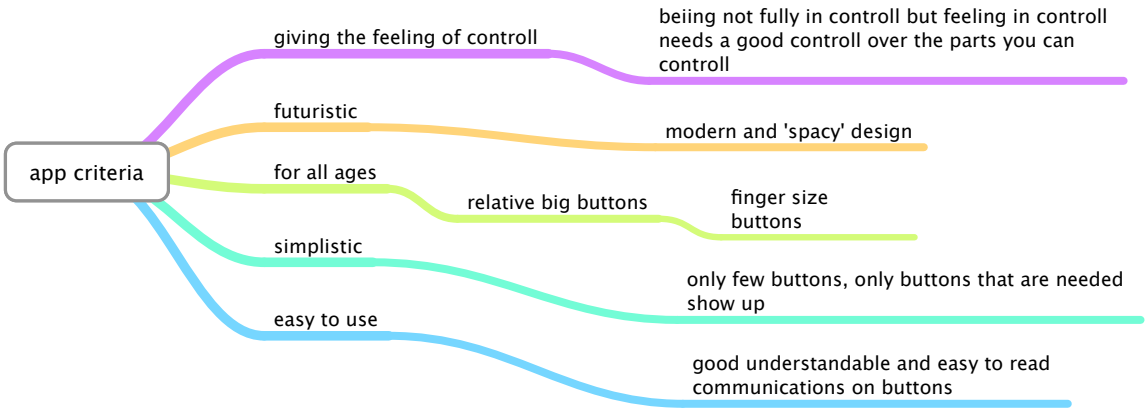


Image 7: app design criteria.

App mockup

The app criteria of the mockup can be seen in image 7. To meet with the criteria a quick research on modern app designs has been done. A compilation of modern designs can bee seen in image 8. Using these images as inspiration and keeping the other visual prototypes in mind the following design has been made, see image 9. To structure the action possibilities a route-map has been made, see image 10. Shooting the movies for the mockup was despite a storyboard a difficult activity due to the unfortunate whether. Quick solutions like filming by hand instead of filming with the quadrocopter itself, resulted in acceptable outcomes.

The combination of all aspects made the mockup a good interactive tool to demonstrate the concept.

Image 8: compilation of modern app designs.

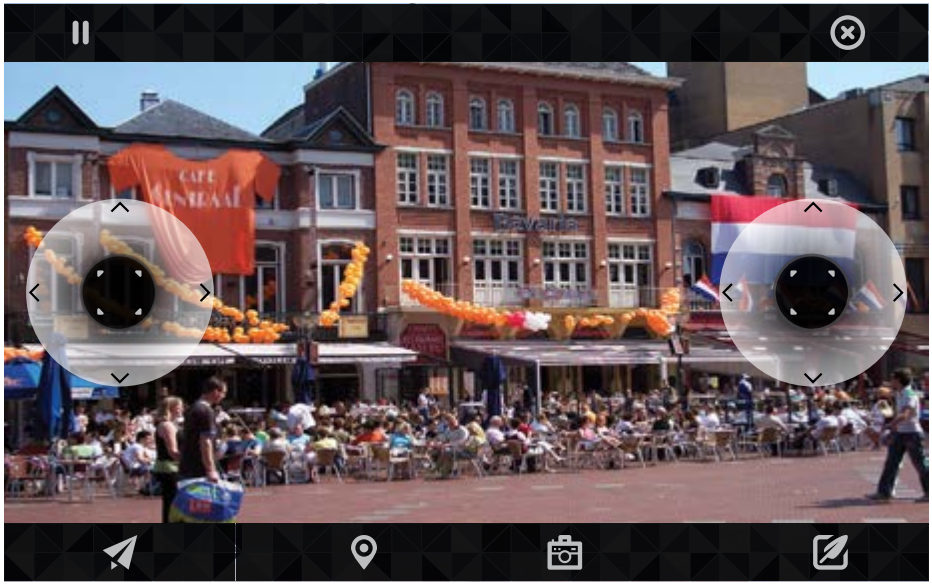


Image 9: app mockup design.

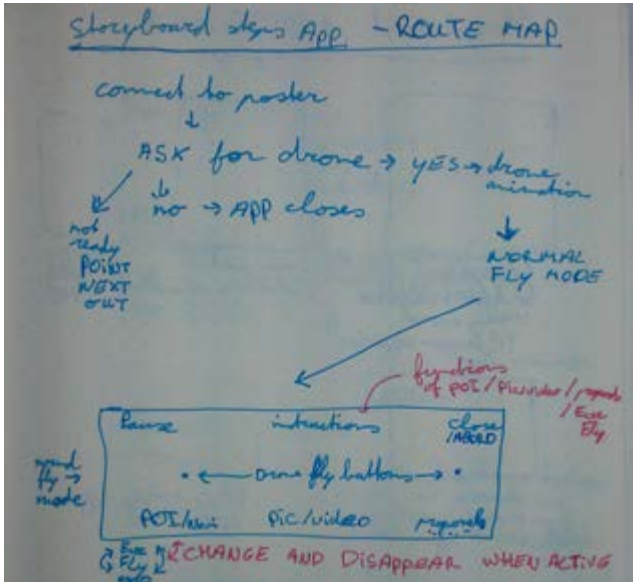
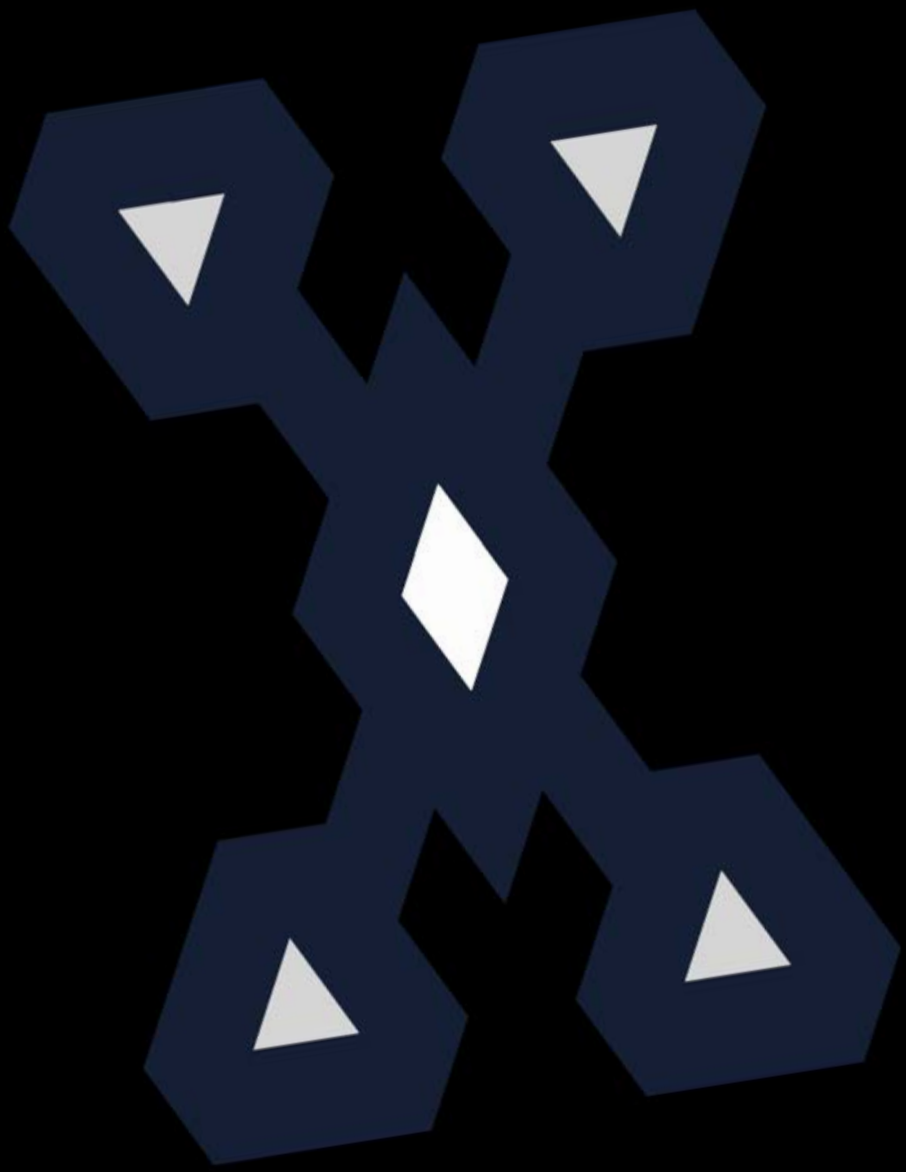


Image 10: route map app.



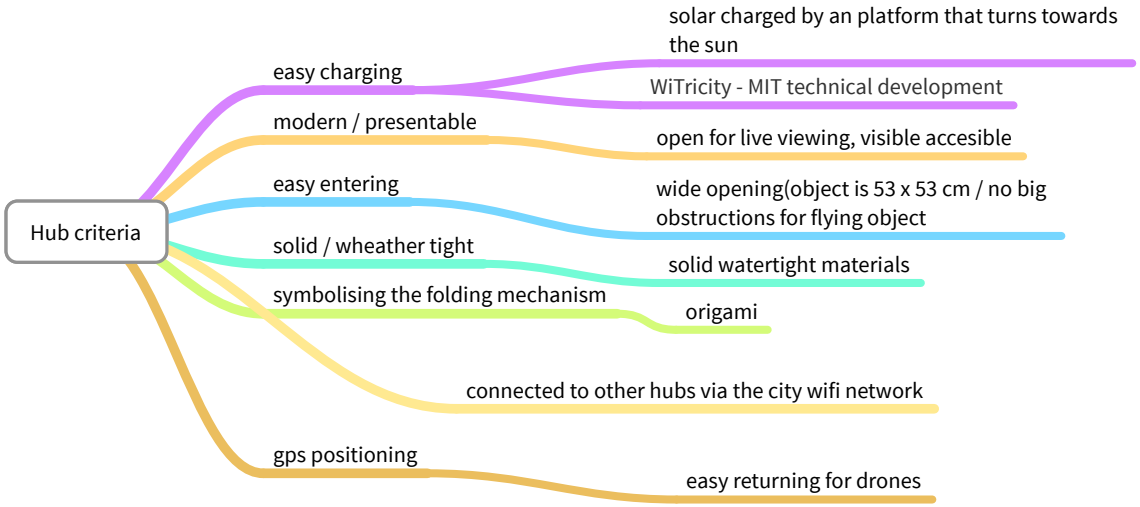


Image 11: hub design criteria.

Hub

The hub criteria can be seen in image 11. By sketching, see appendix B, the form of the hub has been developed. This form than was translated into a cinema 4D/SolidWorks model, see image 12. The making of the SolidWorks model showed possibilities of implementing solar panels and a sun following platform to make the hub more energy efficient and less energy dependent and thereby more sustainable.

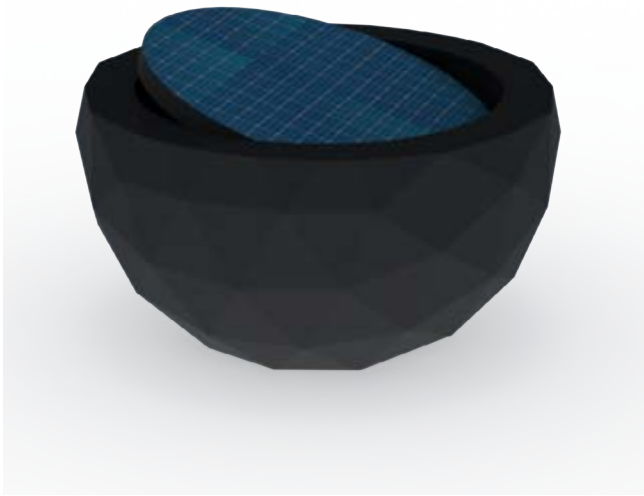
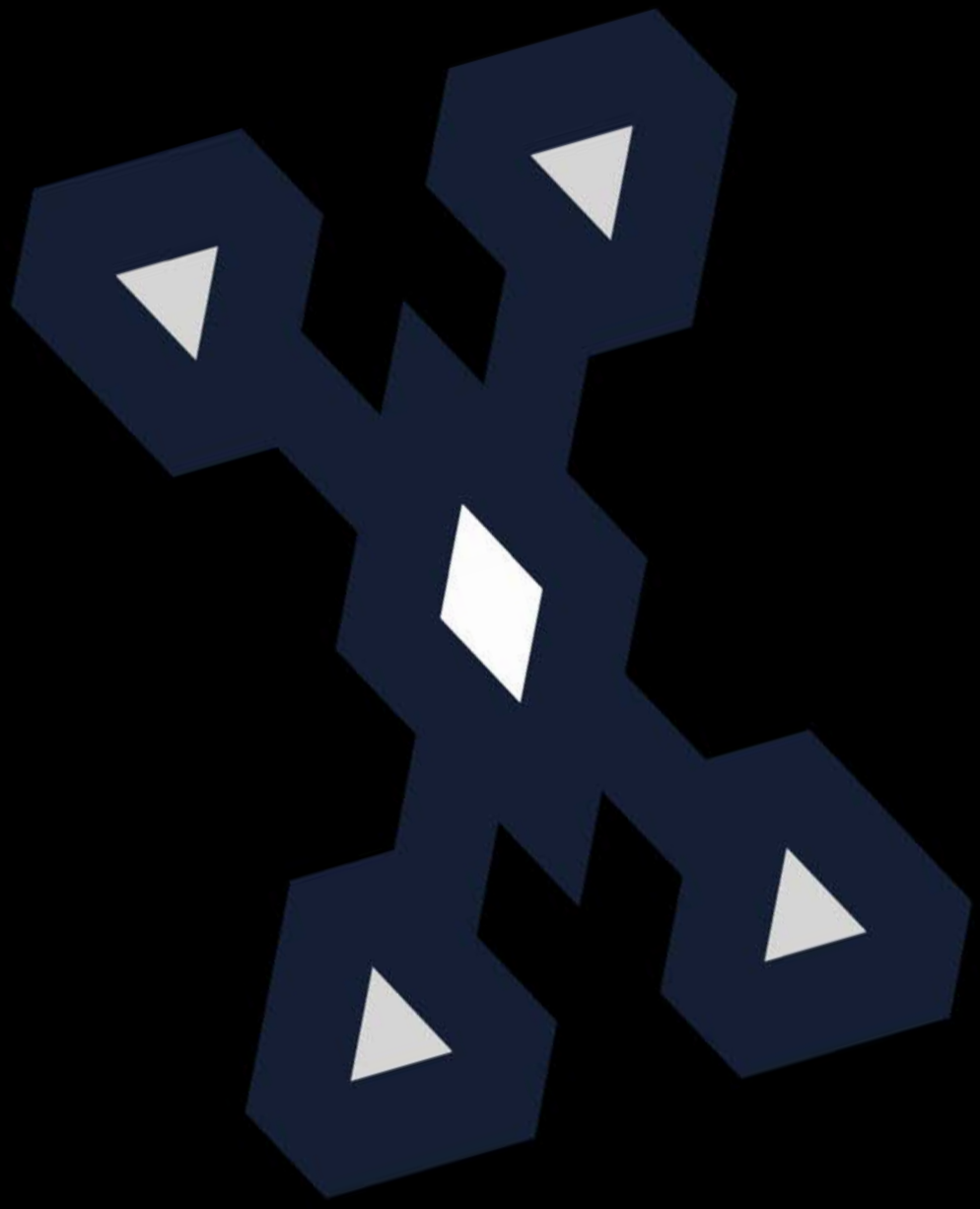


Image 12: hub 3D model.



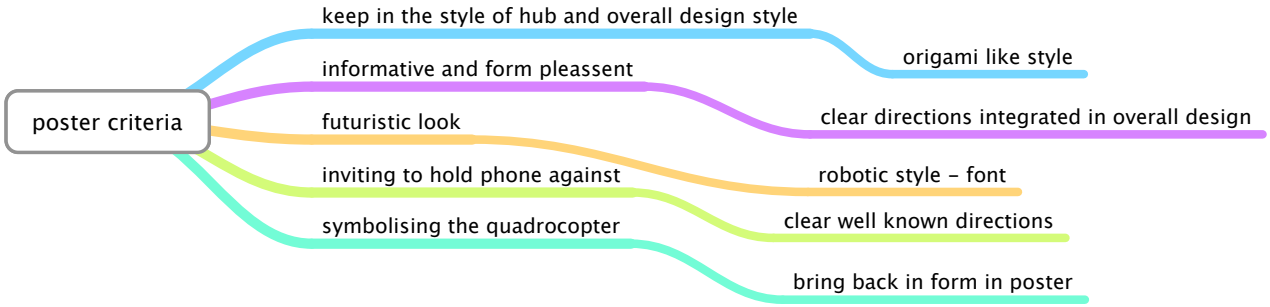


Image 13: poster design criteria.

Poster

The poster criteria can be seen in image 13. The difficulty was in finding a proper way of triggering the user to place his phone on the poster and keeping it within the holistic style of all visuals. See appendix C for the different tryouts and image 14 for the end result.

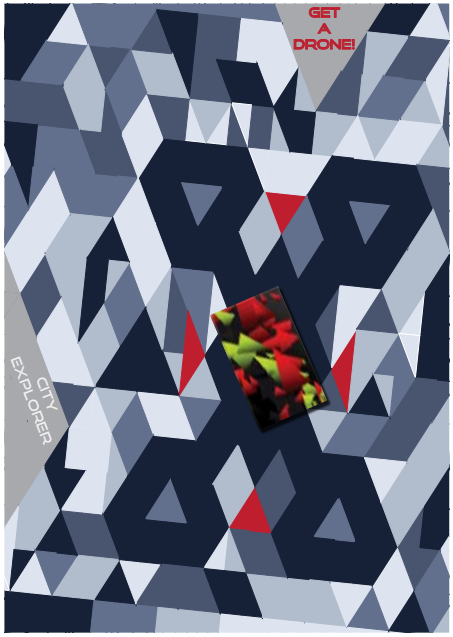


Image 14: final poster design.

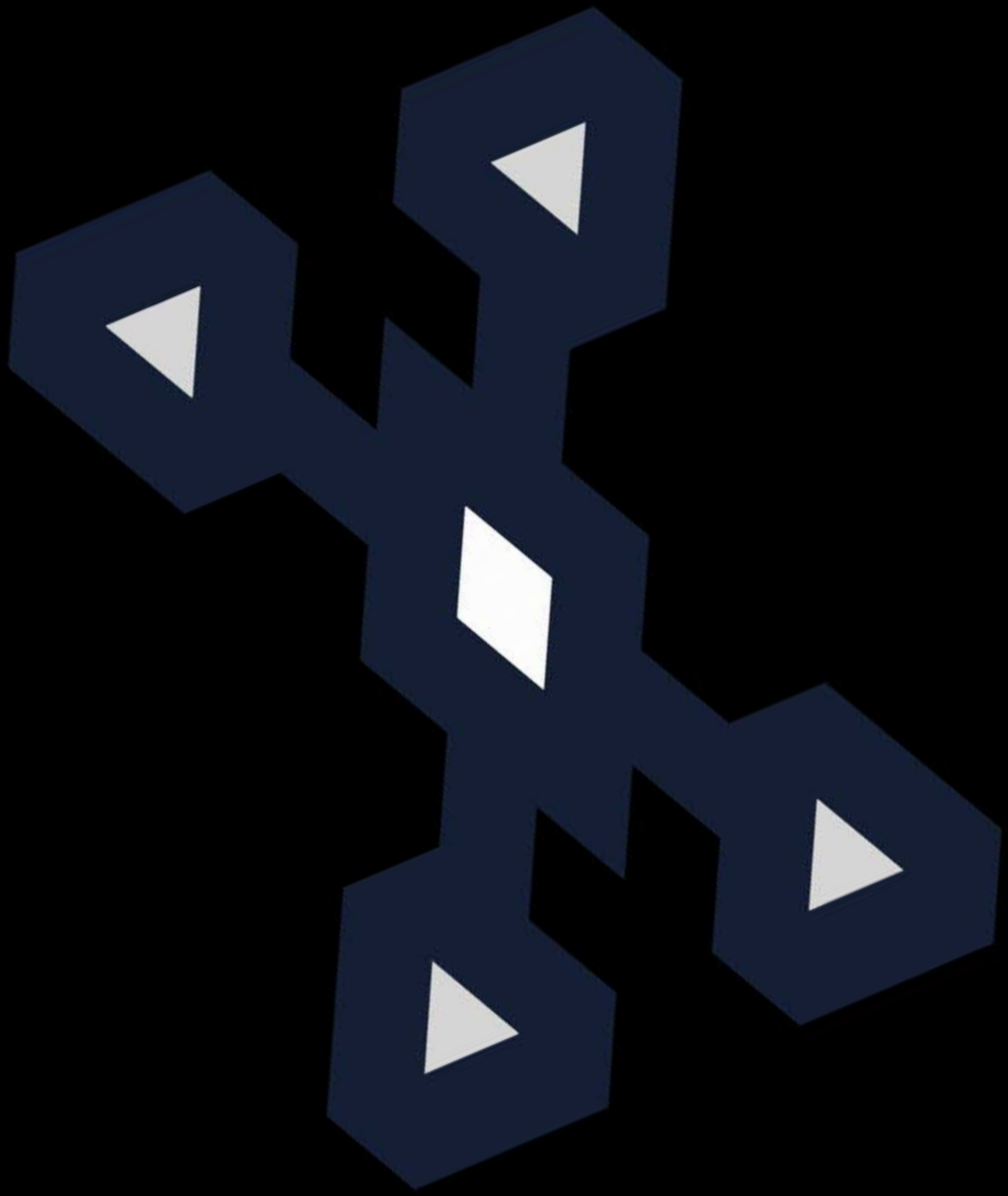


Image 15: the connections and applied technologies between the different hardware's.

Proposal real design

In this proposal will be described what approximately is needed within the concept for a possible realization, focused on the technology. What else is needed can be seen in the business model. See image 15, for the connections and applied technologies between the different hardware's.

Hardware

Quadrocopters

- Surround shield
  - High range distance sensors on all sides
  - Altitude sensor
- Privacy
  - Compass in combination with gps

24 hours use

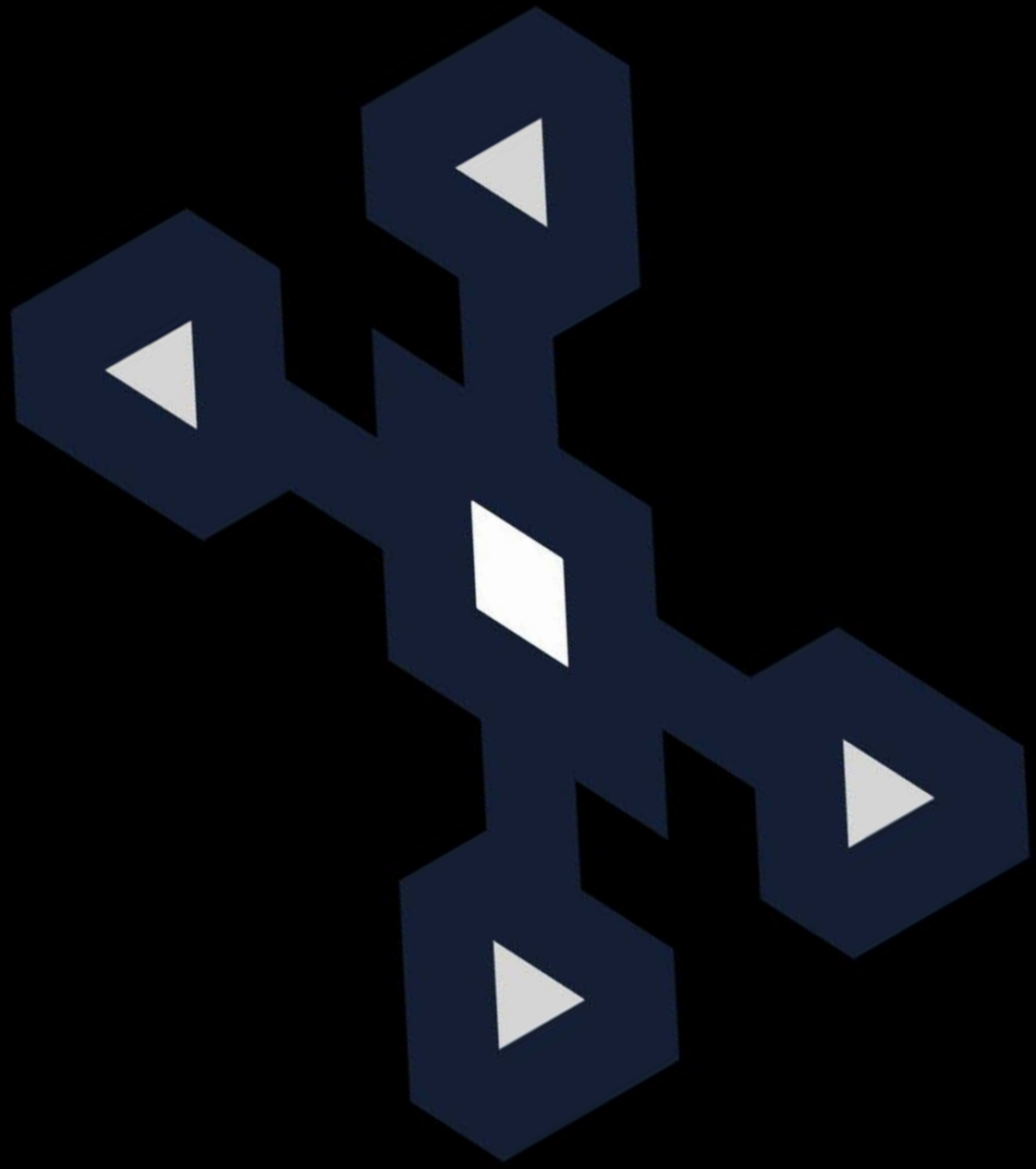
- night vision and night lights

all whether use

- special fluid coating - Liquipel™

others

- microcontroller
- Wi-Fi + USB connection
- 3 axis accelerometer
- 2 axis gyroscope
- single axis yaw precision gyro
- induction charging
- light weight carbon structure
- motors + high efficiency propellers
- 10.000 milliampere lithium polymer battery
- safety hull
- 2 x 1080p cameras



Hub's

-Induction charging for quadrocopters.

-Solar panels and high capacity batteries for energy supply and collecting energy.

-A rotating frame for the optimal sun impact on the solar panels.

- GPS sender and receiver.

Posters

- Passive NFC chip

Smartphones

- NFC-chip reader

City network

- Stable city Wi-Fi

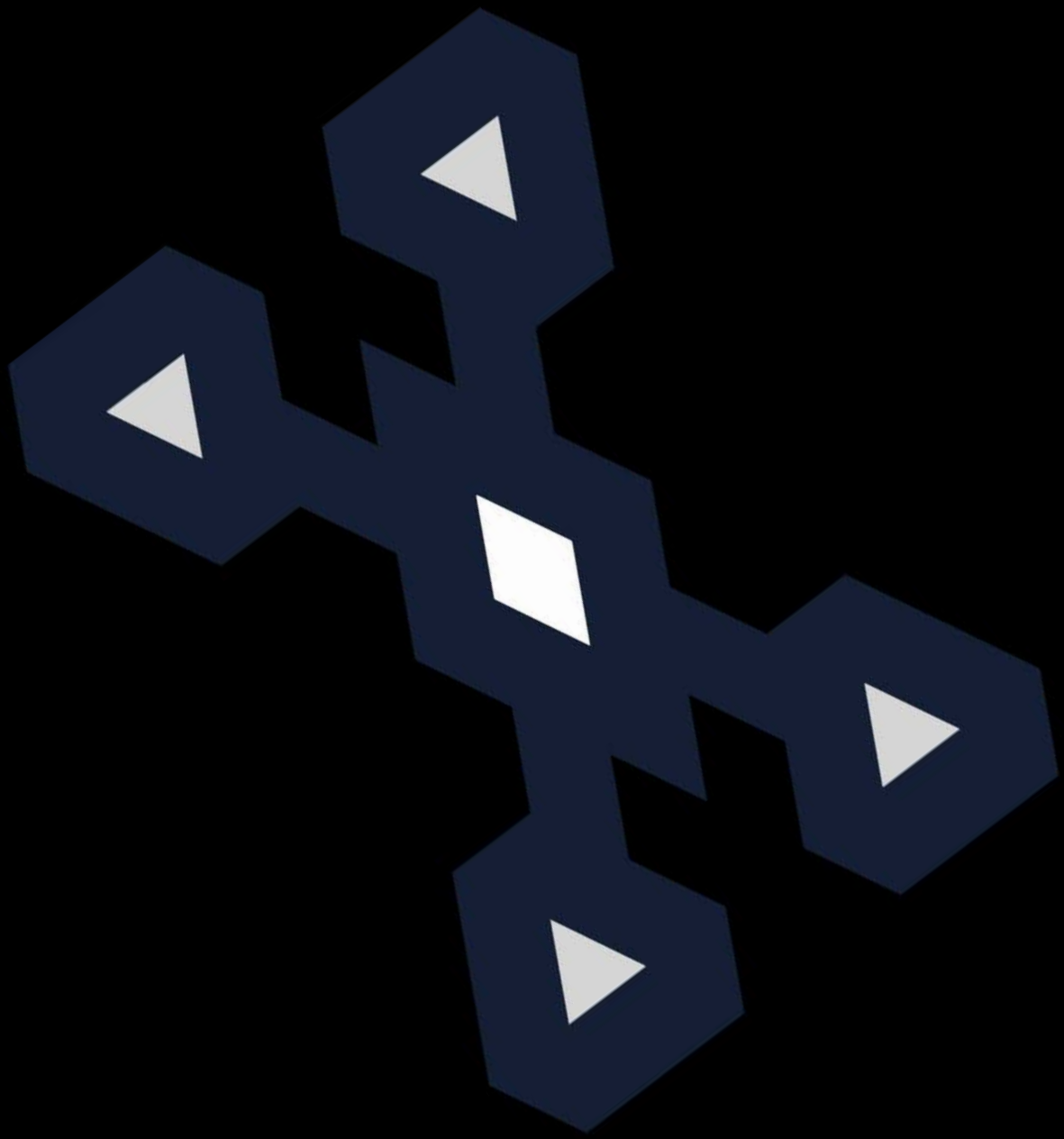
Software

All named hardware needs their own specific software that is able to steer all parts and in addition these software's have to be able to communicate with each other.

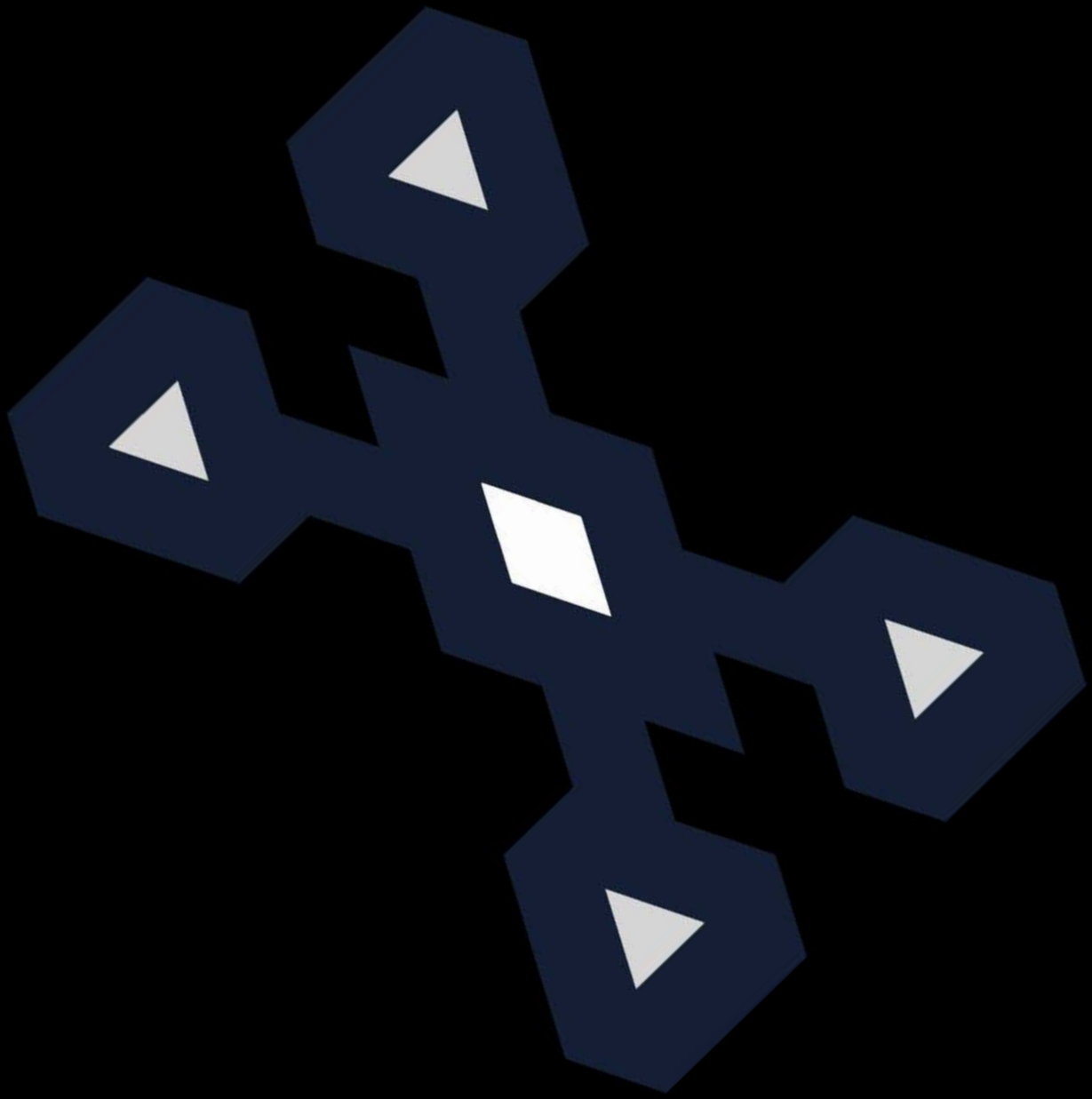
Adaptable system

In order for the concept to work it is necessary that there is a well-distributed network of posters. Overcrowded areas are undesirable.

The usage has to be analyzed daily to be able to adapt the distribution of the quadrocopters. On the long run the quadrocopters should not per definition be connected to a specific poster and hub. The system should work decentralized to reach an optimum of usage by being quickly adaptable to new situations.



USER TEST



USER TEST

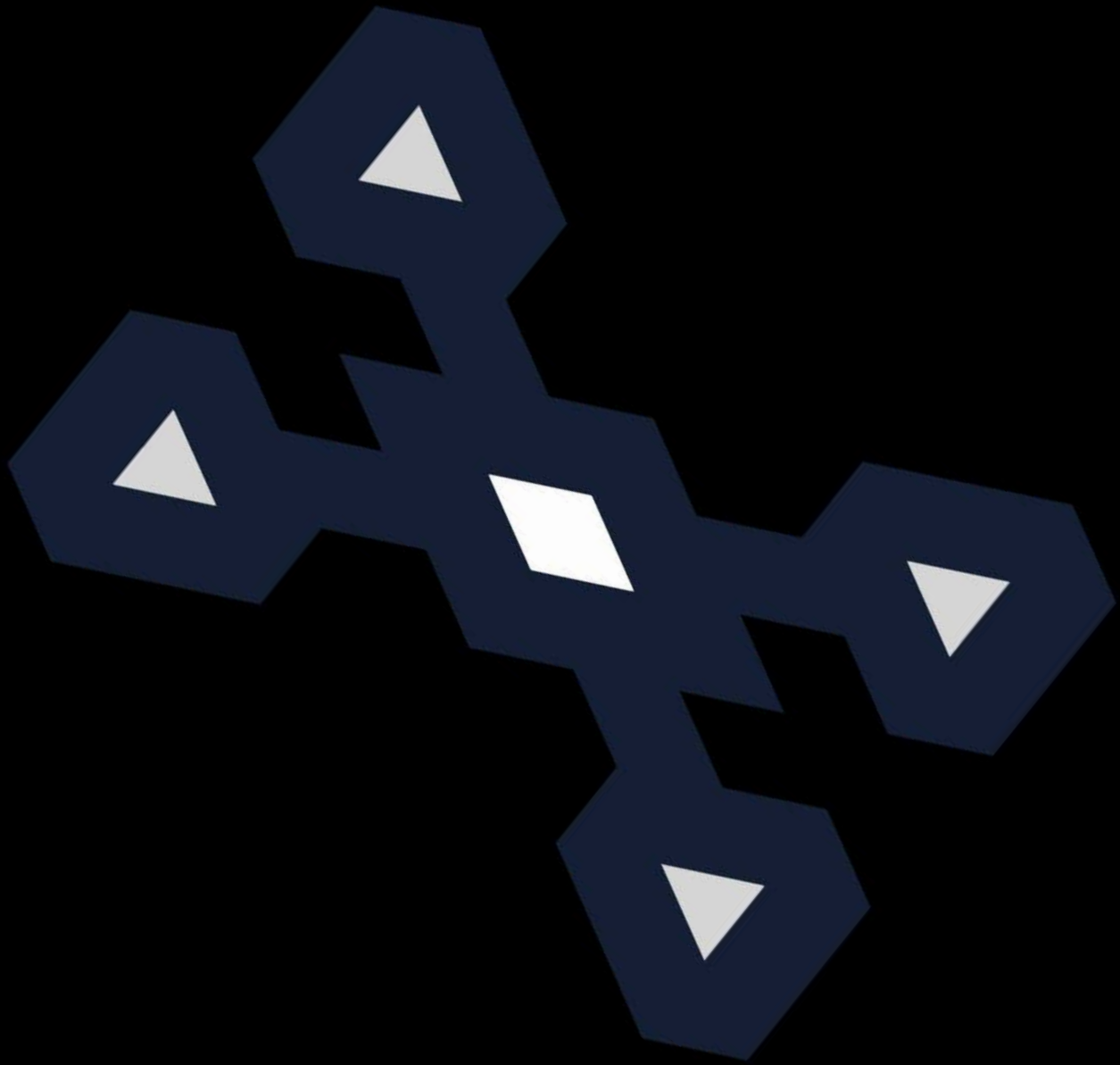
User test

In order to test if exploring the world around you by a quadrocopter is really a fun way to explore; a user test has been done. This user test required only a very minimalistic set up, to examine the core value. Participants had to fly with the quadrocopter for 10 minutes and thereby explore the world around them. After the 10 minutes the following questions were asked.

1. Did the perception of your surrounding change? And how?
2. Did you have fun while exploring?
3. Would you pay for flying around with the quadrocopter?

Concluded can be that the perception significantly changes in positive direction. That the majority, of the questioned people, has fun exploring with the quadrocopter. Only few people would pay for the service, which is an important aspect for the business model.

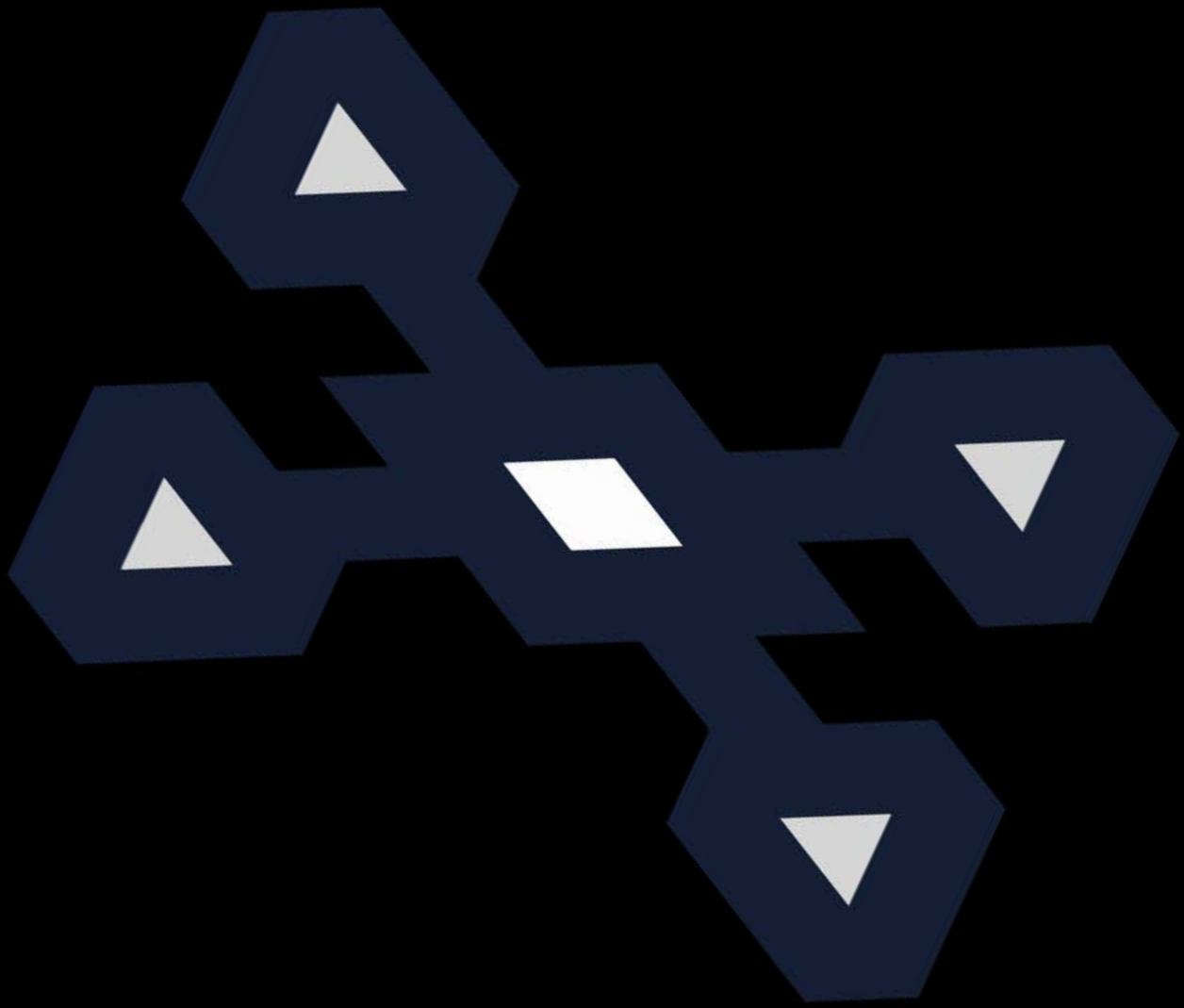
The results of the user test can be seen in appendix D.



BUSINESS MODEL

BUSINESS MODEL

Business model
This business model for the ‘city explorer’ is based on city promotion and tourist attraction. Trying to keep the threshold, for using the ‘city explorer’, as low as possible, by having no price tag for the user, aims for a quick acceptance of the ‘city explorer’. See image 16 for the business model.



The Business Model Canvas

Designed for: City Explorer

Designed by: Ferdinand Ziesemer

On: Day Month Year

Iteration: No.

Key Partners

Who are our Key Partners?
Who are our key suppliers?
Which Key Resources are we acquiring from partners?
Which Key Activities do partners perform?

motivations for partnerships:
Optimization and economy
Reduction of risk and uncertainty
Acquisition of particular resources and activities

- Hardware
  - Drones
  - Hubs
  - Posters
- Advertisements
- City
- House owners
- Shops

Key Activities

What Key Activities do our Value Propositions require?
Our Distribution Channels?
Customer Relationships?
Revenue streams?

categories
Production
Problem Solving
Platform/Network

- Software
- Maintainance
- Distribution

Key Resources

What Key Resources do our Value Propositions require?
Our Distribution Channels? Customer Relationships?
Revenue Streams?

types of resources:
Physical
Intellectual (brand patents, copyrights, data)
Human
Financial

- Drones
- Hubs
- Posters
- Software
- Maintainance
- Engineers

Value Propositions

What value do we deliver to the customer?
Which one of our customer's problems are we helping to solve?
What bundles of products and services are we offering to each Customer Segment?
Which customer needs are we satisfying?

characteristics
Newness
Performance
Customization
"Getting the Job Done"
Design
Brand/ Status
Price
Cost Reduction
Risk Reduction
Accessibility
Convenience/Usability

- Fun way of exploring the city
- Information
- Souveniers

Customer Relationships

What type of relationship does each of our Customer Segments expect us to establish and maintain with them?
Which ones have we established?
How are they integrated with the rest of our business model?
How costly are they?

examples:
Personal assistance
Dedicated Personal Assistance
Self-Service
Automated Services
Communities
Co-creation

- Great user experience

Channels

Through which Channels do our Customer Segments want to be reached?
How are we reaching them now?
How are our Channels integrated?
Which ones work best?
Which ones are most cost-efficient?
How are we integrating them with customer routines?

channel phases:
1. Awareness
How do we raise awareness about our company's products and services?
2. Evaluation
How do we help customers evaluate our organization's Value Propositions?
3. Purchase
How do we allow customers to purchase specific products and services?
4. Delivery
How do we deliver a Value Proposition to customers?
5. After-sales
How do we provide post-purchase customer support?

- Advertisements
- Word of mouth communication

Customer Segments

For whom are we creating value?
Who are our most important customers?

Mass Market
Niche Market
Segmented
Diversified
Multi-sided Platforms

- Tourists
- City users

Cost Structure

What are the most important costs inherent in our business model?
Which Key Resources are most expensive?
Which Key Activities are most expensive?

is your business more:
Cost Driven (leanest cost structure, low price value proposition, maximum automation, extensive outsourcing)
Value Driven (focused on value creation, premium value proposition)

sample characteristics:
Fixed Costs (salaries, rents, utilities)
Variable costs
Economies of scale
Economies of scope

- Rent
- Hardware
- Salaries

Revenue Streams

For what value are our customers really willing to pay?
For what do they currently pay?
How are they currently paying?
How would they prefer to pay?
How much does each Revenue Stream contribute to overall revenues?

types:
Asset sale
Usage fee
Subscription Fees
Lending/Renting/Leasing
Licensing
Brokerage fees
Advertising

FIXED PRICING
List Price
Product feature dependent
Customer segment dependent
Volume dependent

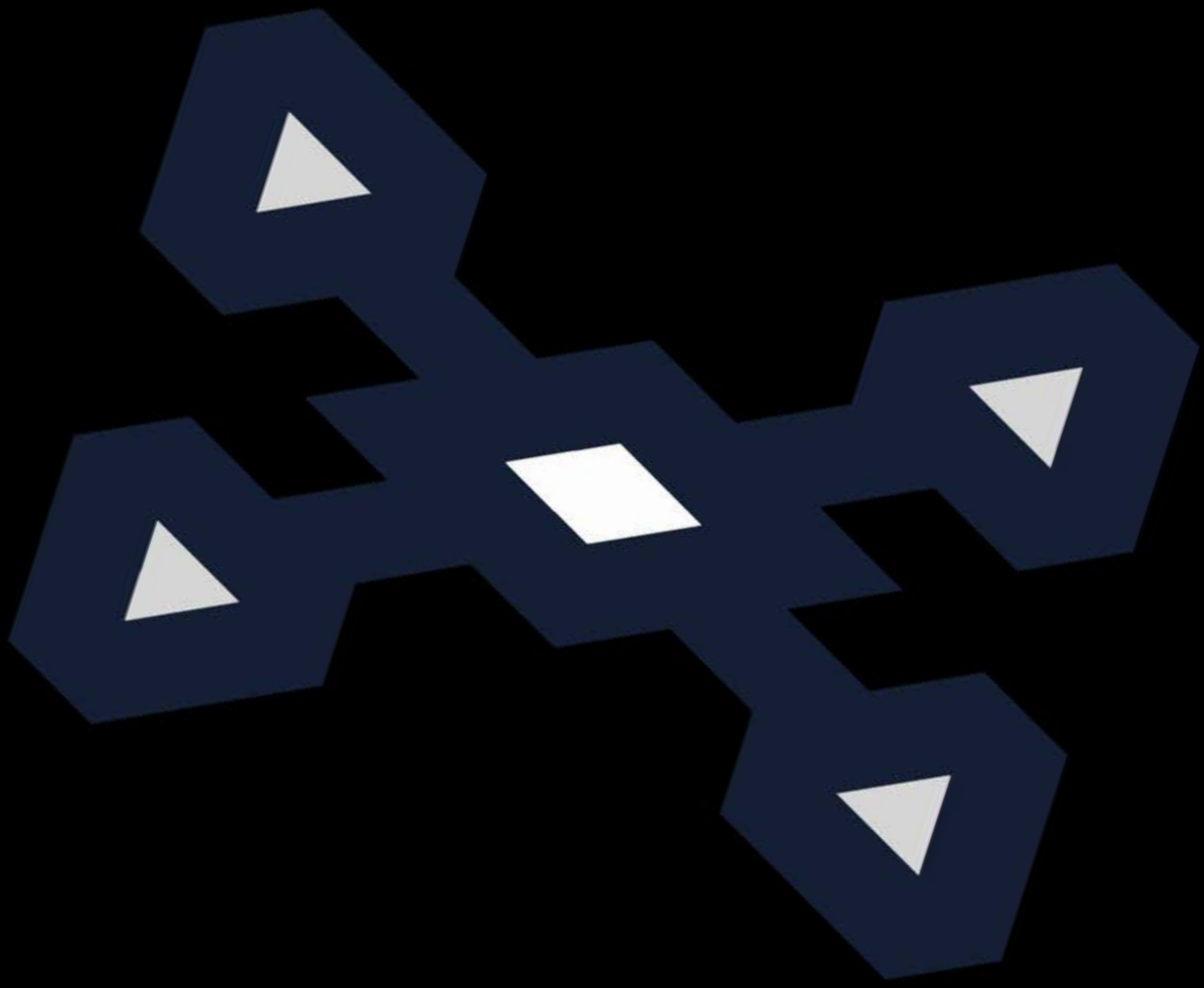
DYNAMIC PRICING
Negotiation (bargaining)
Yield Management
Real-time-Market

- Advertising for stores and cities
- Renting out for city events

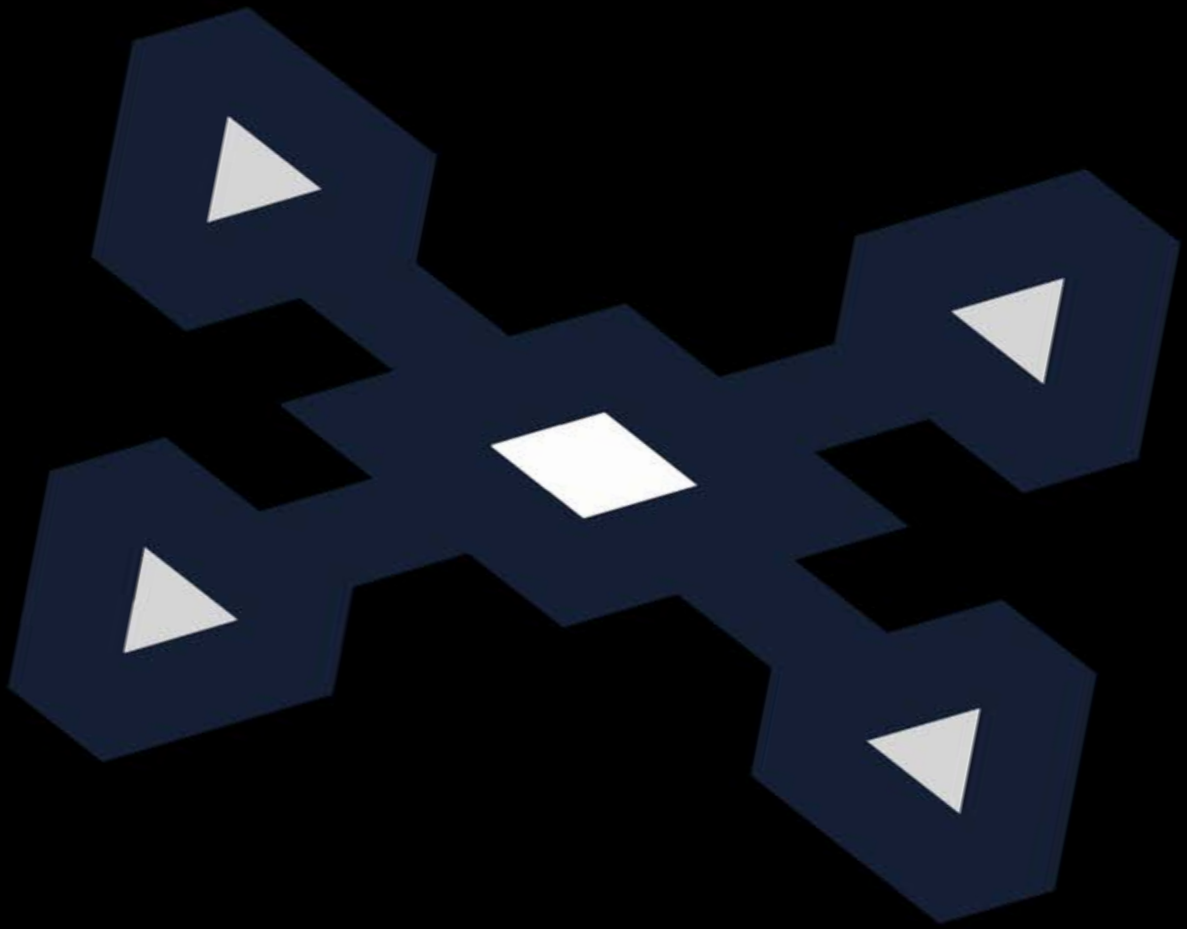
www.businessmodelgeneration.com

This work is licensed under the Creative Commons Attribution-Share Alike 3.0 Unported License.
To view a copy of this license, visit http://creativecommons.org/licenses/by-sa/3.0/
or send a letter to Creative Commons, 171 Second Street, Suite 300, San Francisco, California, 94105, USA.

Image 16: business model for ‘City Explorer‘.



FUTURE



FUTURE

Discussion & Conclusion

The big overlaying question that appears to lie on this project and especially within the relation of the vision and the concept is, do the restrictions within the concept contradict too much with the vision.

The vision states that the physical equivalent of, or an alternative to a function of, the digital world needs to be a serving system that serves the user and thereby creates a more supportive environment for modern and futuristic technologies to be accepted and thereby shape society.

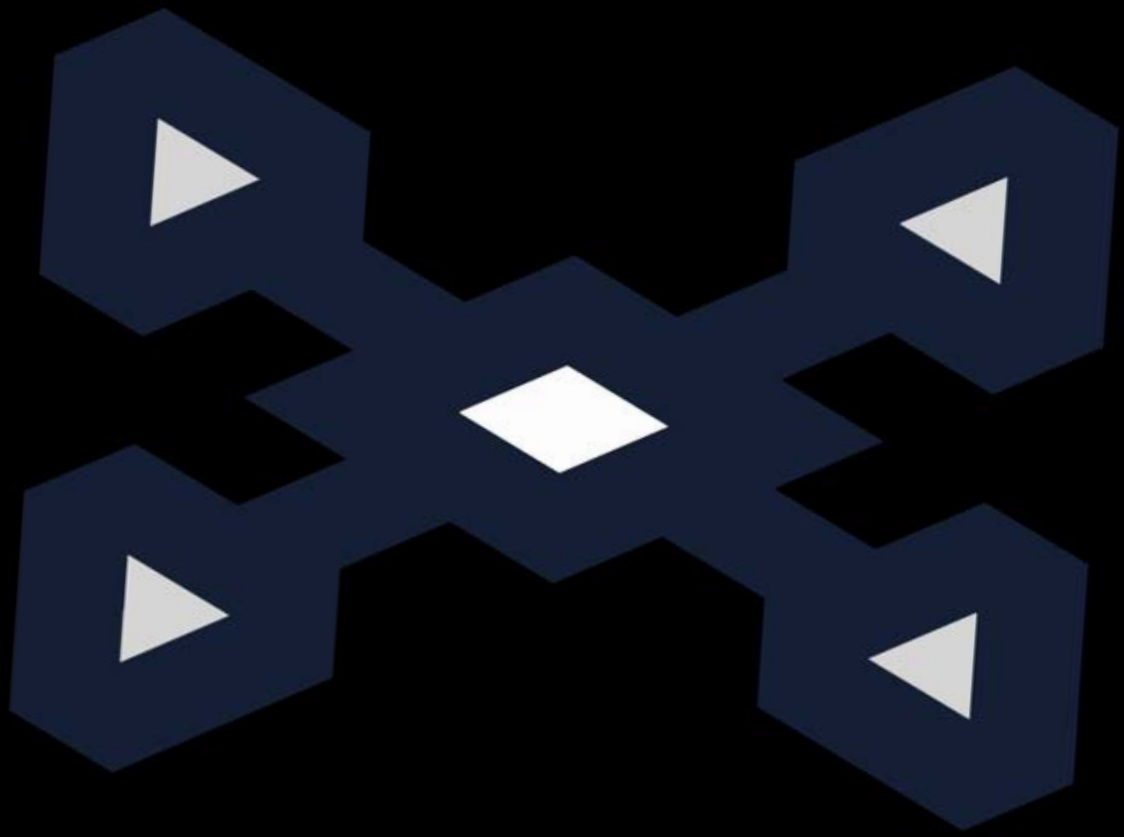
Within the concept several restrictions are set up, technological restrictions, privacy restrictions, safety restrictions and flying restrictions.

Is the contradiction too big?

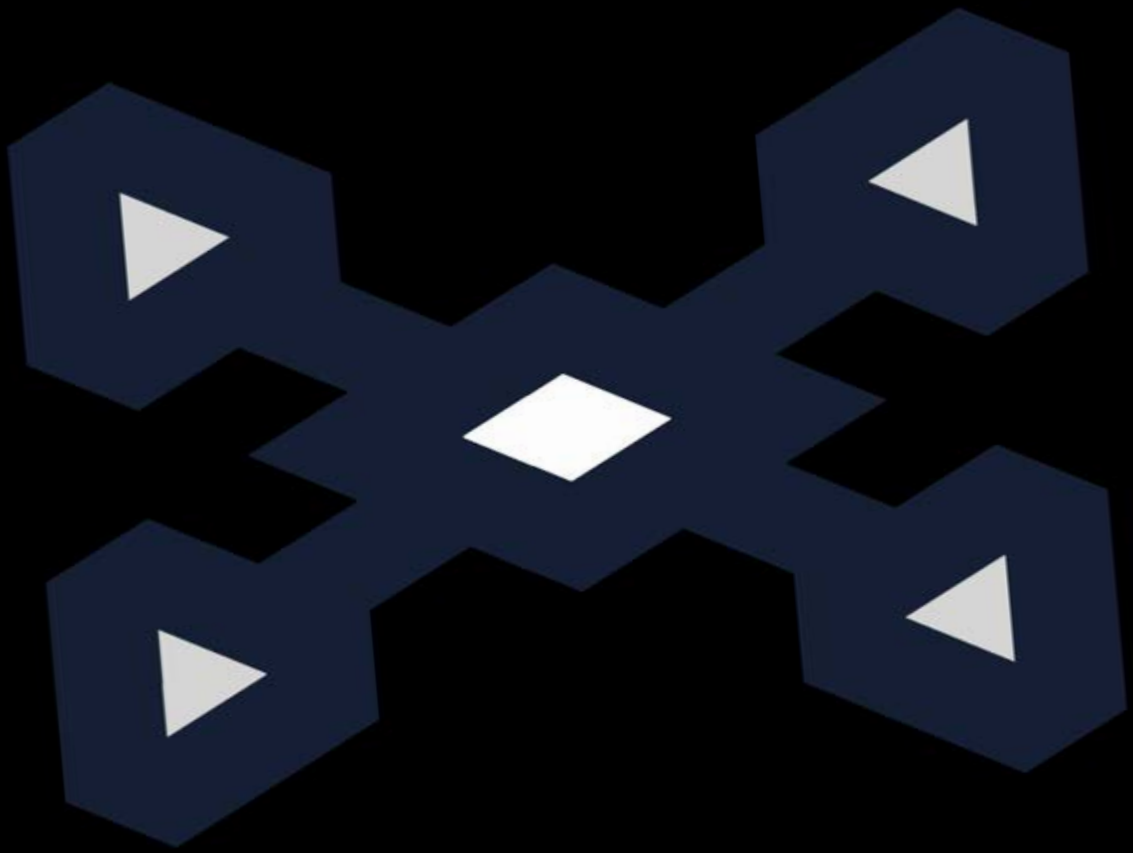
Seeing that the purpose of the restrictions is partly to support the usability, create safety or prevent from scandals, can be concluded that these are positively constructive restrictions that help to reach a bigger goal of creating a new era of acceptance of technology. Reaching the point that the restrictions of this moment are accepted would mean that an even higher level of acceptance has achieved.

Future developments

- Developing the needed quadrocopter.
- Developing the Hubs in detail.
- Developing the connections between the hardware (software).
- Further research on acceptance of the concept.
- Detailing the concept with additional iterations.
- Develop new possibilities like Games, to enlarge the action possibilities.

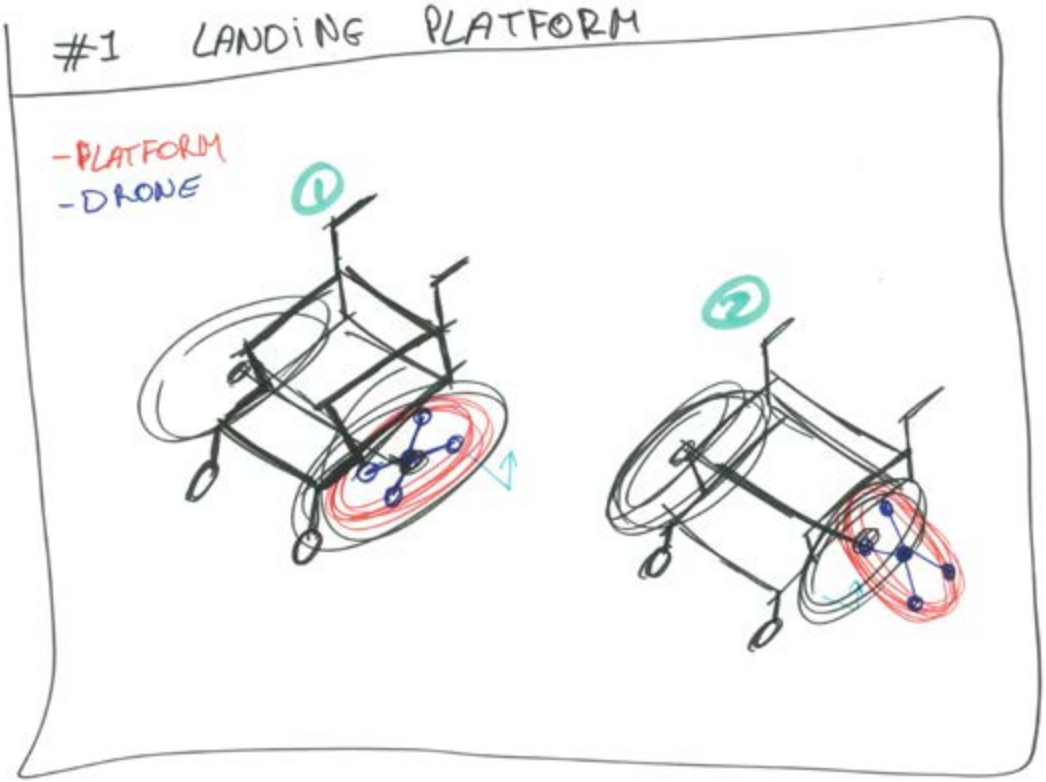


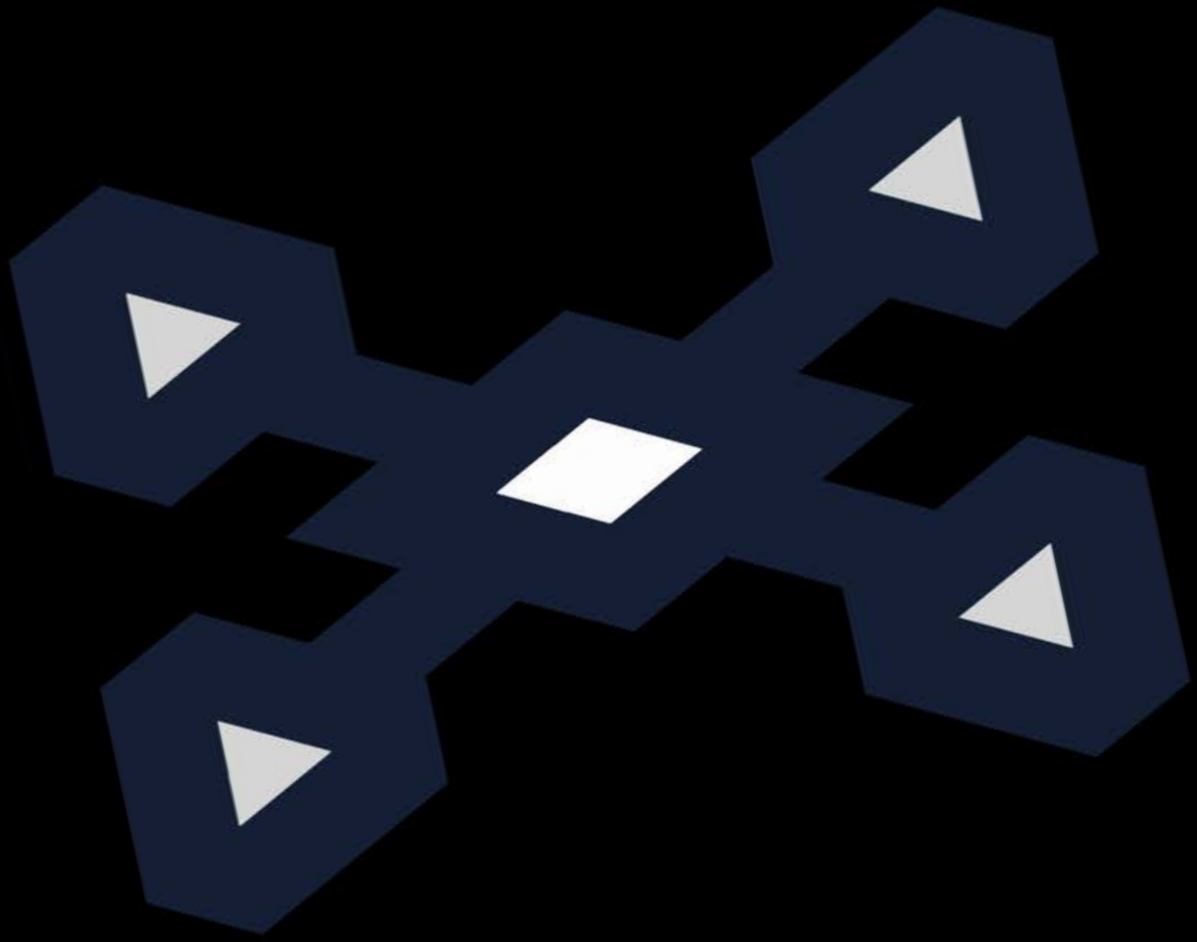
APPENDIX

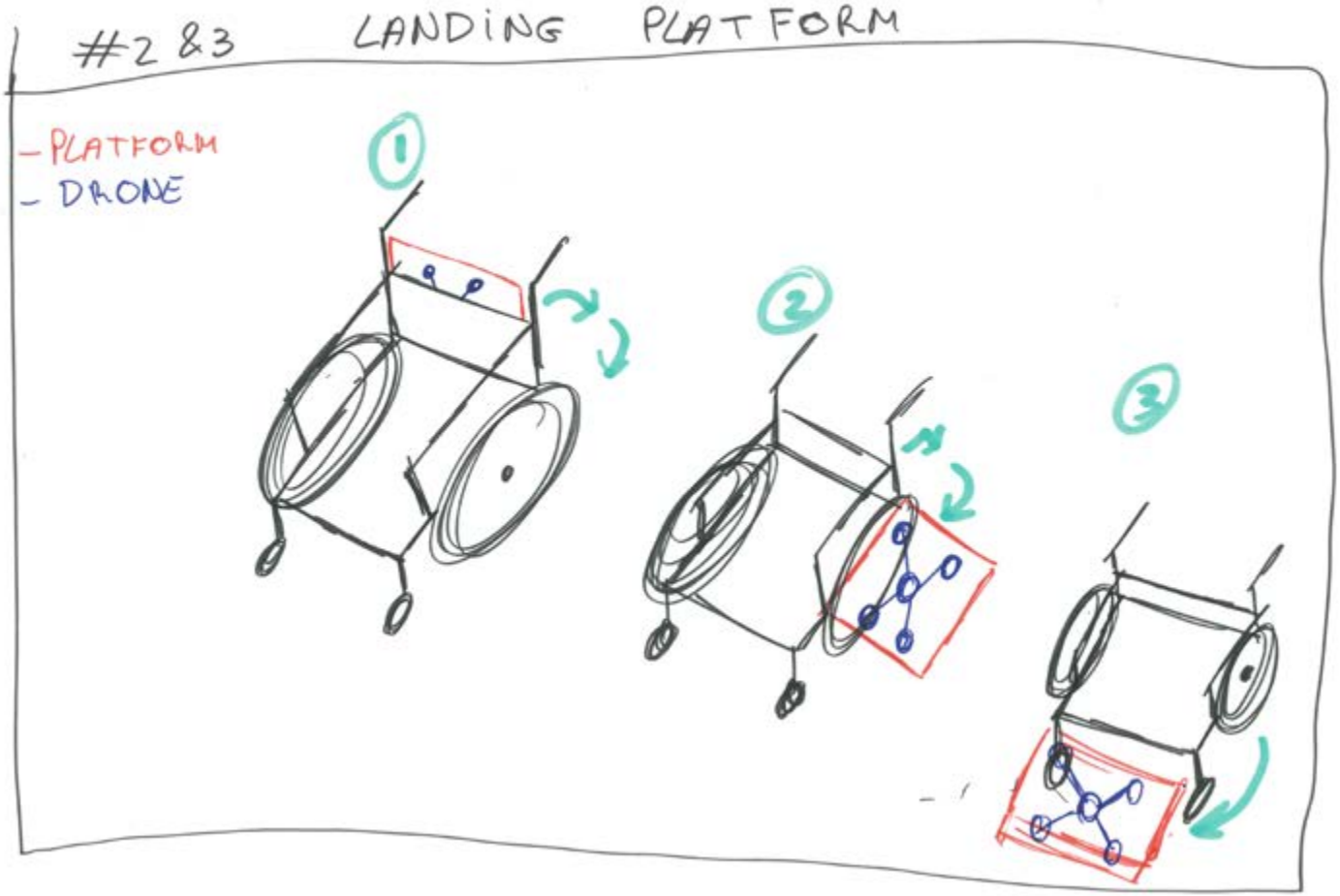


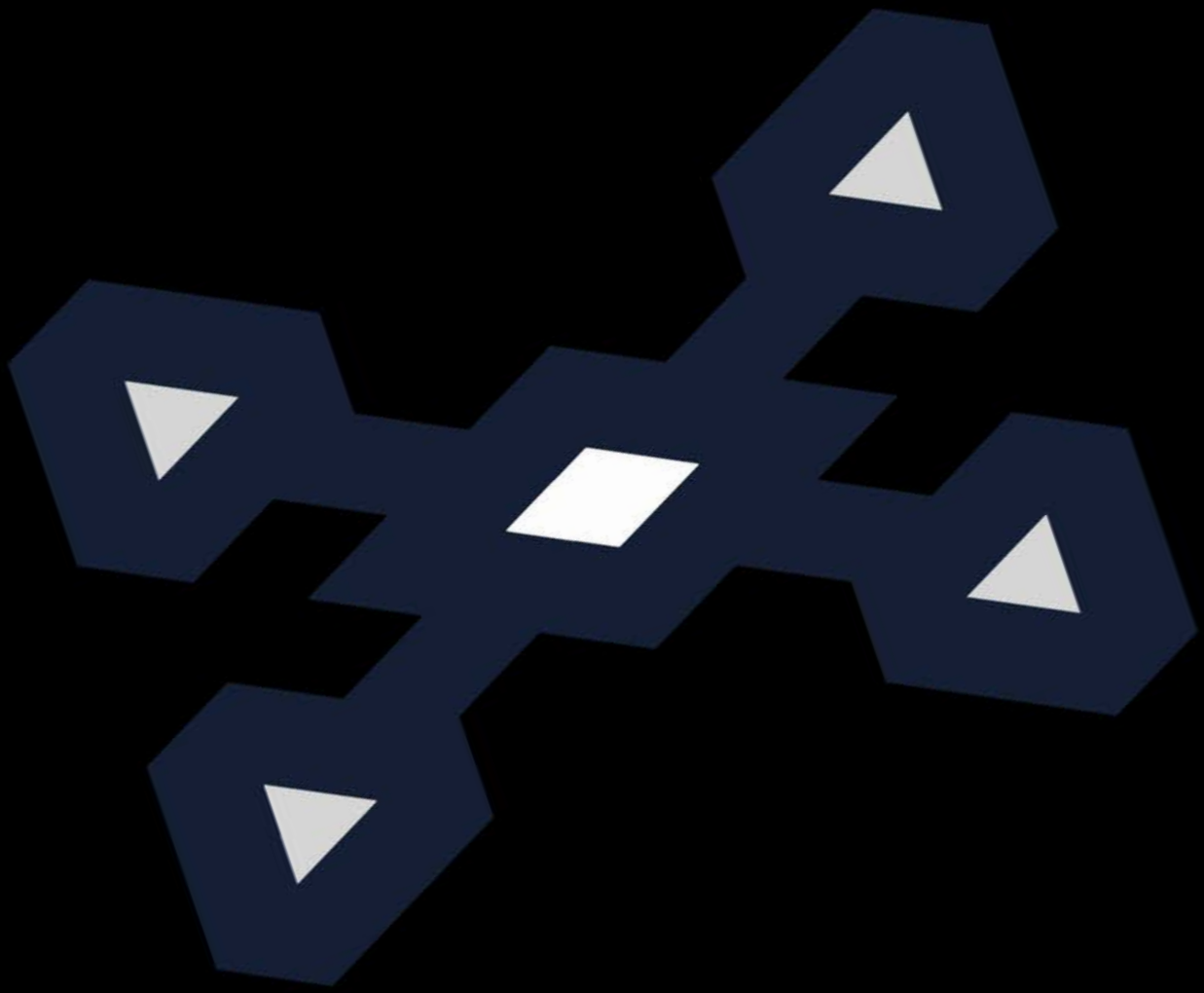
APPENDIX A

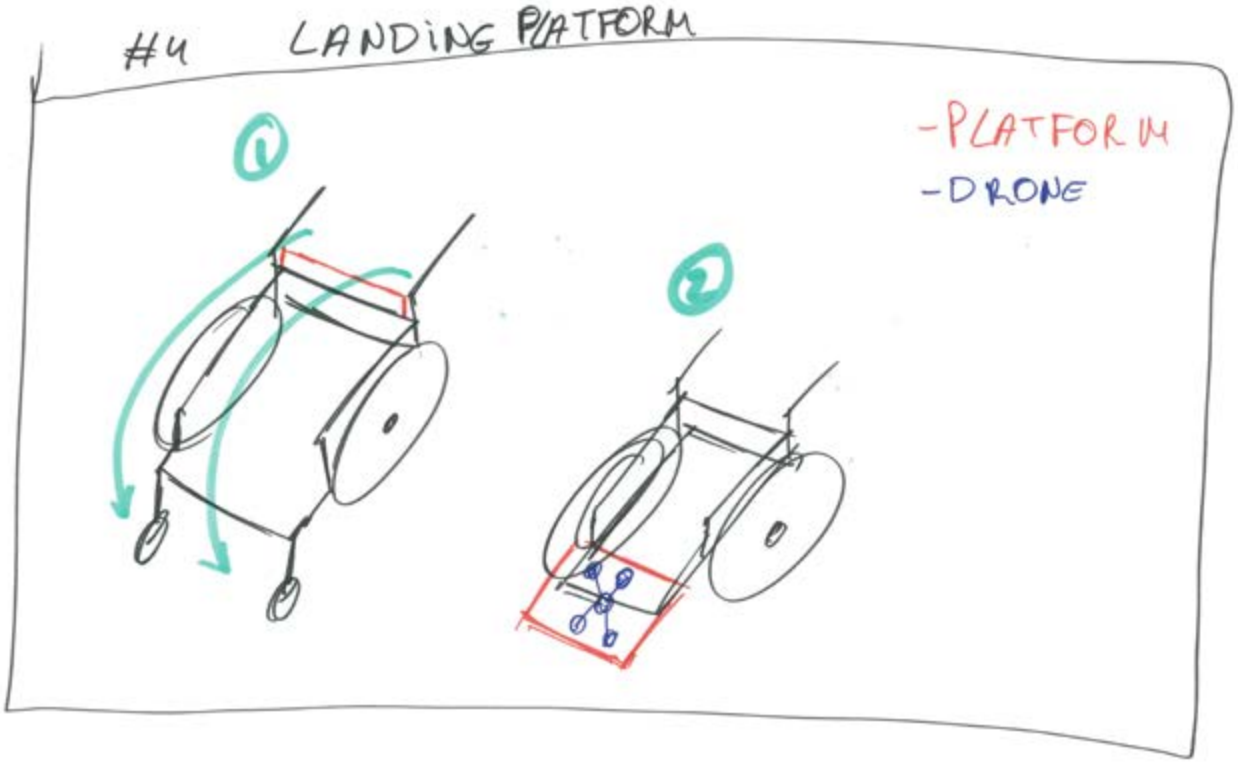
Explorations on wheelchair drone platform 1/4

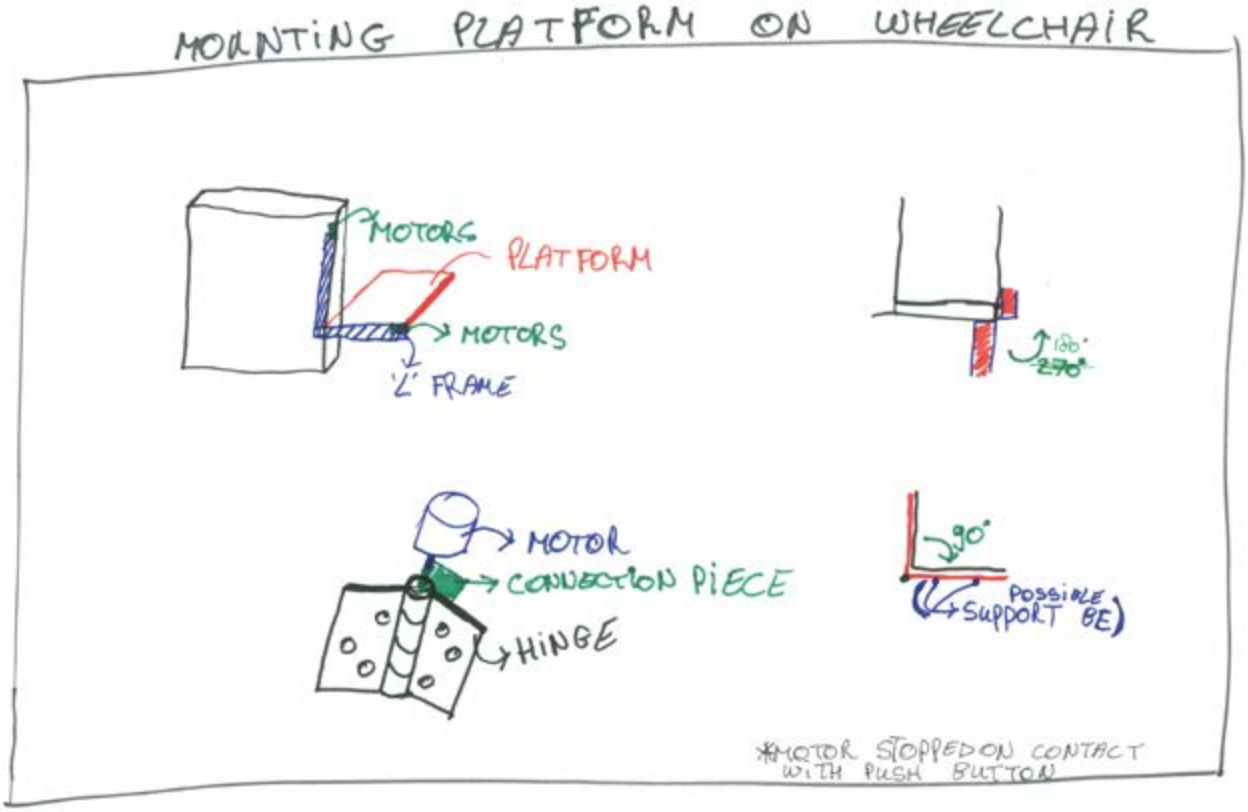


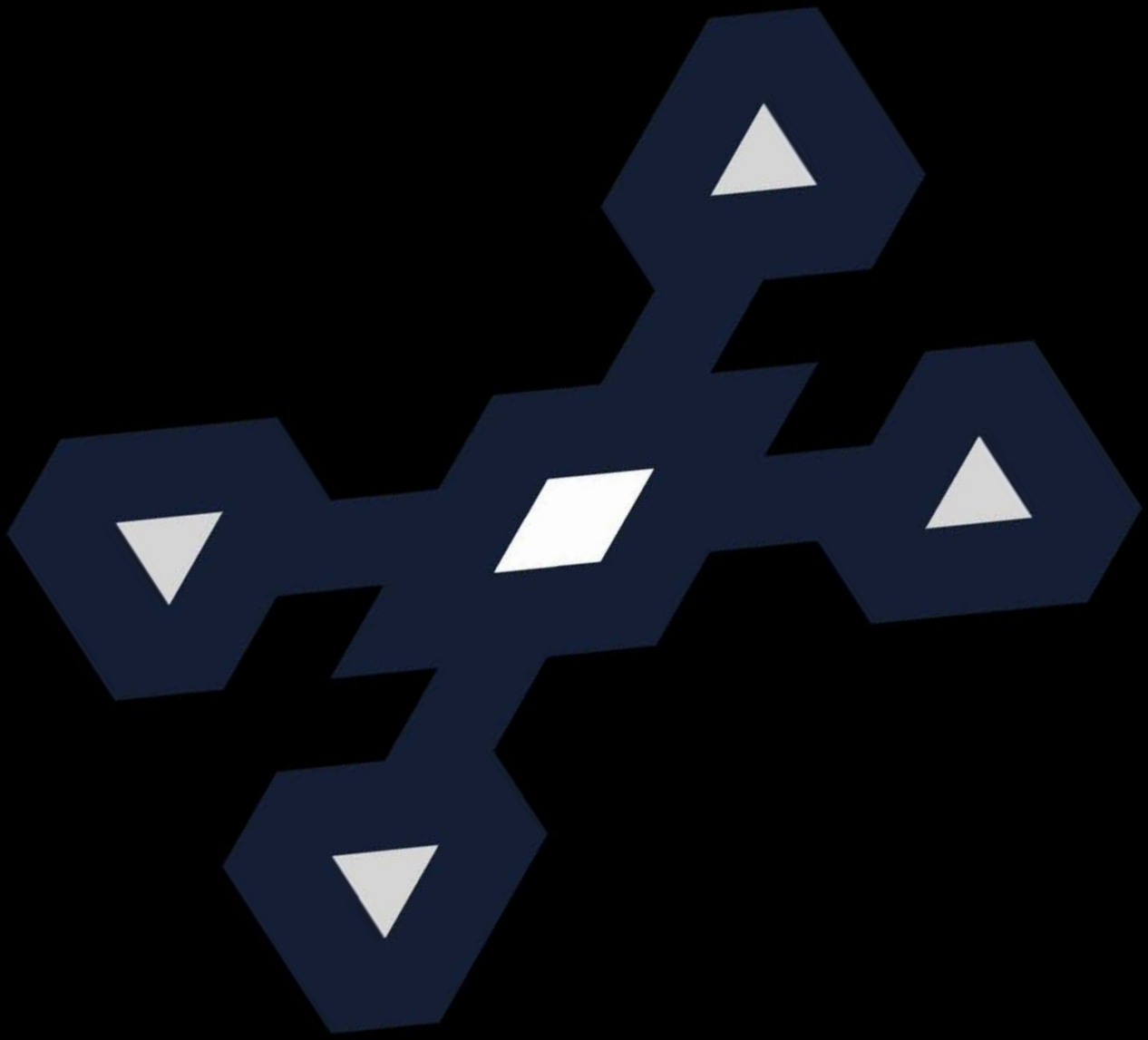



#2 &3 LANDING PLATFORM
- PLATFORM
- DRONE
1
2
3



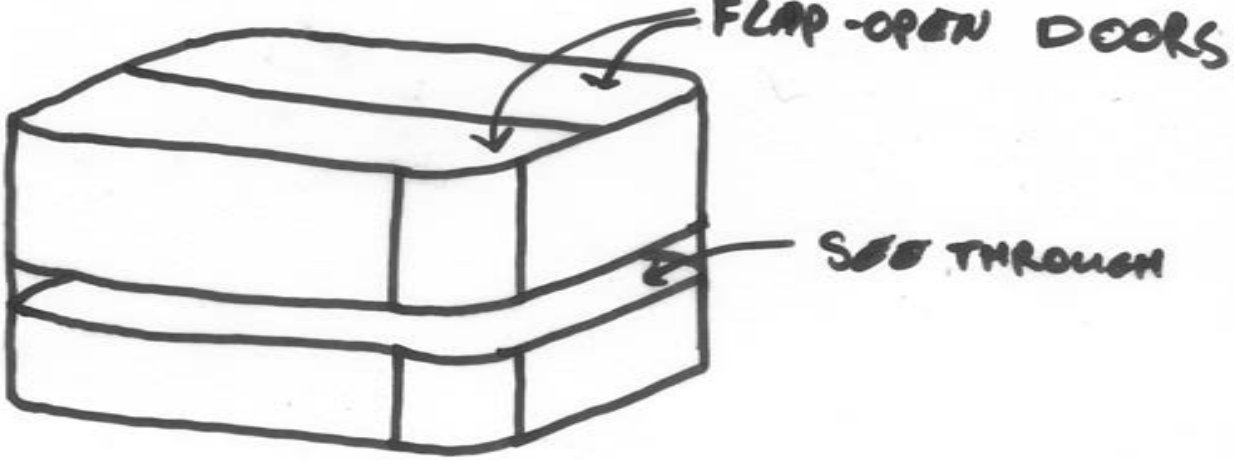

#4 LANDING PLATFORM
1
2
-PLATFORM
-DRONE

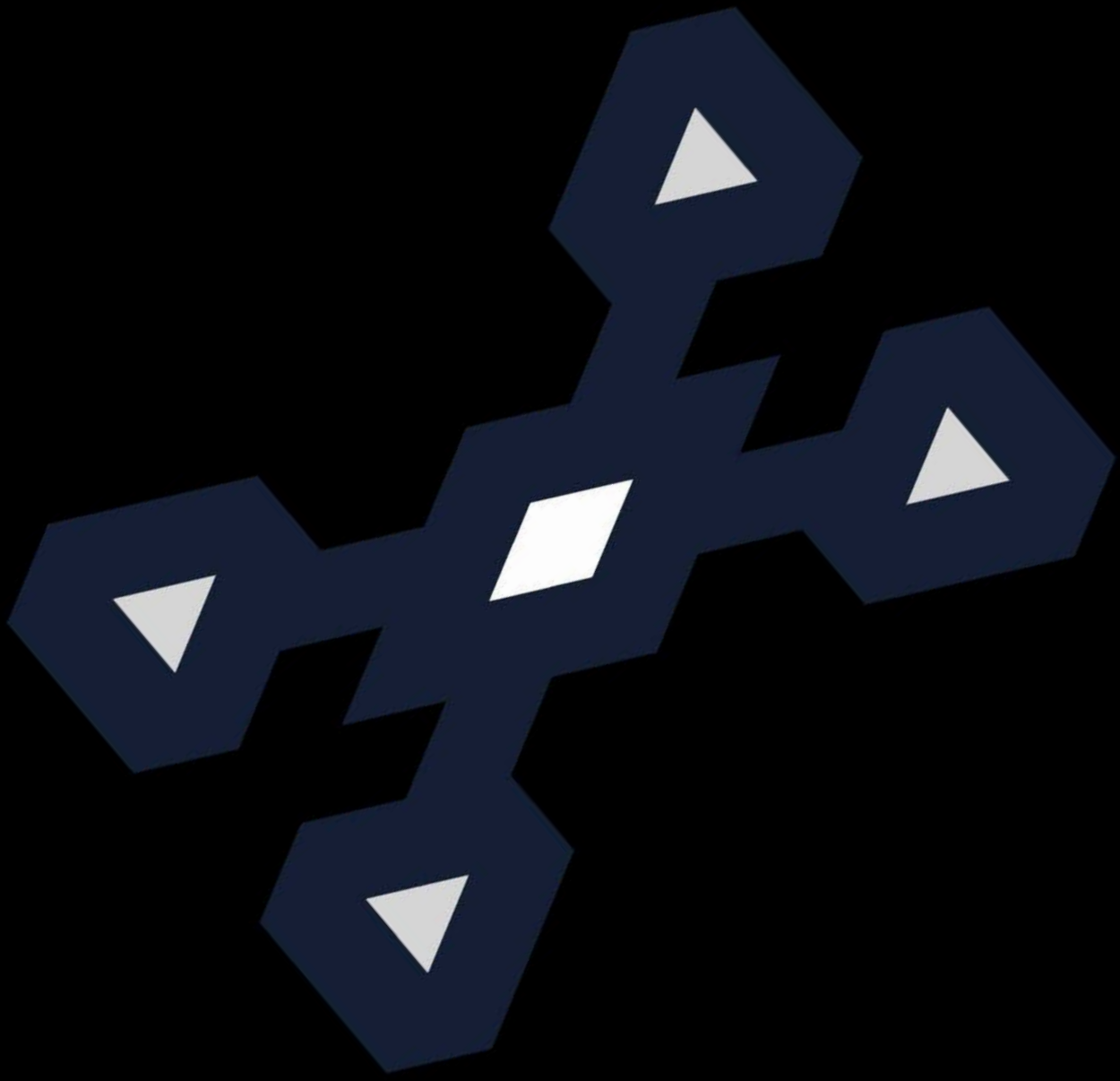

MOUNTING PLATFORM ON WHEELCHAIR
MOTORS
PLATFORM
MOTORS
'L' FRAME
180°
270°
MOTOR
CONNECTION PIECE
HINGE
90°
POSSIBLE SUPPORT BE)
*MOTOR STOPPED ON CONTACT WITH PUSH BUTTON



APPENDIX B

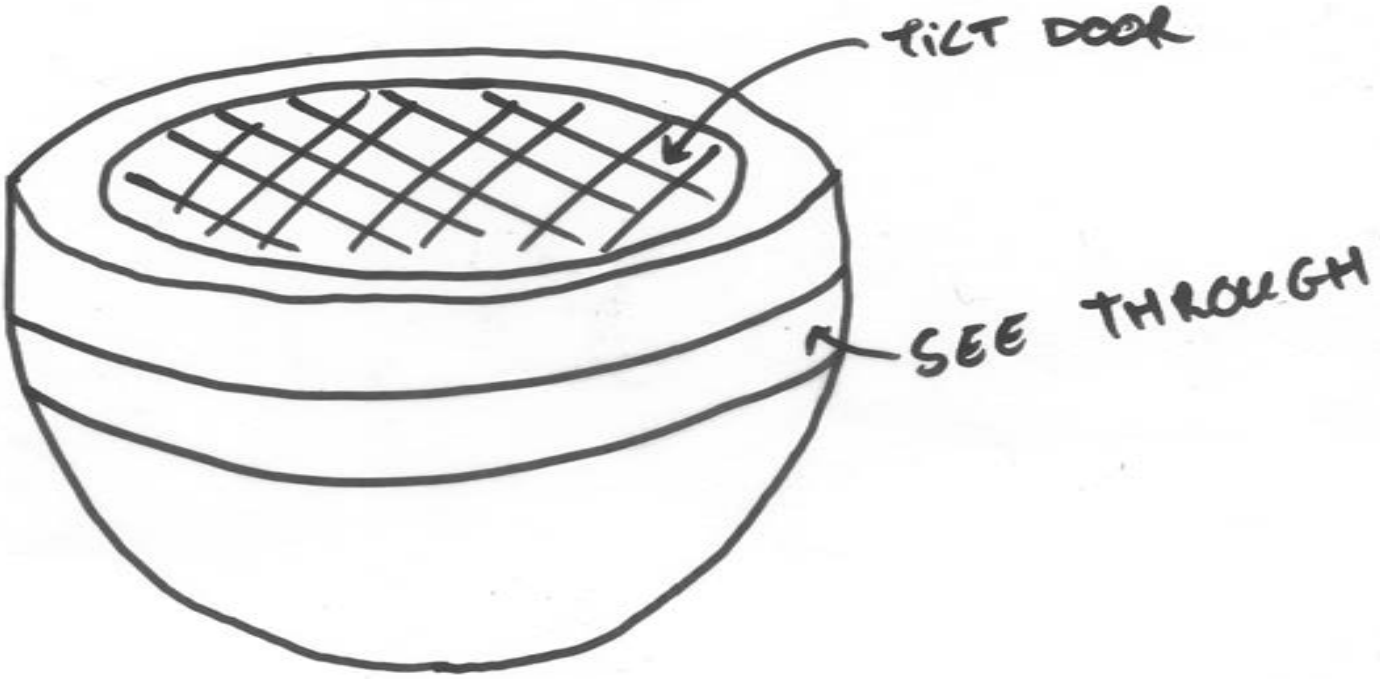
Hub form development 1/4

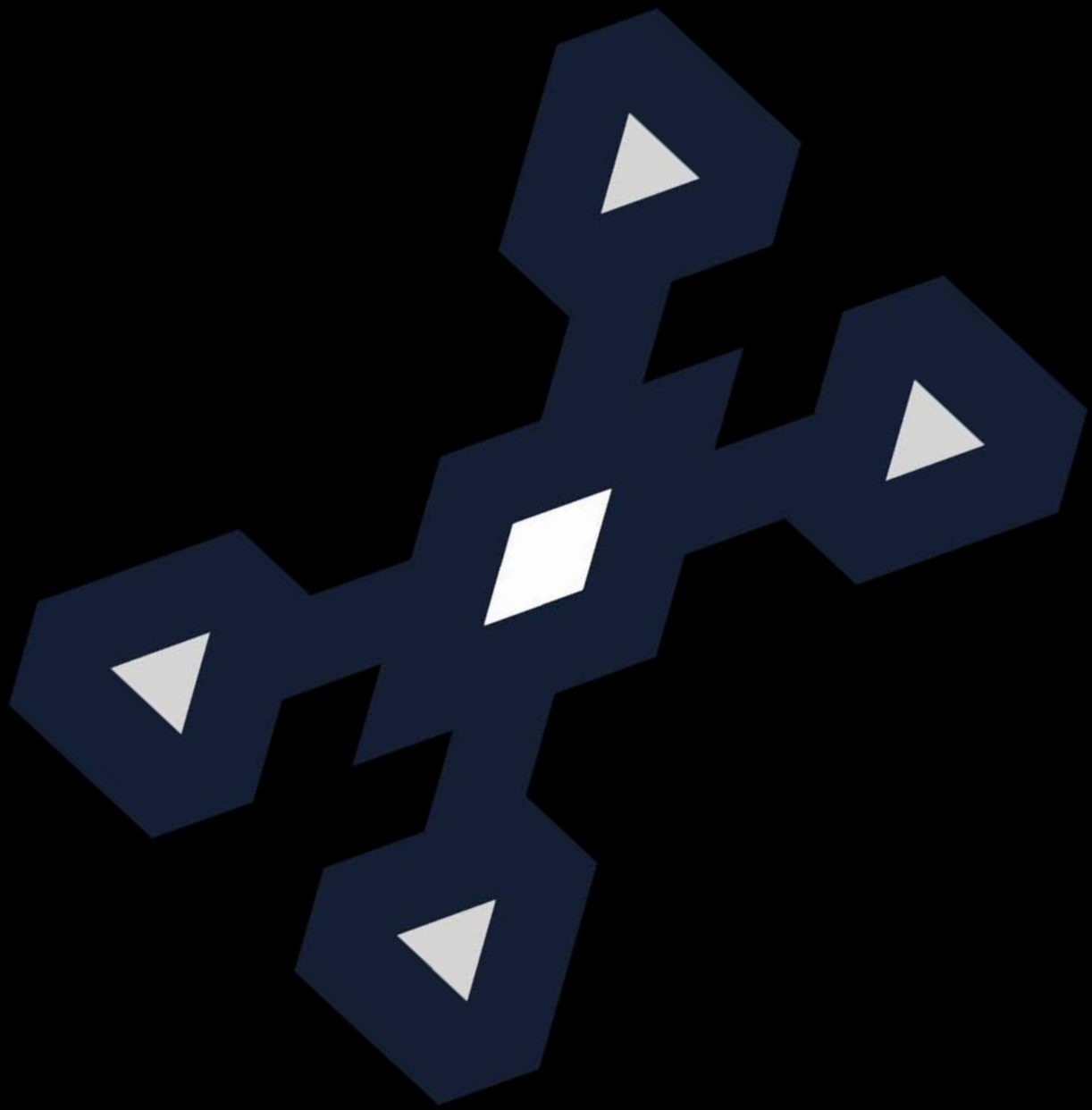




APPENDIX B

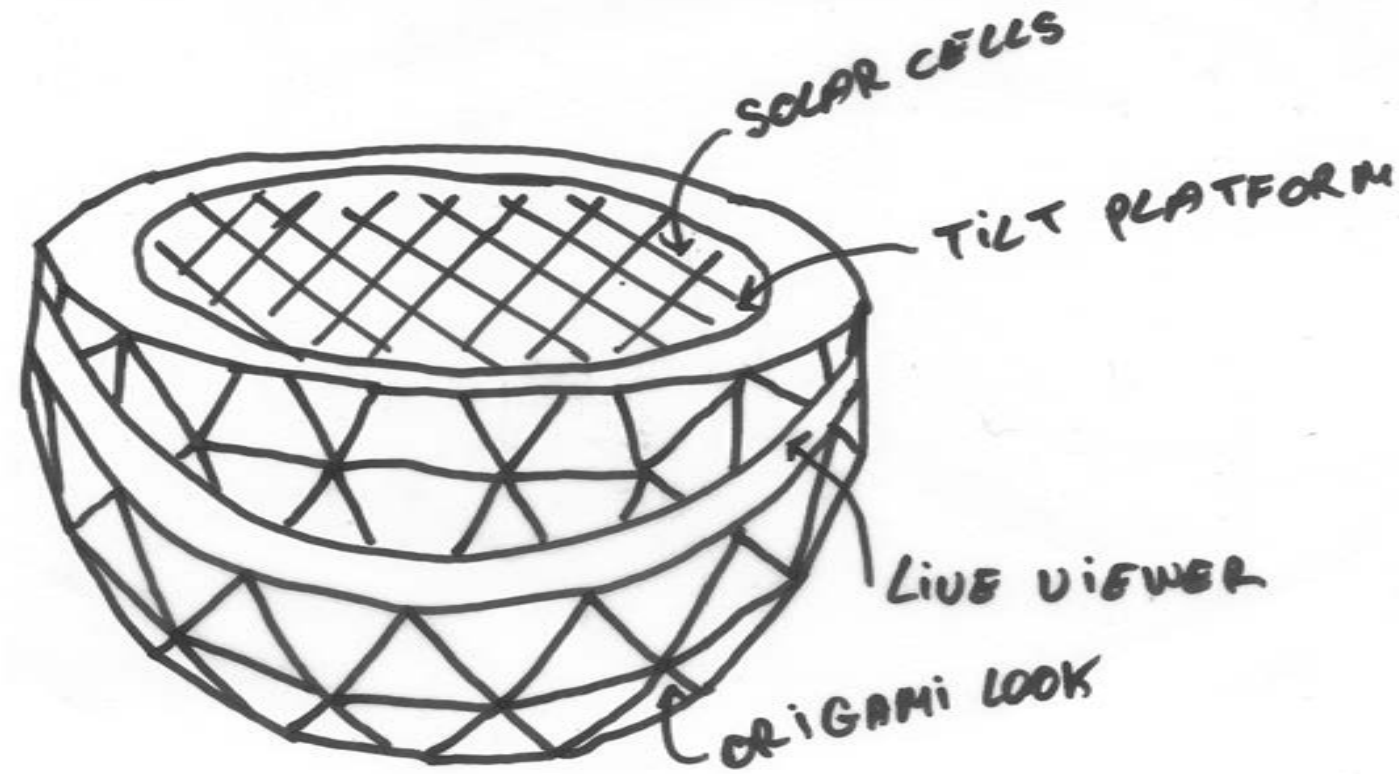
Hub form development 2/4

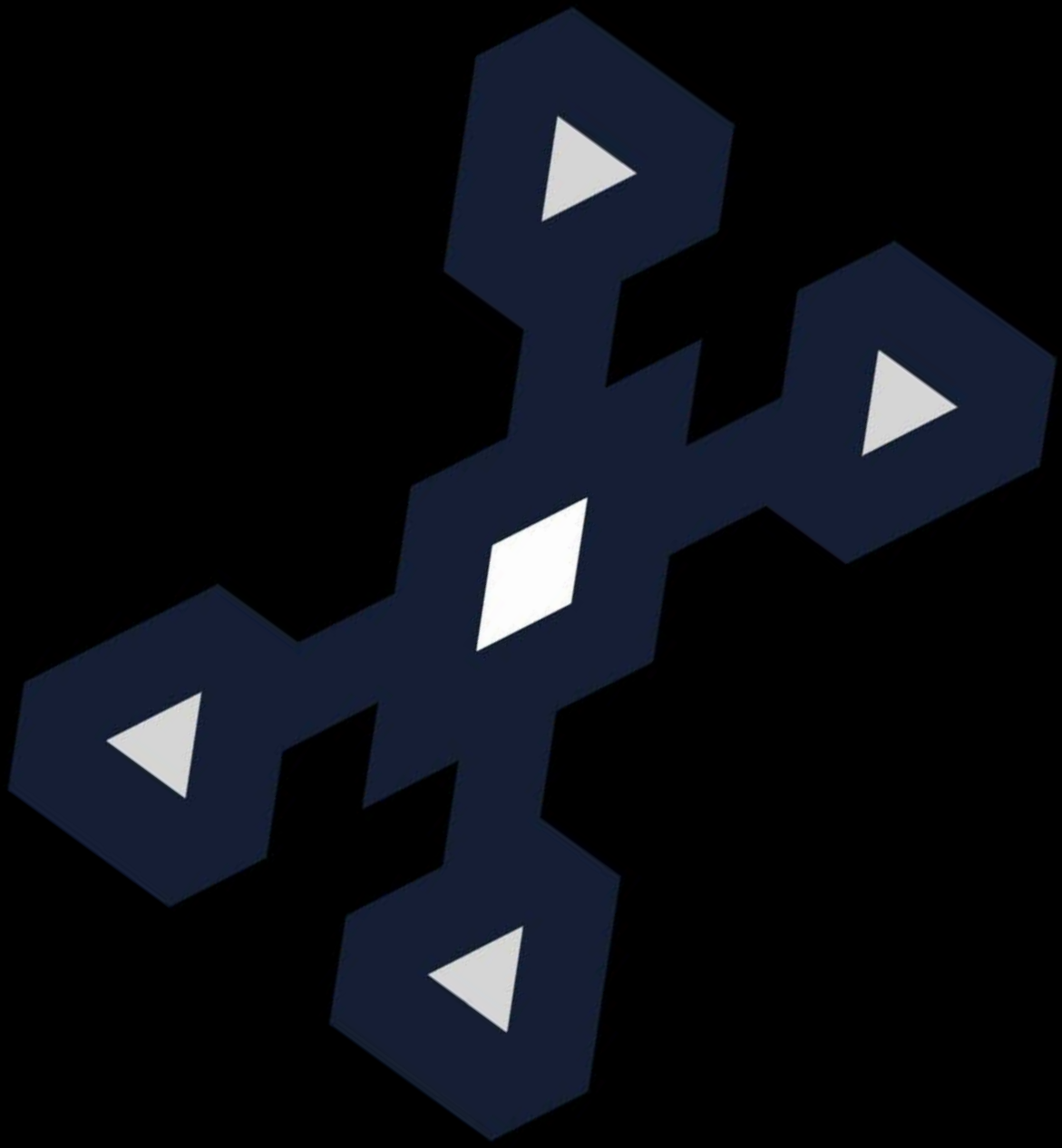




APPENDIX B

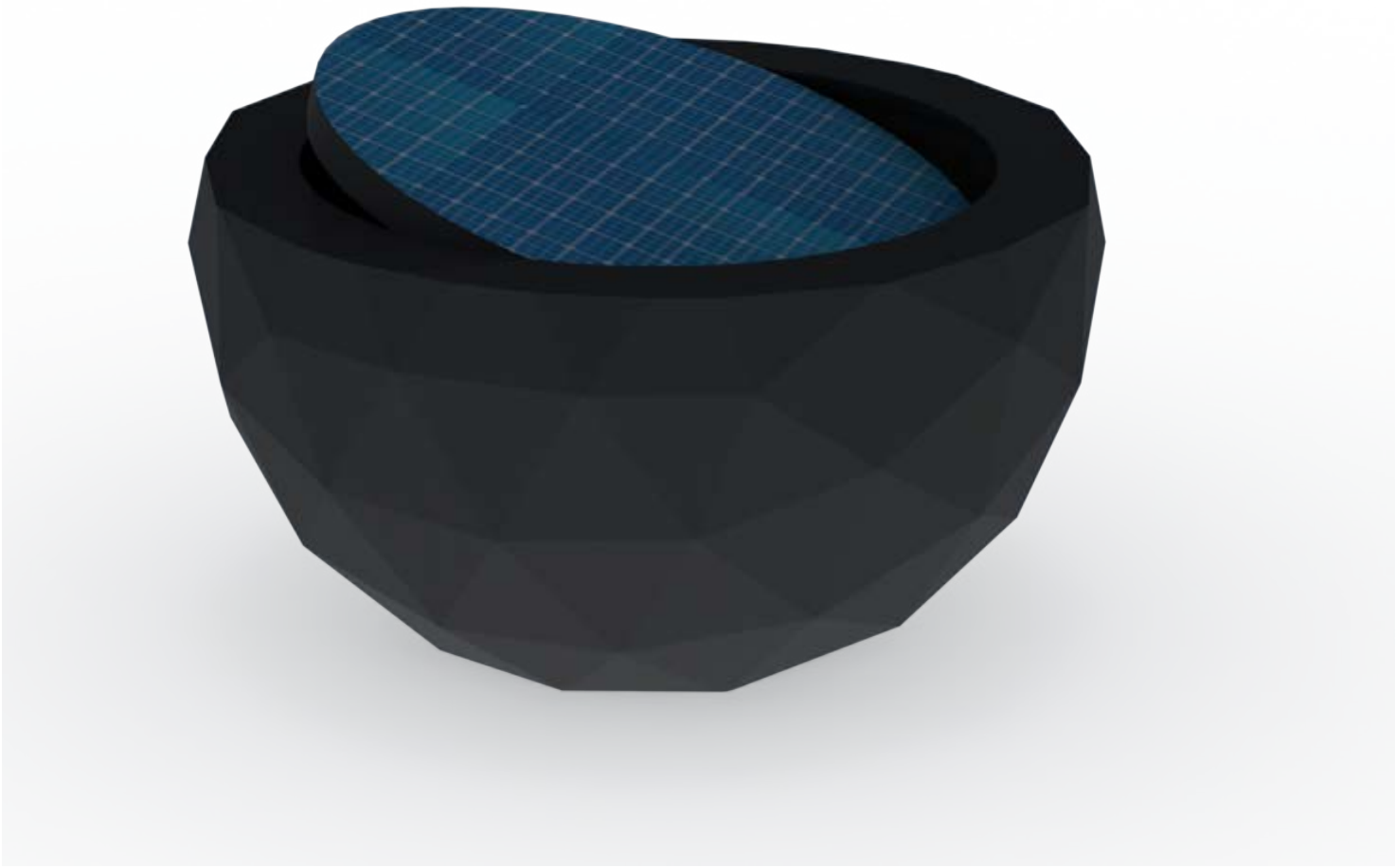
Hub form development 3/4





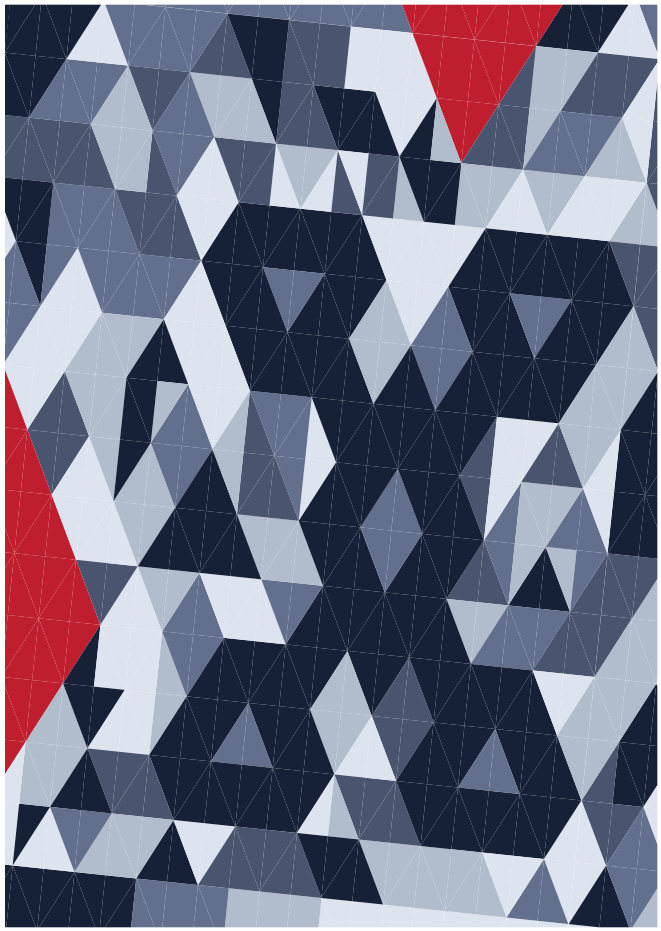
APPENDIX B

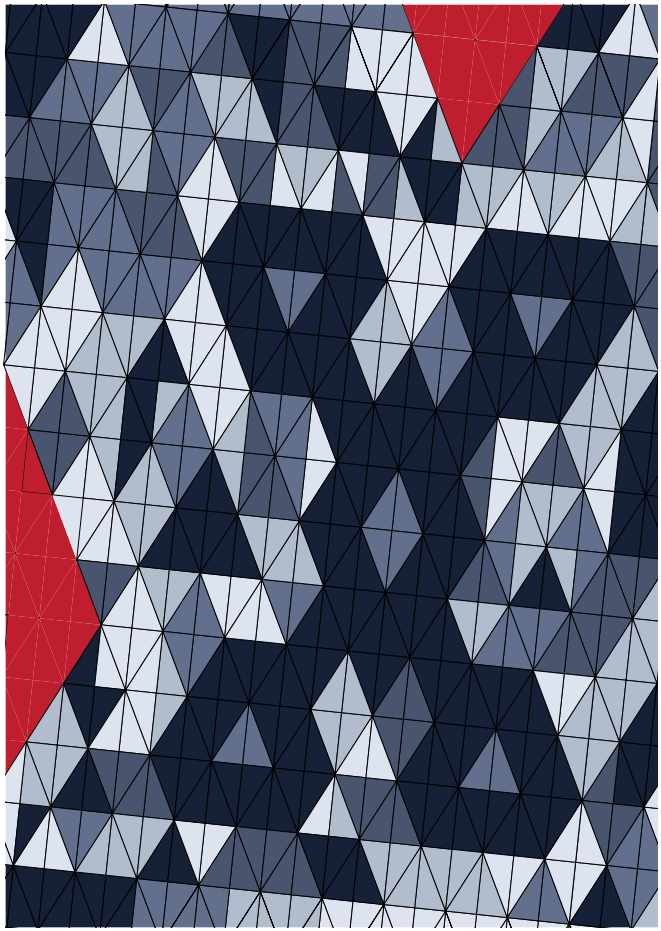
Hub form development 4/4

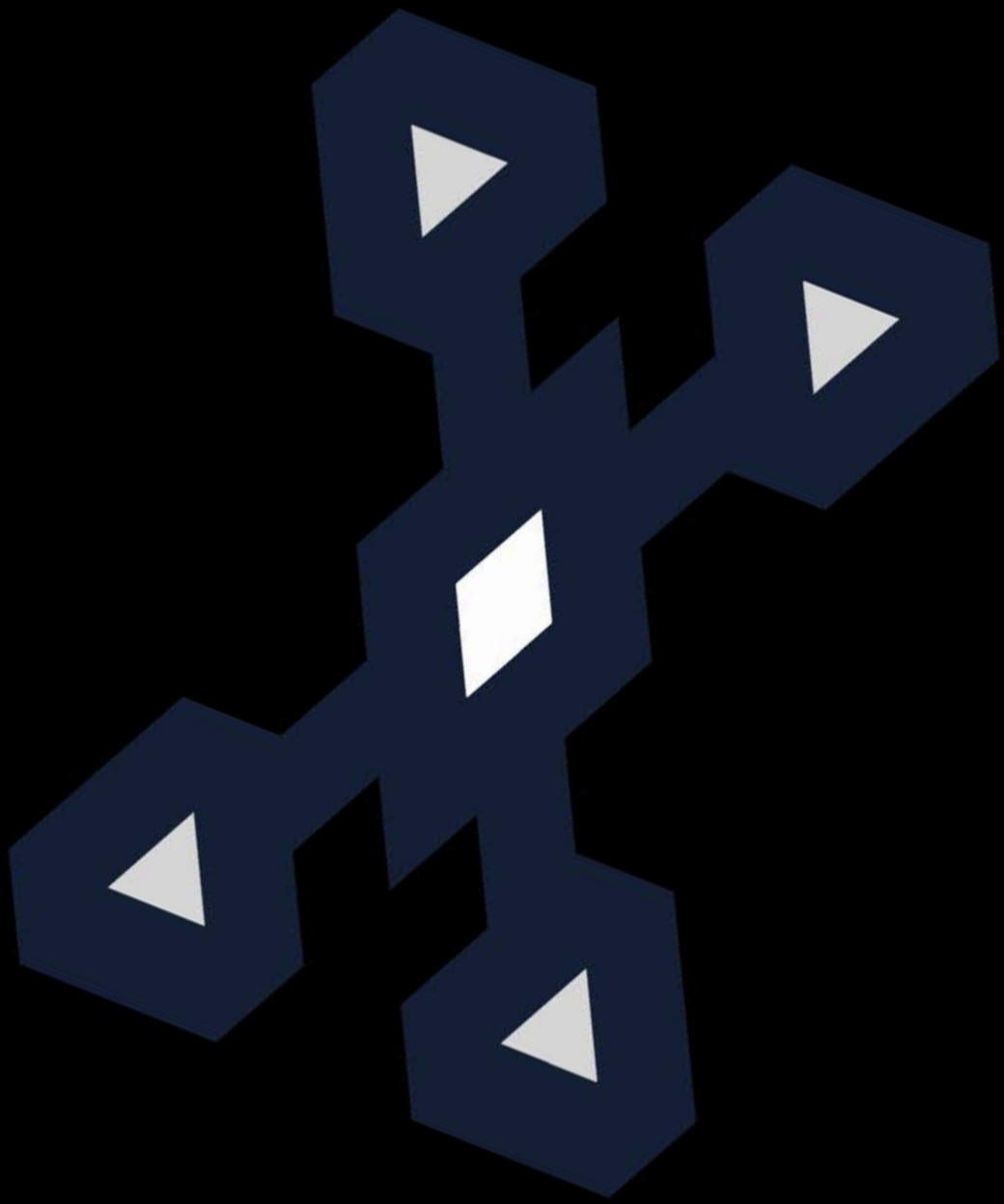


APPENDIX C

Poster tryouts 1/3

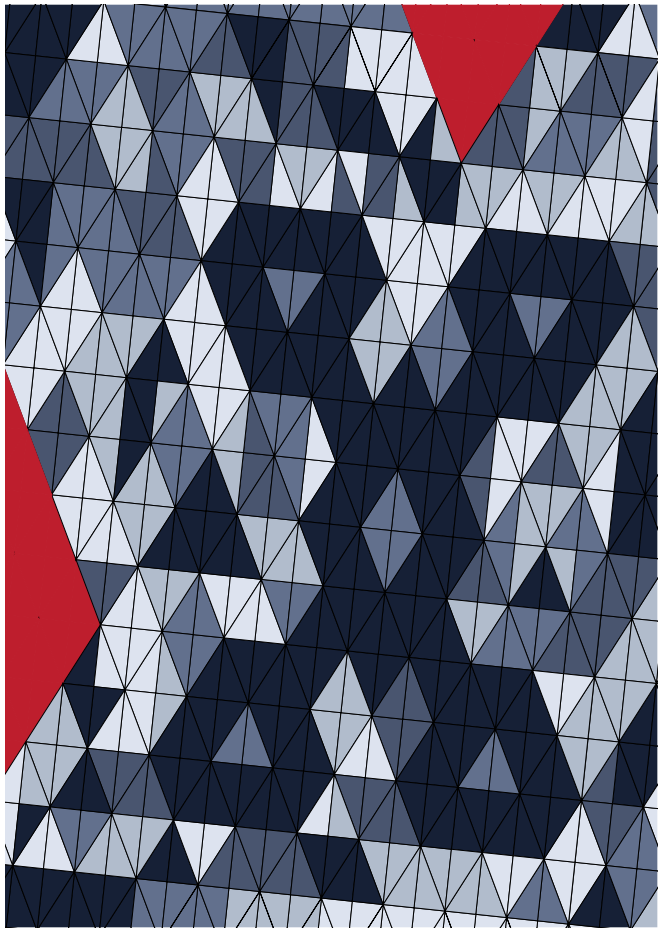


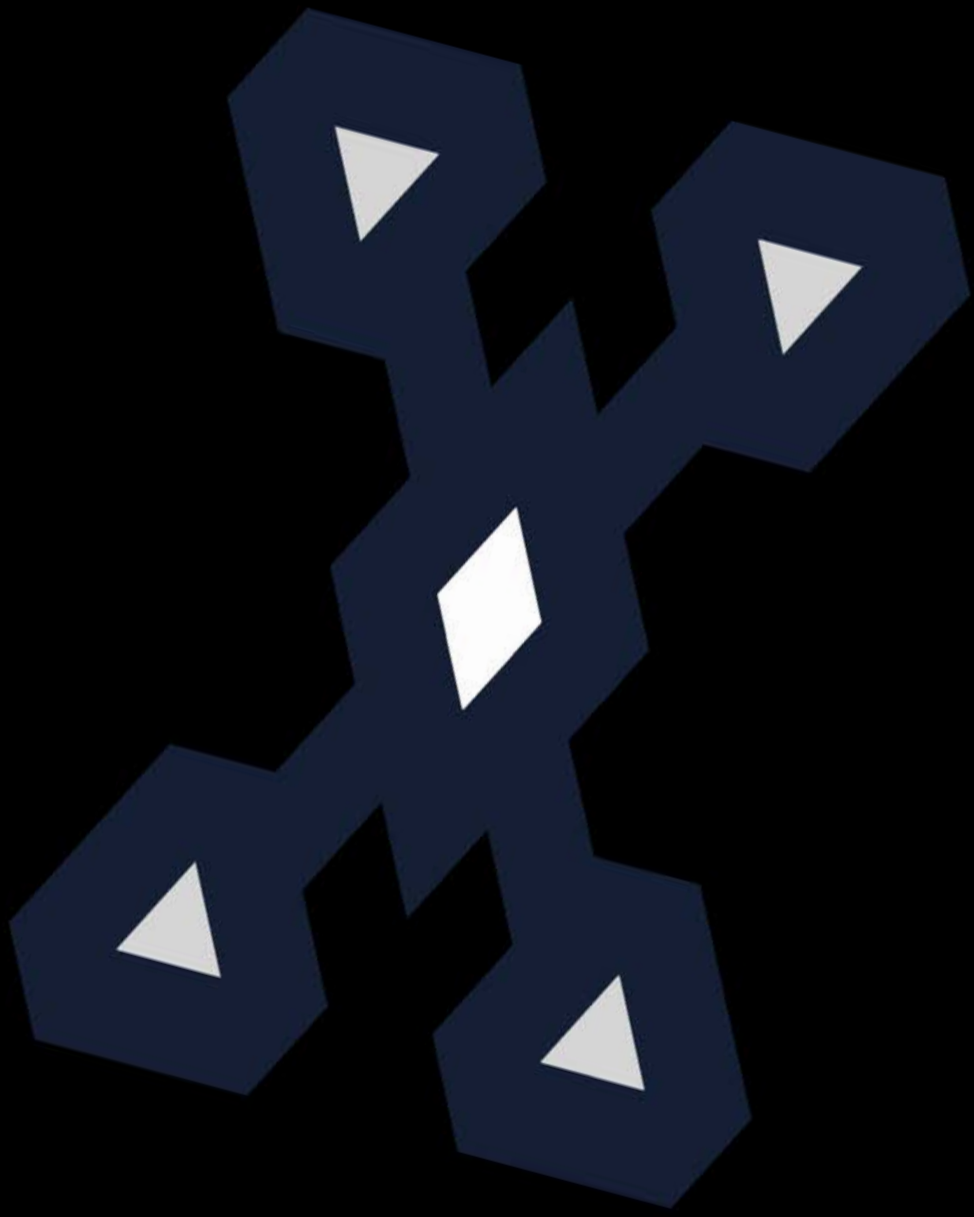




APPENDIX C

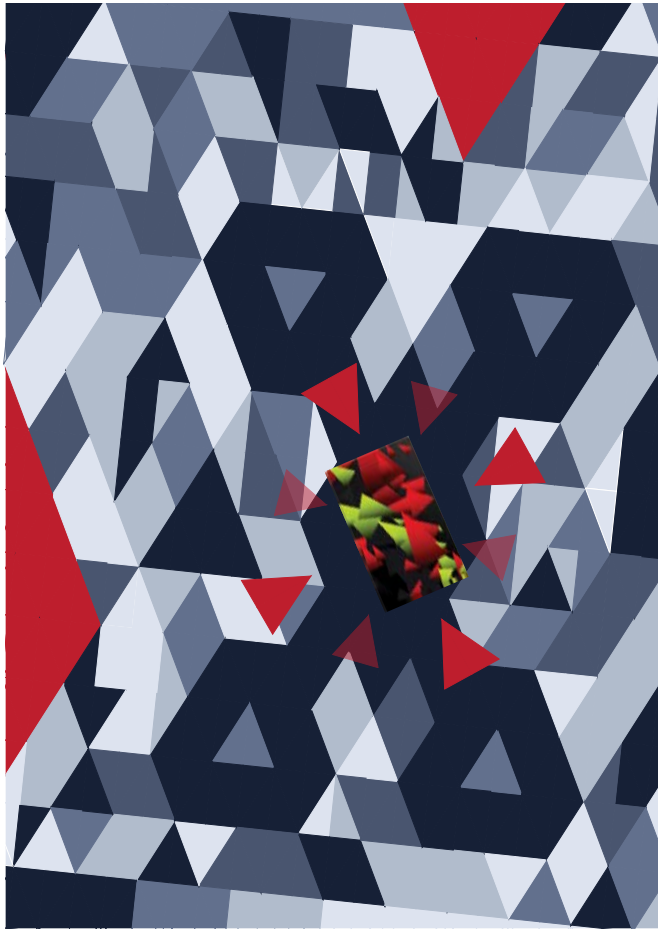
Poster tryouts 2/3

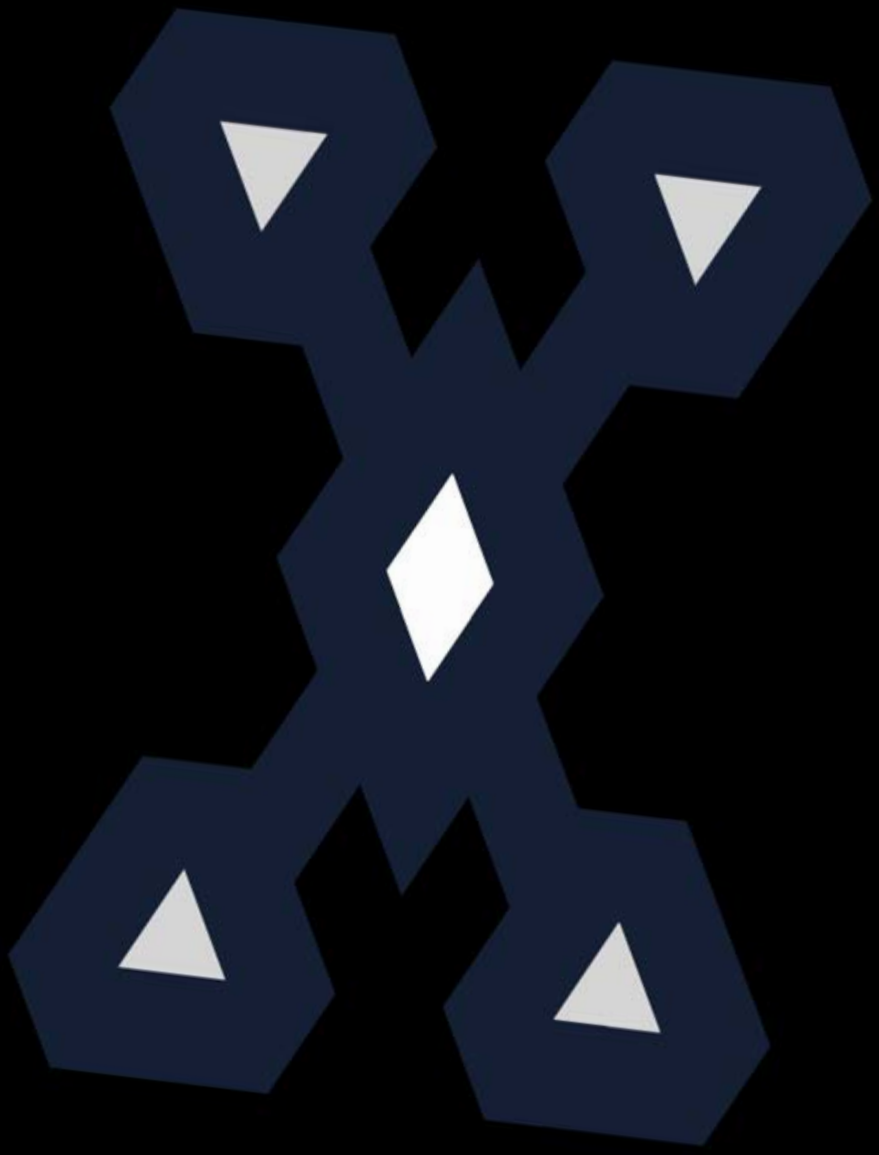




APPENDIX C

Poster tryouts 3/3





APPENDIX D

User test results

	Change of Surrounding	Fun to Exploration	Willingness to pay for Service
User 1	Yes, I could so more of it in a shorter time-span.	Yes	No
User 2	Yes, it was fun to do.	Yes	No
User 3	Seeing the city from above does make you feel small	Yes	No
User 4	Not to a large extend	No	No
User 5	Yes, Everything looks smaller	Yes	No
User 6	Yes, it gives you great oversight	Yes	Yes
User 7	Yes, you can really explore your surroundings	Yes	Yes
User 8	Yes, it is more passive	Yes	No
User 9	No, I can see everything from here	No	No
User 10	Nothing	No	No
User 11	Yes, you can see more	Yes	No
User 12	Yes, I got a nice overview	Yes	No
User 13	Yes, I have a new perspective	Yes	No
User 14	Yes, my son really enjoyed it	Yes	Yes
User 15	Yes, it gives you good information	Yes	No
User 16	Yes, you get good local insights	Yes	Yes
User 17	Yes, you get new information	Yes	No
User 18	Yes, it is fun	Yes	No
User 19	No, but I find the controls difficult	No	No
User 20	The birds-eye perspective is enjoyable	Yes	Yes
User 21	The interaction is quite good	Yes	No