





## 1. SOCIOLOGICAL APPROACH

1.1.1. EDGES	3
1.1.2. DISTRICTS	4
1.1.3. LANDMARKS	5
1.1.4. NODES	6
1.1.5. PATHS	7
1.1.6. PARTICIPATORY PROCESS	8-11
1.2. INTERVIEWS	12-24
1.2.1. QUESTIONS	13
1.2.2. SHAHMEER	14-15
1.2.3. LESLIE	16-17
1.2.4. MATILDA	18-20
1.2.5. LUCILLE	21-22
1.2.6. JULIE	23-24
1.3. GRAPHIC NOVEL	25

## 2. VARIABLES

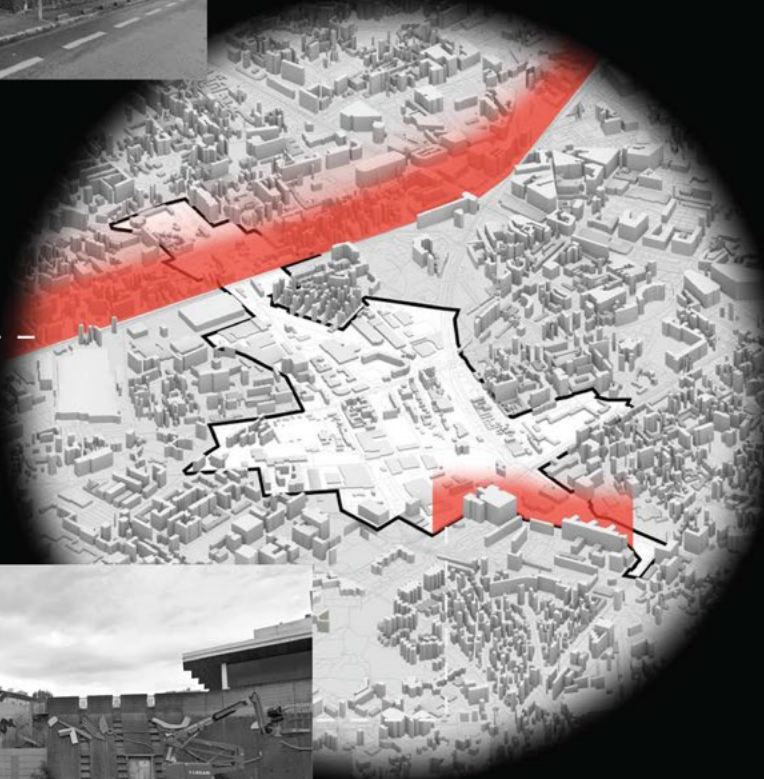
2.1. GREEN AXIS OPTIMIZATION	27
2.1.1. GREEN AREAS	28
2.1.2. PROPOSED GREEN AXIS NETWORK	29
2.1.3. OPTIMIZATION EXPERIMENTS	30
2.1.4. WHY USING ALGORITHMS?	31
2.2. ACCESSIBILITY OPTIMIZATION	32
2.2.1. ACCESSIBILITY CONDITION	33
2.2.2. STREET GENERATION EXPERIMENTS	34
2.2.3. STREET GENERATION RESULTS	35
2.2.4. SELECTED RESULTS	36
2.3. PROPOSED INTERVENTIONS	37
2.3.1. CASE STUDY > UBER SKY TOWER	38
2.3.2. RESEARCH > AVIATION CAR CONCEPTS 1	39
2.3.3. RESEARCH > AVIATION CAR CONCEPTS 2	40
2.3.4. ISOVIST ANALYSIS	41

## 3. MASTER PLAN

3.1. DETAILS OF TECH PARK	43
3.1.1. DETAILS TECH PARK	44
3.2. DETAILS OF PUBLIC HOUSING	45
3.2.1. DETAILS OF PUBLIC HOUSING	46
3.3. DETAILS OF PIAZZA	47
3.3.1. A-A' PERSPECTIVE SECTION OF PIAZZA	48
3.4. DETAILS OF URBAN AVIATION HUB	49
3.4.1. DETAILS OF URBAN AVIATION HUB	50
3.4.2. DETAILS OF PARKING AND COMMERCIAL CENTER	51
3.5. 3D PERSPECTIVE	52
3.6. VISION	
3.6.1. TECH PARK	53
3.6.2. PUBLIC HOUSING	54
3.6.2. URBAN AVIATION TRANSPORTATION HUB	55

# 1.1.1. EDGES

# EDGES . E I



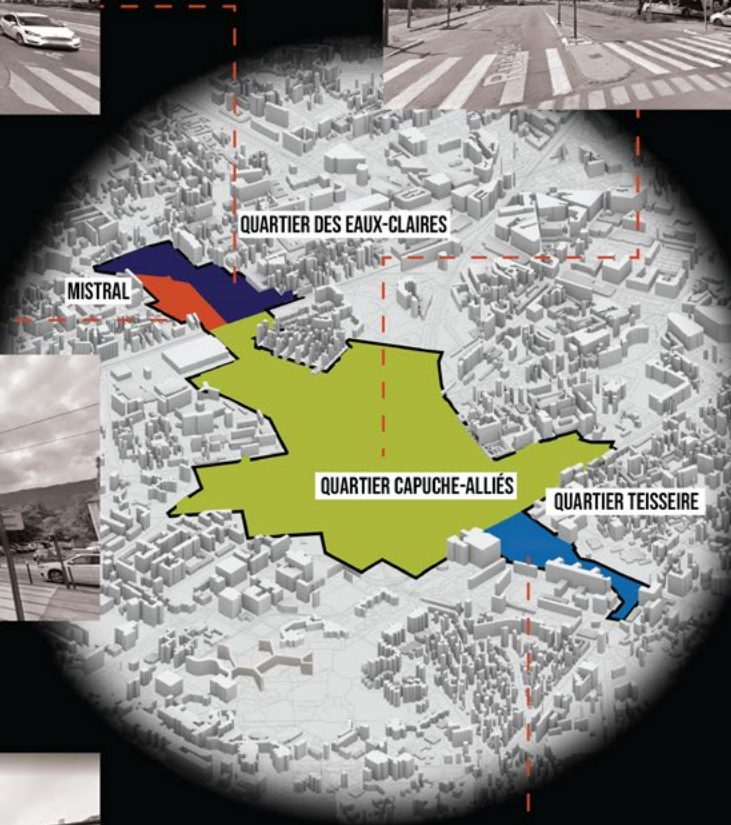
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When you continue walking in the same direction for a while, you cross the road and the small industrial area begins. The element of intangible boundaries as much as roads is usually the transition area between two different regions. The sandy area between the city and the sea, the road or walls between the housing and the industry are good examples. The individual also has his own psychological boundaries and is among the factors that play a major role in recognizing the field. They are like an abstract linear threshold.

## 1.1.2.DISTRICTS

# DISTRICTS



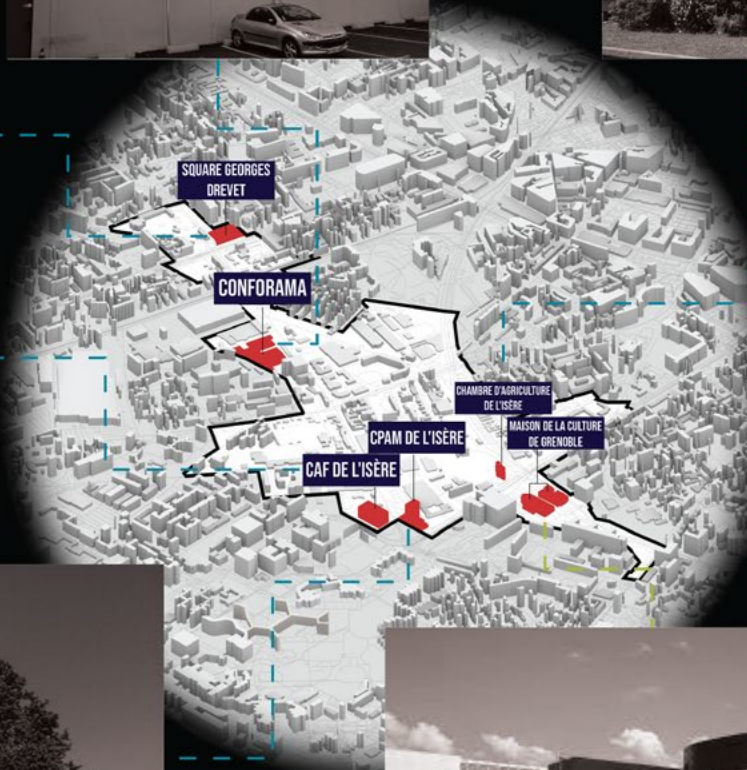
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When you look around at your current location; You can understand where you are from roads, building typologies, spatial characteristics of the area. In a place surrounded by residences, the residential area will be the noisy and single-story factories and the industrial area will be. Regions can vary in size and shape from person to person.

# 1.1.3.LANDMARKS

# LANDMARKS



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Landmarks can be a statue, a different building, any sign, shop or a large mountain. Sign items constitute a point reference source. They are generally easily identifiable physical formations. Besides the sign elements that everyone has an idea of, there may be special interpersonal sign elements. The most obvious feature is that they are physical and / or content or memorable objects.

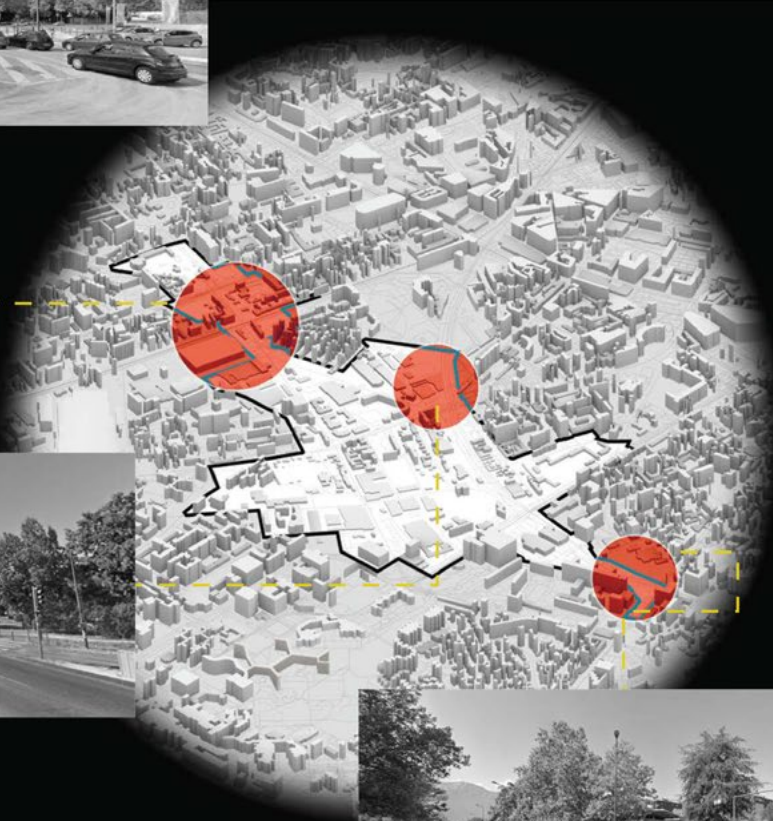
# 1.1.4.NODES

# NODES . NOT TOM SEDON



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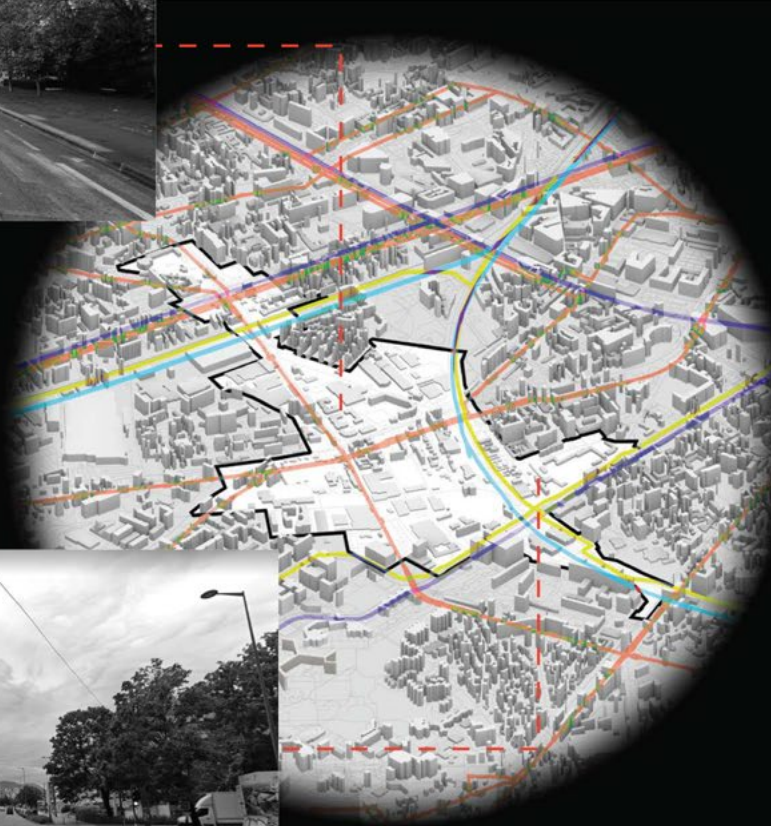
Nodes are the strategic points that allow the observer to enter the city, or where it is most memorable to travel from one point to another.

# PATHS . PATH



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- Bus
- Train
- Bicycle
- Tram

Paths can be a pedestrian path, a 15-meter motorway or railroad that runs through the houses is both a vehicle for people to perceive their environment and an object that guides them. Roads are sometimes suitable for crossing and sometimes crossing regions.

# 1.1.6.PARTICIPATORY PROCESS

# METHODOLOGY

WHEN TECHNOLOGY AND DEMOCRACY WAS LITTLE, THE FEW ELITES HAD THE “CITY BRUSH” AND DREW THE CITY FOR OTHER ELITES TO READ AND JUDGE THOSE DESIGN. IT WAS A TOP DOWN SYSTEM WHERE EVERYTHING WAS DONE FOR THE PEOPLE, BUT WITHOUT THE PEOPLE, SO THE INHABITANS EITHER ENJOYED OR SUFFERED THE RESULTS. THE CITY OF TOMORROW BY LE CORBUSIER, 1929, IS THE EXAMPLE WHERE YOU CAN SEE IT IS VERY TOP DOWN, VERY CONTROLLED AND SEEMS VERY ORGANISED BUT PEOPLE DO NOT HAVE A SAY.

NOWADAYS, WE ARE AT A POINT WHERE SOME CITIES HAVE UNDERSTOOD WE HAVE THE TOOLS TO LISTEN TO THE CITIZENS. THE CITY IS STILL PLANNED BY A FEW, BUT SOME ARE ENGAGING THE CITIZEN IN LISTENING, JUDGING, AND VOTING. THAT HAS CREATED A NEW GENERATION OF PLANNERS THAT HAVE STARTED USING THEIR “CITY BRUSHES” FOR EVERYONE TO READ. MASTER PLANS ARE MORE DIDACTIC AND UNDERSTANDABLE, AND CITIES TRY TO SIT WITH THEIR CITIZENS TO GET FEEDBACK.

MARA BALLESTRINI SAID, “WHEN WE EXTEND RIGHT, SOCIETY PROGRESSES”.



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## A TOP DOWN SYSTEM

ELITE DRAWS THE CITY



ELITE READS

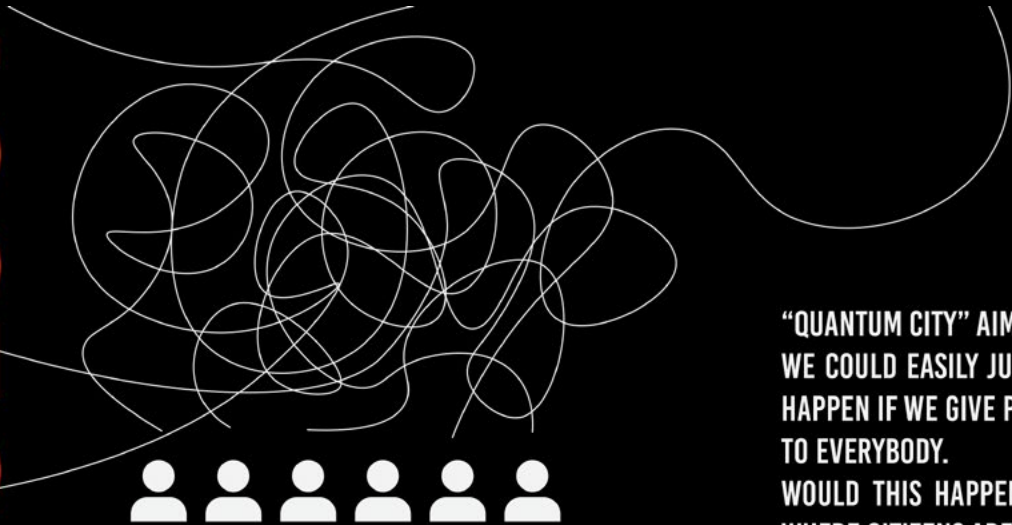


INHABITANS ENJOY OR SUFFER THE RESULTS

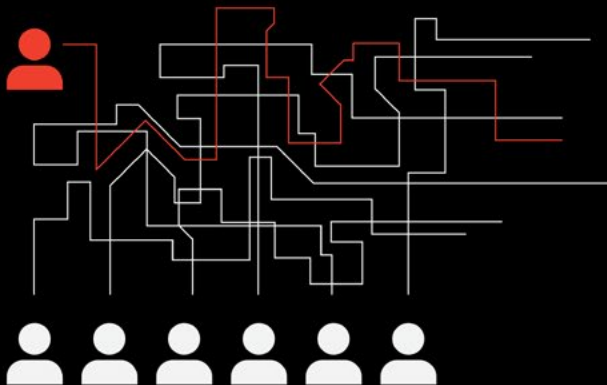
“Quantum City.” IAAC Blog. Accessed June 14, 2020. <http://www.iaacblog.com/programs/quantum-city/>.

## 1.1.6.PARTICIPATORY PROCESS

# METHODOLOGY



PROFESSIONALS FINALISES THE DESIGN



“QUANTUM CITY” AIMS AT GIVING BRUSHES TO ALL CITIZENS. WE COULD EASILY JUMP INTO THINKING THIS IS WHAT WILL HAPPEN IF WE GIVE PENCILS TO EVERYBODY.

WOULD THIS HAPPEN? BUT THIS HAPPENS IN SCENARIOS WHERE CITIZENS ARE TO PLAY A PASSIVE ROLE IN A PUBLIC SPACE. THEY HACK IT AS IT IS NOT THEIRS.

HOWEVER, WHEN WE GIVE PEOPLE THE POWER TO DESIGN, WE ARE EMPOWERING THEM. FOR EXAMPLE “LEGO CITY” – A COLLABORATIVE PROJECT WHERE TOOLS WERE GIVEN TO CITIZENS TO BUILD. AND LIKE WHAT SPIDERMAN’S UNCLE BEN SAID, WE BELIEVE THAT “WITH GREAT POWER COMES GREAT RESPONSIBILITY”. WITH THAT, AND THE FEELING OF OWNERSHIP, ACTIVE CITIZENS ARE CAPABLE OF GREAT THINGS.



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## 1.1.6.PARTICIPATORY PROCESS

# STRATEGIES

PHASE -1 THE DESIGN WILL BE CAPTURED AND STORED BY THE SYSTEM. THROUGH A SET AMOUNT OF TIME, EACH VISITOR'S CONTRIBUTION WILL BE RECORDED, WITH NEW DESIGNS APPEARING AND LEVELS OF TRANSPARENCY EVOLVING. ONCE THE DEADLINE IS REACHED, PHASE 2 WILL COME INTO PLAY.

PHASE -2 THE SYSTEM WILL USE ALL THIS DATA TO CREATE ON THE ONE HAND WHAT WE CALL A QUANTUM MAP. THIS IS A MAP WHERE ALL THE DESIGNS ARE OVERLAID. THIS WILL ALLOW SOME PATTERNS TO ARISE. IN ADDITION TO QUANTUM MAP, QUANTUM GRAPHICS WILL BE PRODUCED. Q GRAPHICS WILL SHOW TENDENCIES AND GAUSSIAN CURVES THAT WILL DETERMINE AVERAGES.THESE AVERAGES WILL CONSTITUTE THE "BRIEF" OR THE "REQUIREMENT" FOR ARCHITECTS AND PLANNERS TO DESIGN. WE HAVE CALLED THIS BAR THE 'PROFESSIONAL ALLOWANCE', WHERE PROFESSIONALS INVOLVED IN THE P NAL DESIGN HAVE SOME MARGIN AROUND THE AVERAGE WITHIN WHICH THE DESIGN MUST BE.

PHASE 4 – WILL HAVE AGAIN THE CITIZENS IN THE CENTRE. VISITORS TO THE SITE WILL BE SHOWN THE DESIGNS VIA AUGMENTED REALITY AND WILL BE ABLE TO VOTE THEIR FAVORITE.

PHASE -5 AFTER A SET AMOUNT OF TIME, THE WINNING OPTION WILL BE DEVELOPED UNTIL COMPLETION.

PHASE -6 AFTER THE CONSTRUCTION OF THE PROJECT, A TEAM CONTINUES OBSERVATION ON THE PROJECT TO SEE HOW PEOPLE INTERACT AND WHAT ARE THE DIFFERENCES BETWEEN THE DESIGN GOALS AND REALITY. AS THE DESIGN IS BASED ON A GENERATIVE CONCEPT, IT WOULD BE EASY TO MANAGE AND CHANGE THE PROJECT LATER ON BASED ON THE NEEDS.



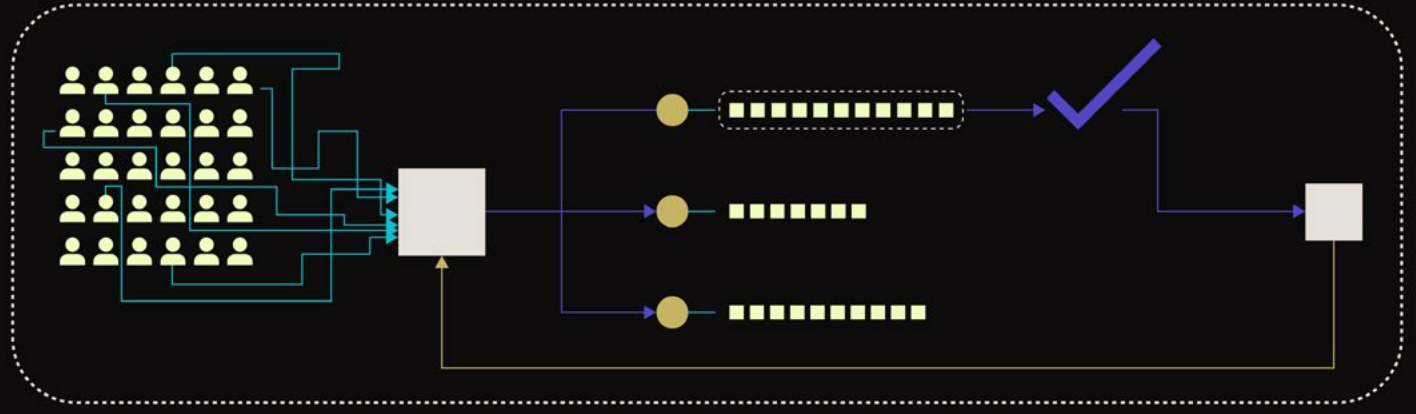
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# 1.1.6.PARTICIPATORY PROCESS

# STRATEGIES



**PHASE ONE**  
DATA COLLECTION

**PHASE TWO**  
GENERATIVE DESIGN

**PHASE THREE**  
DESIGN DEVELOPMENT

**PHASE FOUR**  
VOTING

**PHASE FIVE**  
MAKE IT REAL!

**PHASE SIX**  
MANAGING



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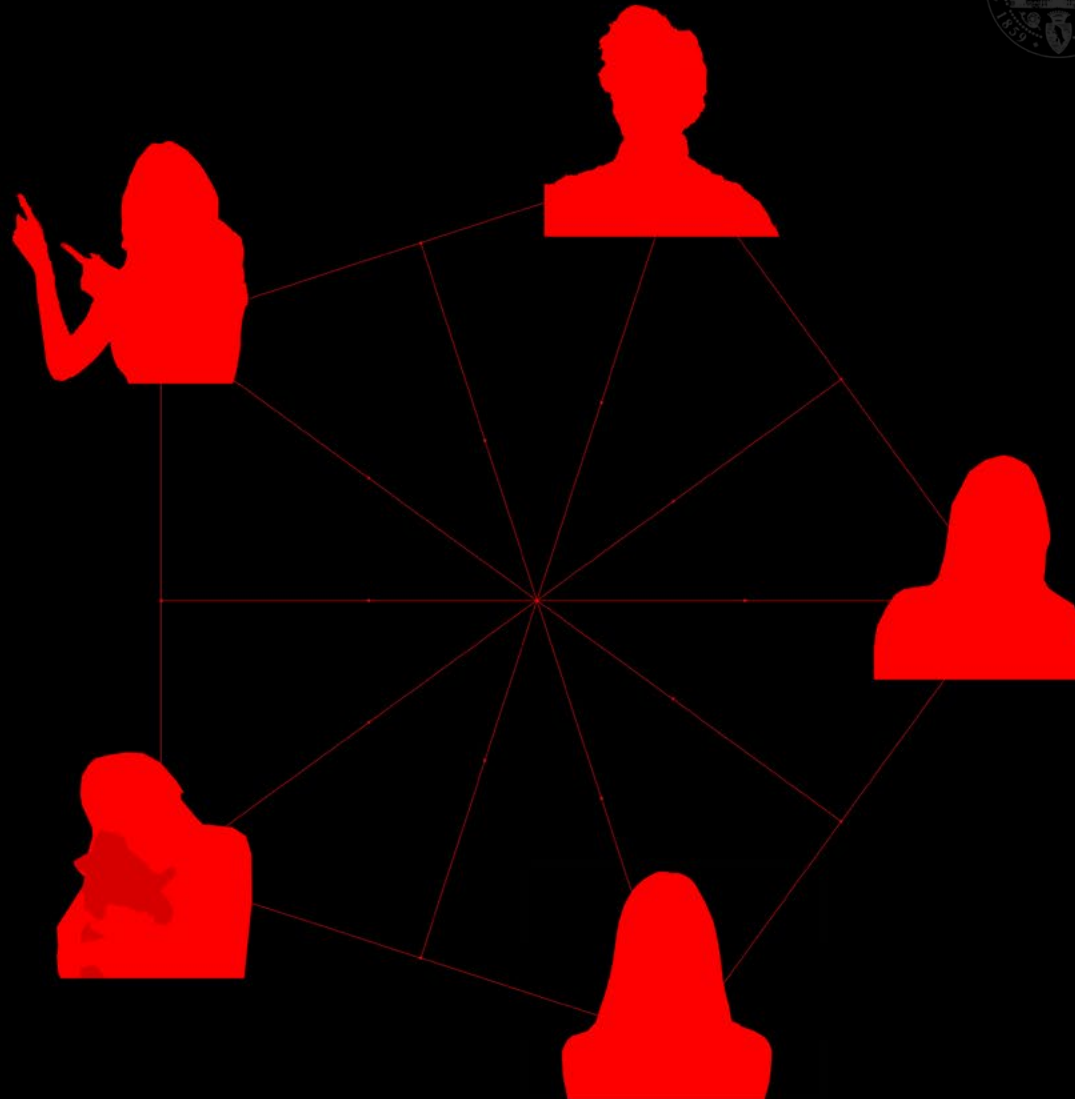
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# 1.2.INTERVIEWS



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# 1.2.1.QUESTIONS



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1. **What comes to your mind when thinking about cities (especially Grenoble) in the future?** What characteristics do they have?

2. **If having the option of walking to work in the shortest possible way, do you rather walk or still prefer to use car or public transportation like buses and trams?** Can you explain your reasons?

3. **Thinking about mixed-use areas in the neighborhood, what are your concerns and excitements?** In general, if you have experience of living in a mixed-use area, please give us your experience.

4. **What comes to your mind when you think about all high rises?** What are the pros and cons in your opinion?

5. As you probably have already known, climate change is happening right now and it will have a noticeable effect on our life in the near future. **Do you think even small cities**

**can make a difference in the future** and help to save the planet? If yes how? If yes, give us your reasons.

6. **Do you think there is enough space for greenery in the city of Grenoble?** While you were living there (or still living there), have you ever thought that you had enough possibility to reach greenery wherever you are located in the city?

7. **What kind of problems does the city of Grenoble face today from your perspective?** What kind of solutions can be created to prevent those problems?

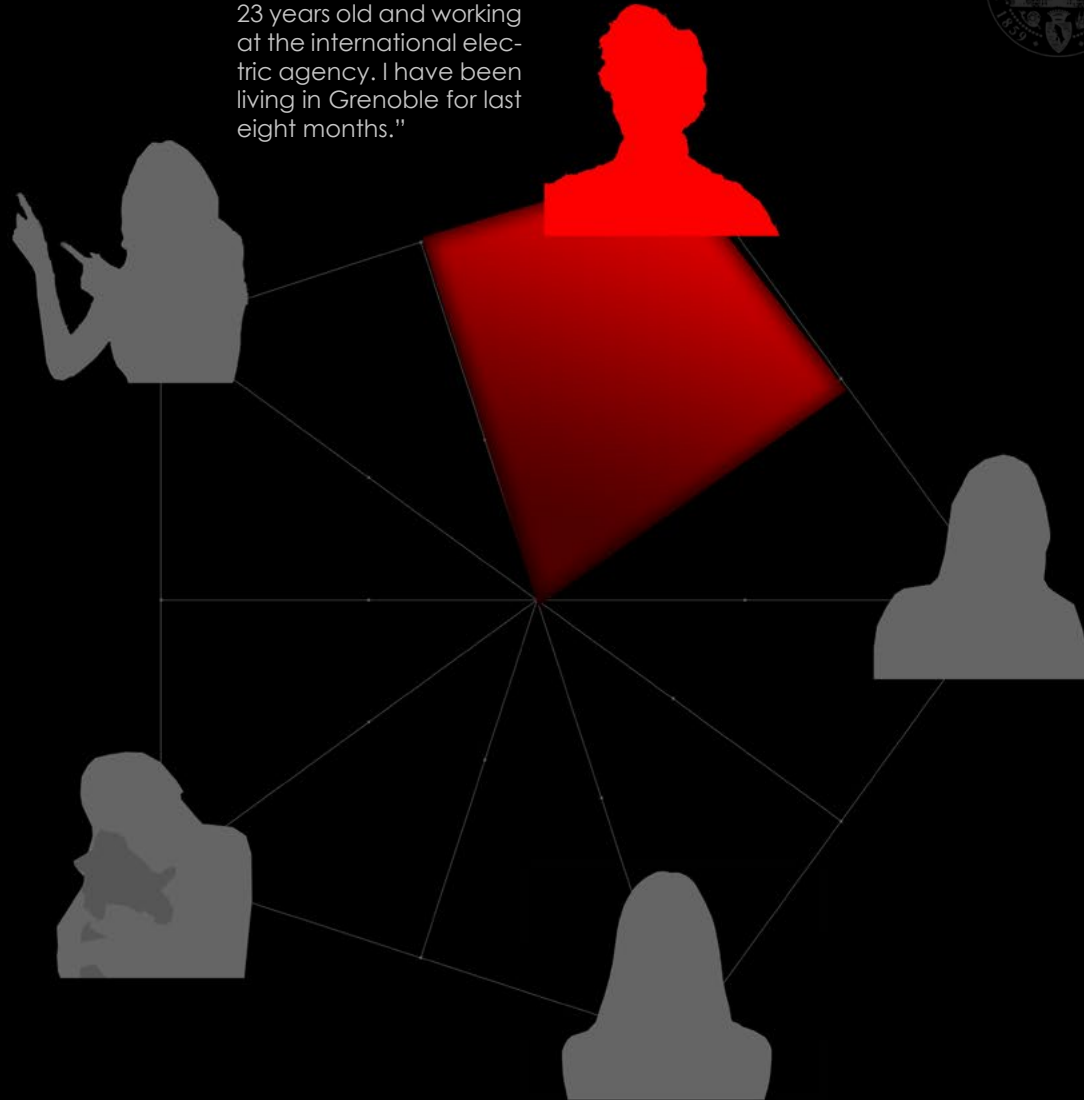
8. Imagine! You are a member of an organization where people come from different layers of society to discuss the opportunities, threads, and needs of their city. Every single person has the same amount of voice. **What would you think about "Giving pencil to everyone"?** What would be pros and cons?

9. **If you would have imagined that unconventional public transportation methods are implemented to the city of Grenoble, how would you respond to that?** Such as autonomous electrical public transportations, flying drones that transport people to their daily activities. Do you think those are fictionary thoughts or they have a chance to be real in the near future?

10. **What do you think about the proposal that we are suggesting for the city of Grenoble.** Is there anything specifically that you want to add or mention? Right now, you have the pencil!

# 1.2.2.SHAHMEER

"Hi! I am Shahmeer, I am 23 years old and working at the international electric agency. I have been living in Grenoble for last eight months."



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# 1.2.2.SHAHMEER

**“I THINK THE BIGGEST PROBLEM IN THE CITY IS THE AMOUNT OF HOMELESS PEOPLE AND ALSO THERE IS A LITTLE CRIME PROBLEM HERE. SO IF WE CAN SUPPLY AFFORDABLE SOCIAL HOUSING TO PEOPLE WHERE THEY CAN HAVE FRESH START, THAT WOULD HAVE AVERTED THOSE PROBLEMS.”**

1. Good question, cities of the future will have less inequality, and people are generally more happier. In Grenoble, public transportation is pretty good, but I want to see some radical changes like electric scooters. Also, I want the city to be more sustainable. Electricity is 100% from renewable energies. And one thing I would like to see in the near future is having less if not zero, homeless people.

2. If I have the option, surely I walk to work, because I am very concerned about the environment. However, if my work is not very near, I prefer public transportation rather than a car.

3. I am all in for mixed-use places as long as the needs of residents are re-

spected. There are a lot of positive points in a mixed-used area, like having all the stores in the same block helps to reduce the carbon footprint of residents. I also used to live in a mixed-used building in Sweden, and that was a very positive experience.

4. I don't see anything wrong with them, but it depends on the place of the building. Like in South American countries, they took a lot of money from banks, and now they have a problem paying back the loan, and skyscrapers made cities poorer and more divided.

5. Climate change can't be changed unless bigger countries like China play their part; however, small cities can help the process and use 100 renew-

able energies and use EVs and clean transportation. There should be a carbon tax for industries. And if the tax is not enough, they should create regulations like banning single-use plastic use in cities.

6. Grenoble is a green city already, but there is always room for greenery. Like Pakistan, where I came from, there are some plans to plant a billion tree shortly.

7. The biggest problem, I think, is homeless people. The solution, I believe, is that the government makes sure that poor people can start fresh. Also, crime is another problem of the city, and by creating more job positions, this problem also can be solved.

8. I am not very aware of this, but I believe education should be free for anyone regardless of their nationality and origin. Having more educated people will help the city and the country in the future.

9. It has both Pros and Cons. It's very futuristic, but many people will lose their jobs, and you have to create new job positions for them or at least pay them a universal income.

10. I like the idea and your proposals. I believe it will help the city in the future to be a better place to live in.



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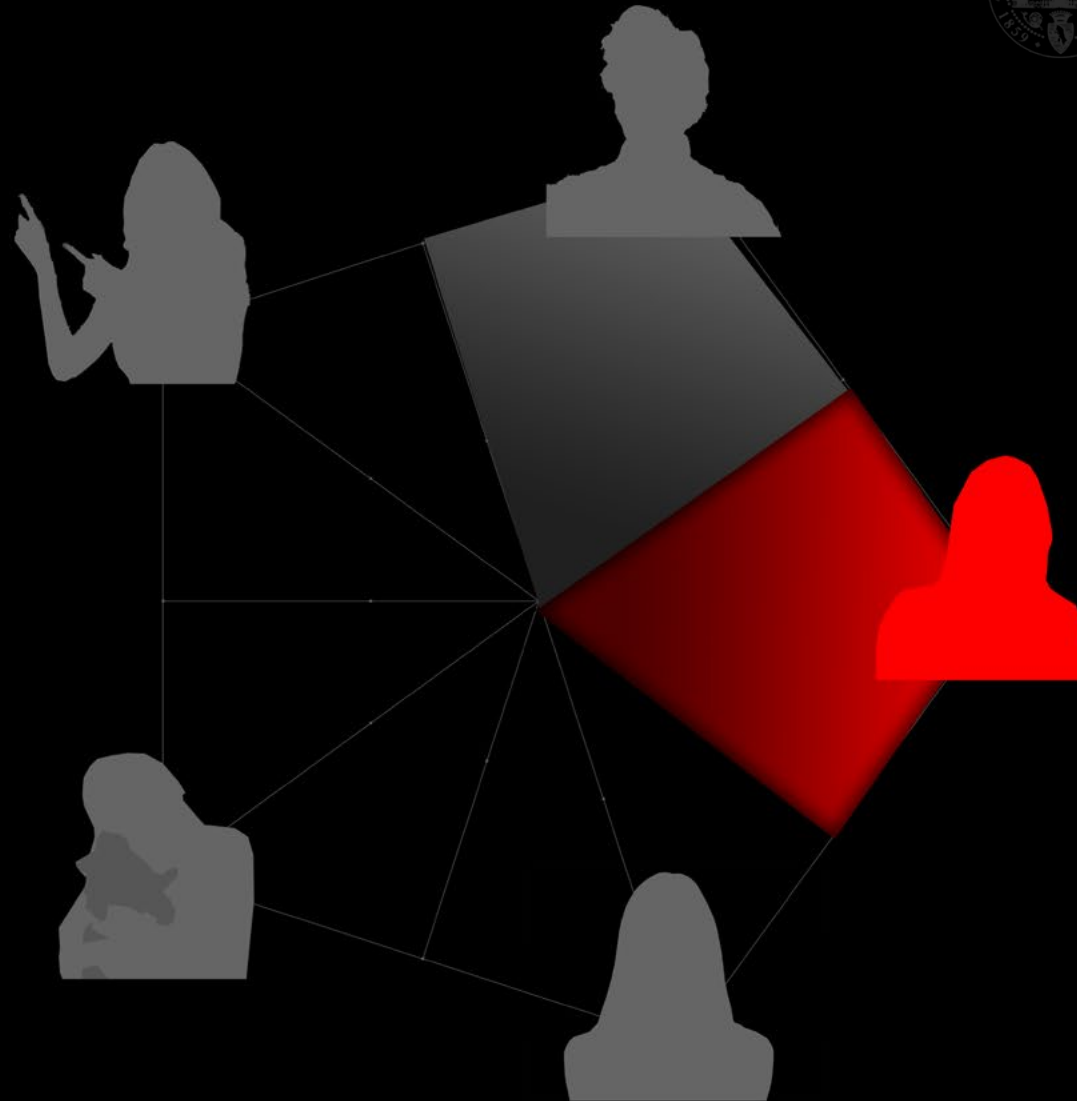
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# 1.2.3.LESLIE



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"My name is Leslie, I am 22 years old and I am French. I'm currently in my last year of engineering school in the field of health information technology. Since my birth, I live 30 minutes from Grenoble," but I have been living in Grenoble for my studies for 5 years.

## 1.2.3.LESLIE

**“I AM A WOMAN, AND IT IS IMPOSSIBLE FOR ME TO GO BACK TO HOME ALONE, BY NIGHT.”**

1. I am thinking directly of the problems that will emerge due to the increase in population, or climate change. The problem is that more and more people are coming to live in the city and we have to find a way to welcome them, to create new homes while preserving the city. The other problem in my opinion is due to climate change every city should put in place measures to counter this phenomenon.

2. If walking to work is an option, of course, I will choose this option. For 2 reasons: the planet and to do some exercises. In Grenoble, I think we're lucky because it is a small city and it is possible to go from one side of Grenoble to the other by walking. Actually, during my last 2 years of studies, I was walking to my school.

3. I do not have experience of living in a mixed-use area. But I think it could be great for many reasons and for a lot of people. It could be a way to have social interactions (great for for-

eign students for instance). My only concern is about everyone's respect for the place.

4. This is something that does not concern us in Grenoble at the moment since we do not have high rises. It's something that may develop in the future. And I think it is a better idea to build high rather than expanding the city : it can allow to preserve green area.

5. Personally, I think that the action of one person can help change the future. So obviously, I think even small cities can have an impact and make a difference to save the planet. The problem right now is that everybody is doing anything because everyone is saying « I'm the only one doing something, it is useless so I stop ». If everyone does something, the impact will be huge.

6. I think we are extremely lucky in Grenoble because we have a lot of greeneries : we have a lot of parks, and it is possible to access the forests and the mountains in few minutes.

7. Grenoble is considered as « Green city », but I think we still can do better. People should be encouraged to take public transportation, and it could be great to make the center pedestrian only. We should really encourage people to stop using their personal vehicle when it is possible. One other problem that Grenoble is facing is the security: there is a lot of robberies, assaults ... I am a woman, and it is impossible for me to go back to home alone, by night.

8. The problem in « giving pencil to everyone » is that these persons are coming from different layers of the society : they do not have the same needs, and visions of the society. So sometimes, the need of one may go against the needs of the others. But in the best of all possible worlds, if everyone could agree, it could be a way to have a fairer and more adapted society.

9. Personally, I think that for the moment, they are fictionary

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DESIGN E  
2019/2020  
SUMMER



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thoughts. When I was younger, I thought (like everybody) that in 2020 we would have flying cars etc. But we can see now that science has limits. And even if it is something real, I am not sure that every cities would have the money to get these unconventional public transportations because you do not only have to pay for these vehicle, you have to arrange all the city and it is a huge budget.

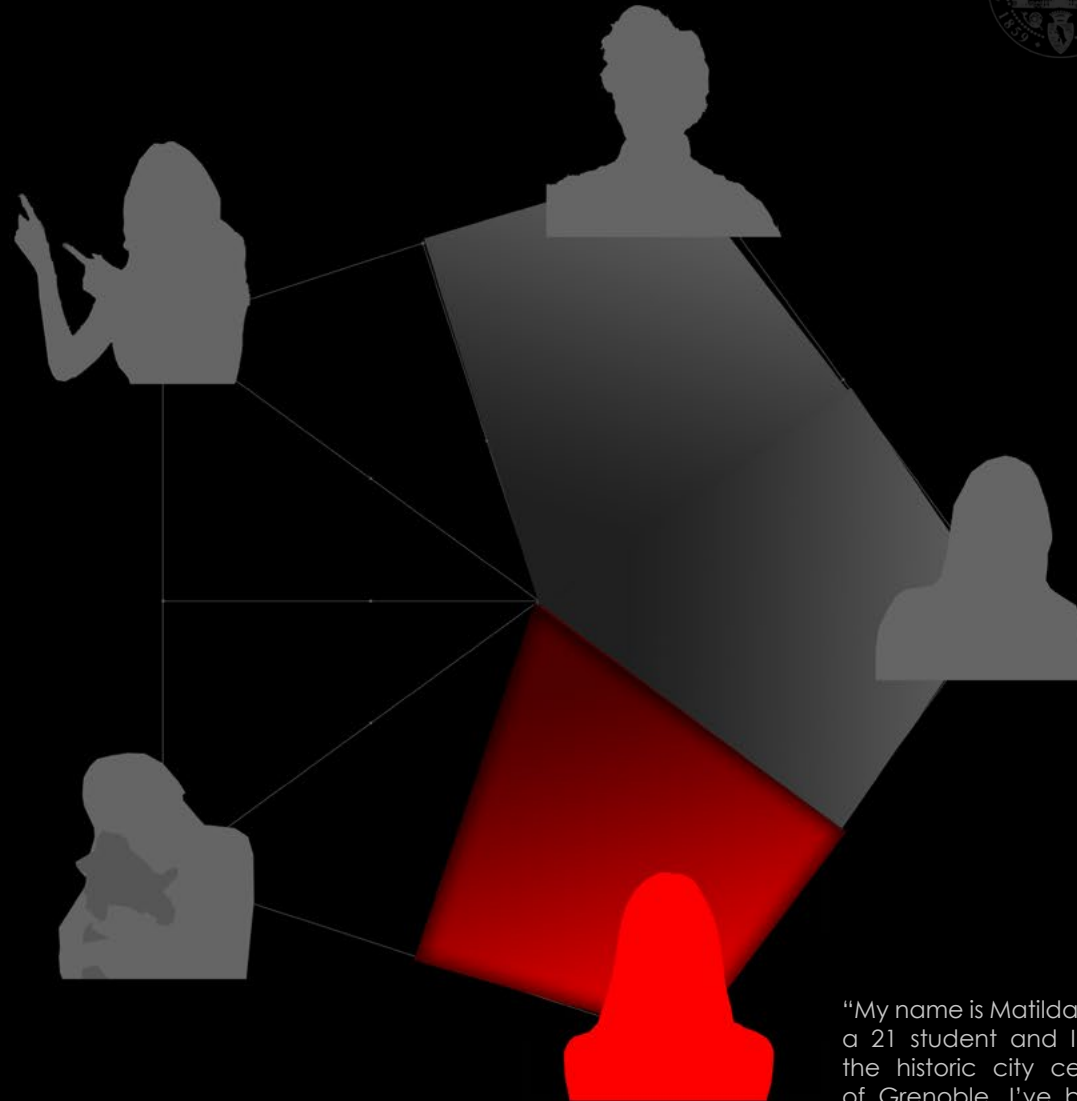
10. I totally agree with all your ideas linked with the actual habits of people : Bicycle parking, public tech park etc. All of these measures should be integrated in our city for a veryyyy long time. But the only thing I think is impossible to imagine right now is the Urban Aviation Transportation.

# 1.2.4.MATILDA



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"My name is Matilda, I'm a 21 student and I live the historic city centre of Grenoble. I've been living in Grenoble for 4 years now."

## 1.2.4.MATILDA

**“THE CITY IS EXTENDING TO THE WEST, BY CONSTRUCTING VERY MODERN BUILDINGS, WHICH CAN CONTRAST WITH THE HISTORICAL GRENOBLE, AND SOMETIMES GIVE THE FEELING THAT THESE TWO AREAS ARE DIFFERENT CITIES.”**

1. I think that in the future, Grenoble would be more focused on environmental problems (it is already the case, but more can be done). I imagine cities of the future to be without pollution, without cars, everyone moving from a place to another by walking, cycling or using ecological means of transport. I also would like to see more and more green spaces, for the city to get closer to nature.

2. I would rather walk. I'm already using my bike more than public transportation (to go to university or to meet friends). I prefer to use my bike because public transportation are often over-crowded, and mainly because I really enjoy to ride a bike. The only problem, when it comes to walking or cycling is the weather, because when we have really bad conditions, I tend to take the tram, because I have to walk for about 50min to get to university.

3. I live in a mixed-use area. There are some restaurants, bakeries, hairdressers, small shops, bars, and a big church near my place. This is really nice to have everything close to you, so you can just walk to do your groceries at the local market or go eat some food outside, meet people in the park, ect. The main inconvenience is the noise, especially in summer when everyone stays out late, you must have good insulation. I think this mix of structures brings diversity and dynamism to an area. We can meet many different people and talk with each other more easily than in housing-only areas, where you just go to get home or go out of home. It is the king of area where you can safely go out, even at night, as there are always some people doing something outside, it is comforting.

4. Honestly, I am not a high-rise fan. In my opinion, it is rarely good-looking, especially in Grenoble. I like that the buildings where I live have no more

than 4 or 5 floors. High-rise buildings are hiding the sky and the light in the streets, and it feels kind of 'unnatural' to me to have such tall buildings in the landscape. The pros are that, of course, you can give a housing to more people of the building is higher, and some of them may have a great view from up there, but for me it is not beautiful and would prefer a city without high buildings (but I know it is good to offer housing).

5. Yes of course! I think every city, even if they are small, should try to do something and act for the environment. In Grenoble, at the moment, we have a mayor, Eric Piolle, who is very concerned about environmental questions, which is a good thing. It is a city where it is easy to go from a place to another using a bike, there are a lot of cycle paths and lanes, so it is not dangerous (as it can be in Paris for example), and the car traffic is reduced. Despite that, the city is still polluted because of its location,

surrounded by the mountains the pollution stagnates. But it is sure that everyone should act for the environment, and small cities should feel concerned as much as big cities, and become an example to show that it is possible, if everyone tries.

6. Grenoble is not known to be very pretty. Many buildings were made of concrete, so it is really 'grey' in some areas. However, there are many green spaces and parks so wherever you live, I believe you can find a green space without having to walk for half an hour, which is nice. But I think that greenery could be integrated to the buildings, to make it more attractive. More greenery in the streets would be great, it would be nice to have access to nature wherever you are, without having to go to a specific place such as parks to feel calmed. The good thing with Grenoble is that you can pretty easily get in touch with nature by taking a bus or driving a little bit out of city, and reach the mountains in less



POLITECNICO DI TORINO  
ATELIER URBAN  
DESIGN E  
2019/2020  
SUMMER

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## 1.2.4.MATILDA

“WHEN IT HAS HOSTED THE OLYMPIC GAMES IN 1968, THE CITY HAS BUILT A LOT OF CONCRETE BUILDINGS AND STRUCTURES TO RECEIVE EVERYONE. THE PROBLEM IS THAT SOME OF THESE BUILDINGS HAVE BEEN KIND OF ABANDON AND THE MAIN PART OF IT WAS REHABILITATED INTO SOCIAL HOUSING. AS THESE BUILDINGS WHERE OUTSIDE THE CITY CENTRE, THESE AREAS BECAME A KIND OF “PROBLEM HOUSING ESTATE”, AND POPULAR SOCIAL CLASSES BECAME SEPARATED FROM THE REST OF THE CITY.”

than 30 minutes. You can also hike to the top of 'La Bastille' or Mount Jalla from the city centre, which is really enjoyable

7. I think that nowadays, there are two main problems in Grenoble. The first one is that the city is extending to the West, by constructing very modern buildings, which can contrast with the historical Grenoble, and sometimes give the feeling that these two areas are different cities. For me, there are maybe too many different types or architecture in Grenoble, depending on the areas or the period of building, which can give a weird result sometimes. The second problem is the separation of different individuals in some areas. When it has hosted the Olympic Games in 1968, the city has built a lot of concrete buildings and structures to receive

everyone. The problem is that some of these buildings have been kind of abandon, and the main part of it was rehabilitated into social housing. As these buildings where outside the city centre, these areas became a kind of “problem housing estate”, and popular social classes became separated from the rest of the city. I think this choice was a mistake, it would have been better if the city had try to mix different social classes to create diversity, instead of creating conflict by making the difference crystal clear. I think these areas deserves more greenspace and beauty in their surroundings (because, if I may say, 68' idea of architecture was not glorious).

8. I think that I would not be annoyed by unconventional public transportation, as long as it is not making the city look

uglier. On top of that, if these transportations are replacing cars and are eco-friendly, I guess I would be happy about this change. I am not really sure about the flying drones transporting people, it would be a pity to saturate the sky with drones, in my opinion. We should focus in making the ground transportation better and healthier before invading the sky with new means of transport. But I think new ways of moving within the city can appear in a near future, yes, especially if cars continue to be less and less.

9. no comment

10. The proposition is great, as it includes way more green spaces than there are now. It is also great to make a pedestrian path, it makes walks easier and nicer when you don't have to worry about cars. The

POLITECNICO DI TORINO  
ATELIER URBAN  
DESIGN E  
2019/2020  
SUMMER



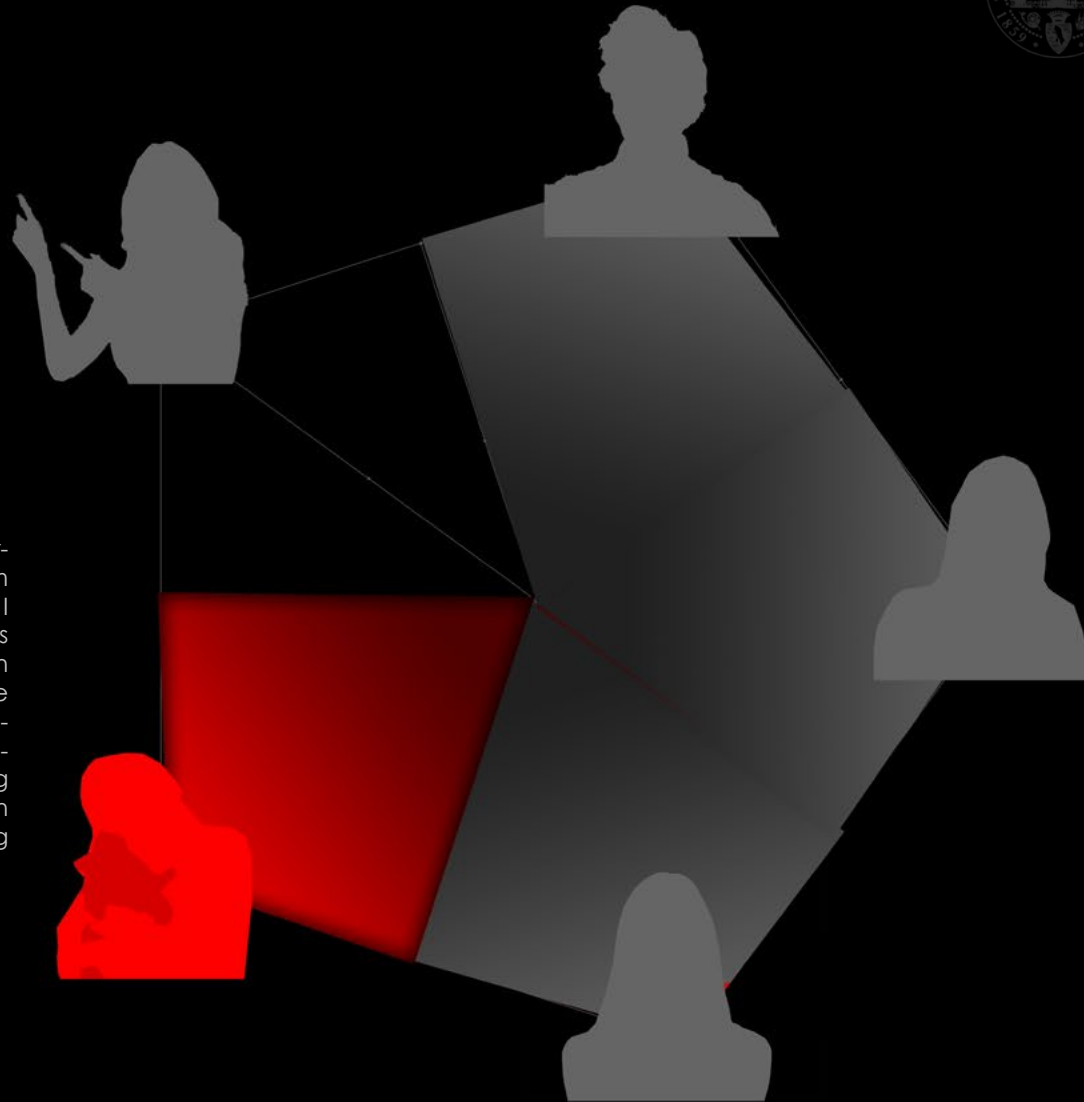
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# 1.2.5.LUCILLE



POLITECNICO DI TORINO  
ATELIER URBAN  
DESIGN E  
2019/2020  
SUMMER

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"My name is Lucille Borlaza, 32 years old, I am from the Philippines. I am currently working as a research scientist in University of Grenoble Alpes with research focus in inhalation toxicology. I have been living in Grenoble since March 2019 and will be staying until March 2021."

# 1.2.5.LUCILLE

**THERE ARE SOME AREAS IN GRENOBLE THAT HAS A CERTAIN “UNSAFE PLACE” REPUTATION. IN THESE AREAS, THERE ARE HORROR STORIES ABOUT GANGS, CAR BURNING GROUPS, KILLINGS, AND A NUMBER OF STEALING CRIMES.**

1. When I think about cities in the future, I imagine a sustainable and environment-friendly city that strives to produce the least possible negative impact on the natural environment through intentional physical design and resident behaviour choices. Possibly, uses 100% clean-energy sources for private and public transportation, commercial and residential energy needs; eco-friendly food sources; and an environmental friendly approach on waste management.

2. I always prefer walking than any other mode of transportation. I mostly prefer public transportation only when the weather is unbearable (snowing, raining).

3. I'm not sure what a mixed-use area is, but I'm assuming it's an area comprised of different topologies. If so, the exciting part of a mixed-use area is its proximity to commercial areas (e.g., stores, restaurants, hospitals, schools/universities). It presents a good level of accessibility and convenience.

However, as you are close to these areas, there is also a concern with regards to noise and peace around the area. Commercial places would mean crowded areas even late at night.

4. I don't see much pros in living in a high rise building, but this is subjective. I'm sure urban-planning wise, it is a much efficient way to save space for residential areas. I am currently living in a flat in a building (with 12 floors), and I decided to live here due to its proximity to my workplace and the price range of rent. However, given the opportunity, I would still prefer to live in a house where you're not limited on space and have a garden of your own. There are so many activities that is not easy to do when you're in a flat, such as cleaning your own car or growing your own food.

5. Yes, micro efforts when put together bring macro changes.

6. Compared to other cities I've lived in (Manila, Philippines; Seoul, South Korea; London, UK), I can say that relatively Grenoble has done absolutely great with making nature accessible. I love the buses that take you to different hiking spots, travelling by tram only takes less than 20 minutes to get through the city center, and there are several parks even in the city center.

7. There are some areas in Grenoble that has a certain “Unsafe place” reputation. In these areas, there are horror stories about gangs, car burning groups, killings, and a number of stealing crimes. I say “horror stories” because I haven't experienced this yet, these are all news from fellow expats and some French friends. There are also a lot of pickpockets inside the trams, which I have been a victim of once. Grenoble also has notorious bike stealers. My boyfriend and I both lost our bikes within 6 months of living here. Both bikes were locked using industrial heavy-duty locks, but that

POLITECNICO DI TORINO  
ATELIER URBAN  
DESIGN E  
2019/2020  
SUMMER



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was not enough to prevent our bikes being stolen.

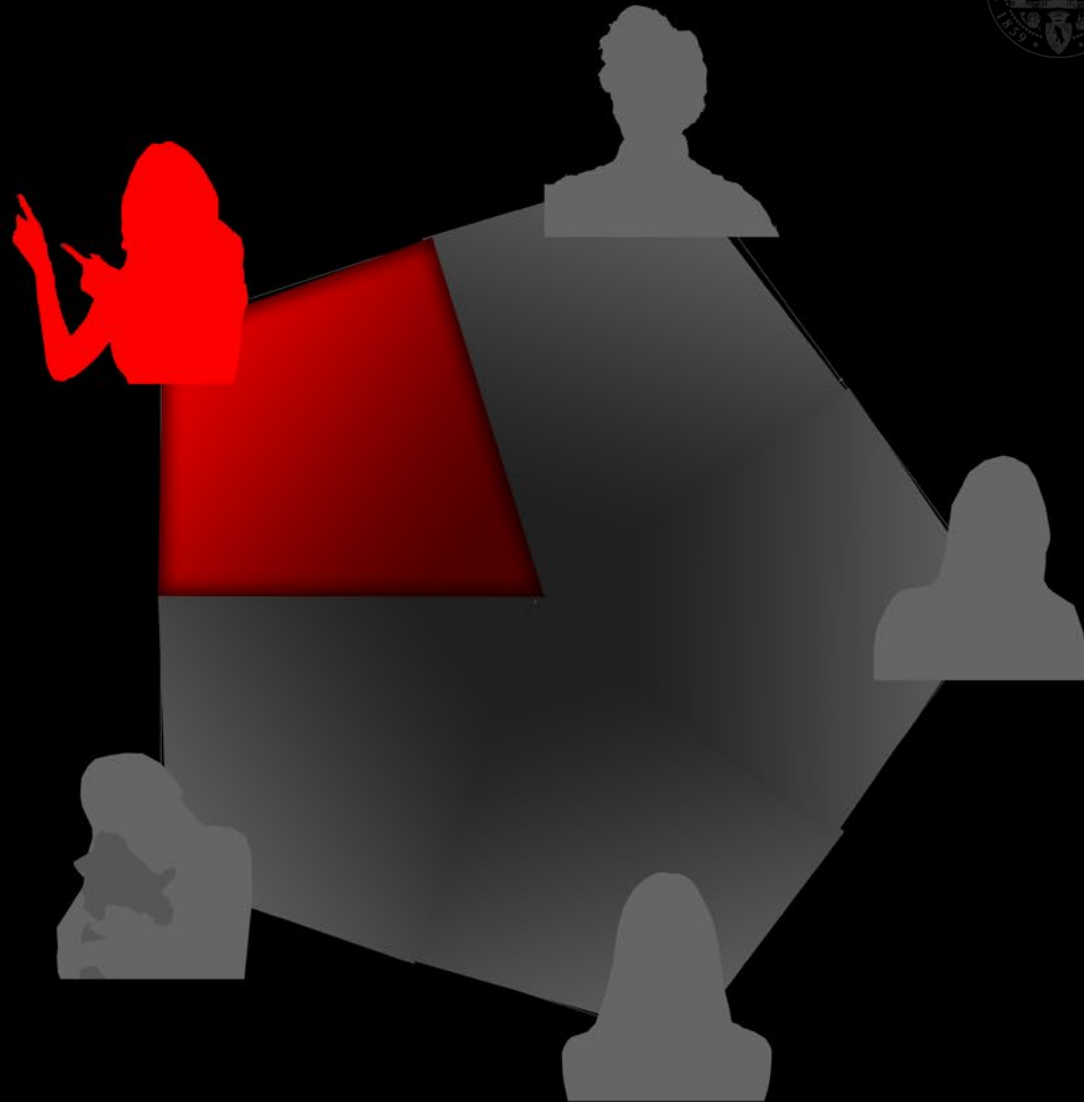
8. I think the ‘Giving pencil to everyone’ approach can be a good way to get ideas that have direct use to residents, after all they are the ones directly affected by it. But of course, this should be guided by a professional that can oversee the feasibility and appropriateness of chosen action plans. Otherwise, the ‘Giving pencil to everyone’ approach can be misdirected and inefficient.

9. I have always seen the future leading to autonomous electrical public transportations. I fully support this and I think the positive attributes of this technology outweighs by a great amount its potential negative attributes, if there are any. I don't know how I feel yet with flying drones as public transportation, but I can see it as an efficient delivery/courier option.

10. The plan looks amazing, kudos to you and your team. Great work!

# 1.2.6.JULIE

"I am Julie! I am 32 years old, and I am French. I am an architect and also a dancer. I have been living in Grenoble for last 15 years."



POLITECNICO DI TORINO  
ATELIER URBAN  
DESIGN E  
2019/2020  
SUMMER

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# 1.2.6.JULIE

“THE BIGGEST PROBLEM IN THE CITY IS AIR POLLUTION!!! WE SHOULD INVEST IN TECHNOLOGY AND OVERCOME THIS PROBLEM!”



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ATELIER URBAN  
DESIGN E  
2019/2020  
SUMMER

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1.no comment

2. I have the chance to go to work on foot, and I love it. It's essential to walk; it helps me to wake up and get some fresh air every day.

3. I live in the city center, and it's a fascinating mix. It's so much better to live somewhere that you can get to know different people from all around the

the world with different backgrounds and fields of work.

4. I don't like high-rises. I believe as humans, we need to live on the ground and not at height. I don't want to live in a tall building myself.

5. Even small cities can be substantial. As we saw in this pandemic that even small cities are important

to solve global problems.

6. Of course, there are a lot of spaces here that can be used as greenery, like many abandoned buildings in the city. There are plenty of solutions to convert them into green areas, like putting plants on their roofs and balconies.

7. The main problem here is pollution; we need more

greenery. It will help the city to breathe.

8. I believe it's essential to ask the opinions of everybody, but in the end, you need to make decisions based on their views.

9. I think there is a project to transport people with flying vehicles. It's for 2025. So It is something real.

10. no comment

# 1.3.GRAPHIC NOVEL



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2019/2020  
SUMMER

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**IT WAS JUST AN ORDINARY AFTERNOON AT CASTELLO PI VALENTINO. IGUR AND AMIRSALAR WERE HAVING A FIERCE CONVERSATION ABOUT THE FUTURE OF CITY OF GRENOBLE!**

**HOW CAN YOU BE SO SURE? HAVE THEY NOT YET WANTED TO BE A PART OF THAT DECISION-MAKING PROCESS...**

**I KNOW!!! THERE ARE SOMEONE OUT THERE WHO WANT TO TAKE RESPONSIBILITIES!**

**WHAT THE...!**

**POW!!!**

**HELLO STRANGERS! I COME TO YOUR UNIVERSE FROM MILLIONS OF LIGHT YEARS AWAY!**

**I AM AN ACTIVE CITIZEN FROM THE FUTURE OF GRENOBLE! WE HAVE FAILED WHEN WE ARE DESIGNING THE CITY! NOW IT IS EVEN HARD TO BREATHE! IT IS FULL OF CHAOS! WE HAD TO CONSIDER THE CITIZENS BUT WE IGNORED THEM! BUT NOW WE CAN CHANGE IT! I AM HERE TO HELP YOU TO FIND THE OTHERS LIKE ME FROM TODAY! THERE ARE PEOPLE OUT THERE WHO CAN'T REACH YOU BECAUSE OF THE EPIDEMIC! BUT WE NEED TO FIND THEM AND CHANGE EVERYTHING!**

**COME WITH ME!!! PEOPLE ARE WAITING FOR YOU!**

**POW!!!**

**CRACK... LET'S GO!!!**

**WOOOHH!!!**

**AAAHHH!!!**

**HEY GUYS!**

**SALUTE!**

**HEY GUYS!**

**HEY! WELCOME, YOU ARE IN GRENOBLE NOW. WE HAVE ALREADY STARTED DEFINING NEEDS OF THE CITY WHILE WE ARE WAITING FOR YOU TO DISCUSS!**

**I CAN START!**

**I AM AMIRSALAR. I CAME FROM FRENCH I AM 28 YEARS OLD AND WORKING AS A CONSULTANT IN THE ARCHITECTURAL BUREAU OF AGENCY. I THINK THE BIGGEST PROBLEM IN THE CITY IS THE ABSENCE OF RESPONSIBLE PEOPLE. ALSO THERE IS A LITTLE CRIME PROBLEM HERE. AS IF WE CAN HAPPY DIFFERENTIAL SOCIAL INCENTIVE TO PEOPLE WHOSE THEY CAN HAVE THEIR FUTURE, THEY WOULD HAVE ARISED THESE PROBLEMS.**

**YOU ARE MISSING A POINT? I AM IGUR. I AM 25 YEARS OLD AND FRENCH. I AM ALSO STUDYING ARCHITECTURE HERE AND AS I OBSERVED ON THE BIGGEST PROBLEM IN THE CITY IS AIR POLLUTION!!! WE SHOULD INVEST IN TECHNOLOGY AND OVERCOME THIS PROBLEM!**

**IF I AM IGUR AND I AGREE WITH AMIRSALAR, PROBLEM THAT GRENOBLE IS FACING IS PUBLIC SECURITY. THERE IS A LOT OF CRIMINALS, MURDERERS, LARA A MURDERER AND IT IS IMPERATIVE FOR US TO GO BACK TO NORMAL LIFE. ON ONE OF THE OTHER HAND, GRENOBLE IS CONSIDERING A GREEN CITY, BUT I THINK WE SHOULD CONSIDER PEOPLE WHOSE ARE WORKING IN THIS PUBLIC TRANSPORTATION. WE SHOULD REALLY INVESTMENT PEOPLE TO STOP USING THEIR PERSONAL BRIDGE AND IT IS FUTURE!!!**

**I AM AMIRALAN AND I THINK WHEN IT IS ABOUT THE CLIMATE CHANGE IN PARIS, THE CITY HAS REALLY A LOT OF CONCRETE BUILDING AND PROBLEMS TO RESOLVE PROBLEM. THE PROBLEM IS THAT SOME OF THESE BUILDINGS ARE ALSO KIND OF AIR-POWELL AND THE MAIN PART OF IT ARE QUALIFIED AS HIGH-SOCIAL INCENTIVE. AS THESE BUILDINGS WOULD DIVIDE THE CITY CENTER, THERE WOULD BECOME A KIND OF "POLYCENTRIC URBAN SYSTEM" AND POLYCENTRIC URBAN SYSTEM BEING GENERATED FROM THE HEART OF THE CITY.**

**AFTER LOTS OF DISCUSSIONS, THOUSANDS OF ALGORITHMIC EXPERIMENTS AND ONE WEEK LATER!**

**ALLRIGHT GUYS, WE FOLLOWED THE PROJECT WITH THE HELP OF OUR DISCUSSIONS, LET'S HAVE ANOTHER LOOK BEFORE FINALIZING IT?**

**LOOKING GOOD? GREEN AIDS IS AMIRSCHEM!! IT IS INTERESTING TO SEE HOW ANTIPOCALYPTIC INTELLIGENCE AND PEOPLE WORKING IN CONFERENCE!**

**IN GENERAL, IT IS GREAT! BUT WE CAN STILL IMPROVE IT TOGETHER!**

**HEY AMIRSCHEM IS OVER HERE! I AM QUITE SATISFIED WITH HOW YOU WOULD COME TOGETHER AND TAKE ON RESPONSIBILITY! MY FINAL ADVICE IS: DO NOT UNDERESTIMATE THE ANTI-CONVENTIONAL TRANSPORTATION IDEAS. THE FUTURE IS MORE ENER THAN YOU THOUGHT! ...**

**AFTER THE GHOST WHO COMES FROM THE FUTURE HAS LEFT, IGUR AND AMIRSALAR KEEP WORKING ON THE PROJECT BY KEEPING THE CONTRIBUTION OF ACTIVE CITIZENS, AND IN THE END THEY CAME UP WITH A FINAL PROPOSAL!!!**

**ALLRIGHT GUYS LET'S GATHER UP! HERE IS THE FINAL VERSION OF THE MASTER PLAN. WHAT DO YOU THINK?**

**WOWWWW!**

**WE Nailed IT!**

**FINALLY! EVERYONE IS HAPPY AND THE PROPOSAL IS READY TO GO! WE DID IT...!**

**IN THE END, THE CITY OF GRENOBLE HAS REACHED A DESIGN THAT COVERS THE PHYSICAL AND SOCIALS NEEDS OF THE CITY WITH THE HELP OF ACTIVE CITIZENS OF TODAY AND THE FUTURE!!!**

**THE END...**

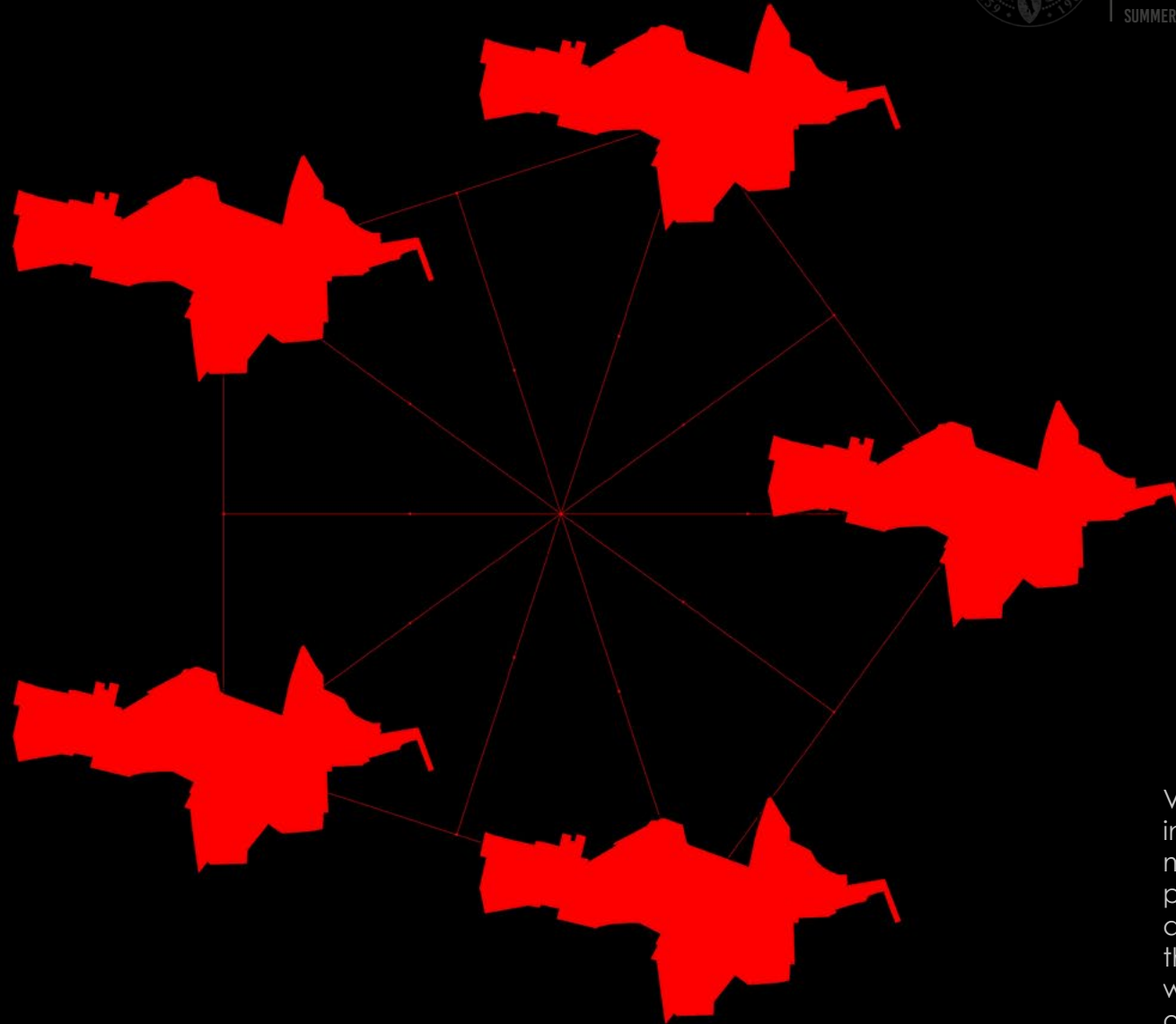
The graphic novel has a fictional story that explains the participatory process behind the design proposal. Even though there is a fictional character who comes from the future of the city, the rest of the characters are real. Those characters are the people who are interviewed with us.

## 2.VARIABLES



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ATELIER URBAN  
DESIGN E  
2019/2020  
SUMMER

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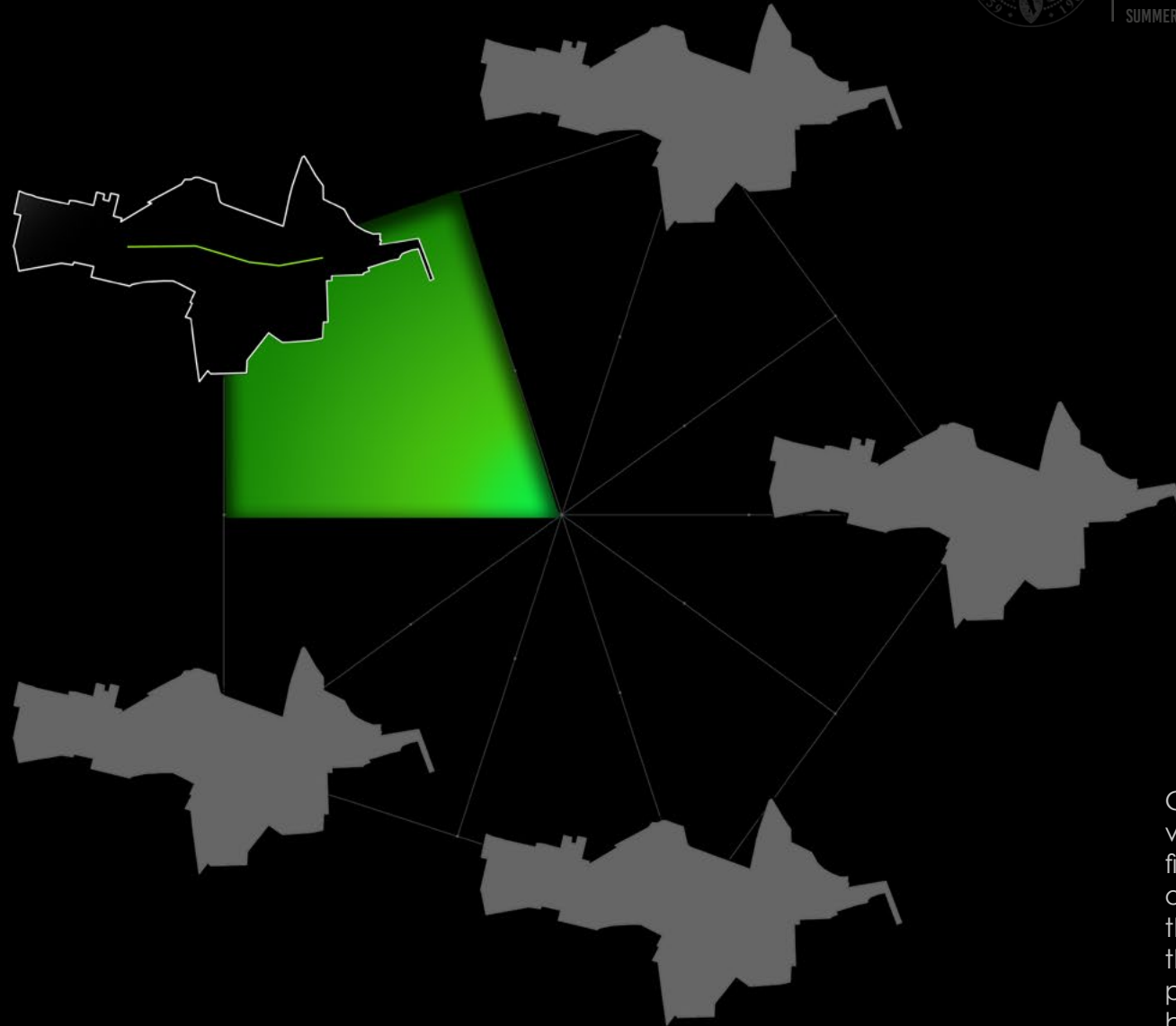
Variables are the key indicators that can be measured with computational methods and which will shape the design phase while we are trying to optimize them.

## 2.1.GREEN AXIS OPTIMIZATION



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ATELIER URBAN  
DESIGN E  
2019/2020  
SUMMER

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Greenery is the first variable that is defined as a goal for optimizing throughout the design process that is going to be implemented on Flaubert District.

## 2.1.1. GREEN AREAS



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2019/2020  
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While the city of Grenoble has a dense building settlement, vice versa the city fails to supply the same level of connection density about the green area network.

## 2.1.2. PROPOSED GREEN AXIS NETWORK



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2019/2020  
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UĞUR YILDIRIM SIMSEK

- PROPOSED NETWORK
- ZAC LIMIT
- GREEN AREAS

With an intervention that will be created in the Flaubert district, the weakness of the north-south line can be prevented, especially by taking advantage of the **centrality** of the district.

## 2.1.3.OPTIMIZATION EXPERIMENTS



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DESIGN E  
2019/2020  
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UĞUR YILDIRIM ŞİMŞEK

The screenshot displays the Galapagos Editor interface. On the left, a map shows a network of paths connecting various points, with a prominent green path highlighted. The word 'TEST 9' is overlaid on the map. On the right, the 'Galapagos Editor' settings panel is visible, containing the following options:

- Options Solvers Record**
- Generic**
  - Fitness: Minimize
  - Threshold: [empty]
  - Runtime Limit:  Enable
  - Max. Duration: 1 Hours, 30 Minutes
- Evolutionary Solver**
  - Max. Stagnant: 0 0 5 0
  - Population: 0 0 0 5 0
  - Initial Boost: 0 0 0 1 0
  - Maintain: 0 0 5 %
  - Inbreeding: 7 5
- Annealing Solver**
  - Temperature: 1 0 0 %
  - Cooling: 0 9 5 0 0
  - Drift Rate: 2 5 %

Below the settings panel, there is a section titled 'Blog posts on 'I Eat Bugs for Breakfast'' with several links:

- [Evolutionary Principles applied to Problem Solving](#)
- [Evolutionary Solvers: Fitness Functions](#)
- [Evolutionary Solvers: Selection](#)
- [Evolutionary Solvers: Coupling](#)
- [Evolutionary Solvers: Coalescence](#)
- [Evolutionary Solvers: Mutations](#)
- [Define "Fitness"....](#)
- [Fitness Pressure](#)
- [On getting lucky in higher dimensions](#)

At the bottom right of the interface are 'OK' and 'Cancel' buttons.

Green axis has been optimized after 9 different experiments and around 9 thousands of results that are gathered from those experiments.

<< <https://www.youtube.com/watch?v=Rc3nSwOuJ0Q> >>

# 2.1.4.WHY USING ALGORITHMS?



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ATELIER URBAN  
DESIGN E  
2019/2020  
SUMMER

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EACH BREAKING POINT ON THE GREEN AXIS HAS ATLEAST TWO PUBLIC TRANSPORT STATION IN A 400 METER RADIUS



CONNECTING TWO MAIN LANDMARKS OF THE AREA



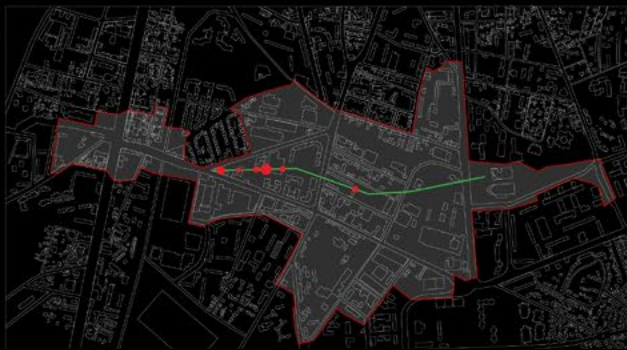
CENTER POINT OF THE GREEN AXIS IS AS CLOSE AS POSSIBLE TO THE CENTER OF THE AREA



HAVING MOST POSSIBLE BREAKING POINTS TO USE AS PUBLIC SQUARES



GREEN AXIS HAS THE LOWEST POSSIBLE INTERSECTIONS WITH EXISTING BUILDINGS



MAKING SURE THAT EACH SEGMENT OF THE GREEN AXIS IS AROUND 300 METERS LONG TO BE WALKABLE FOR MOST PEOPLE

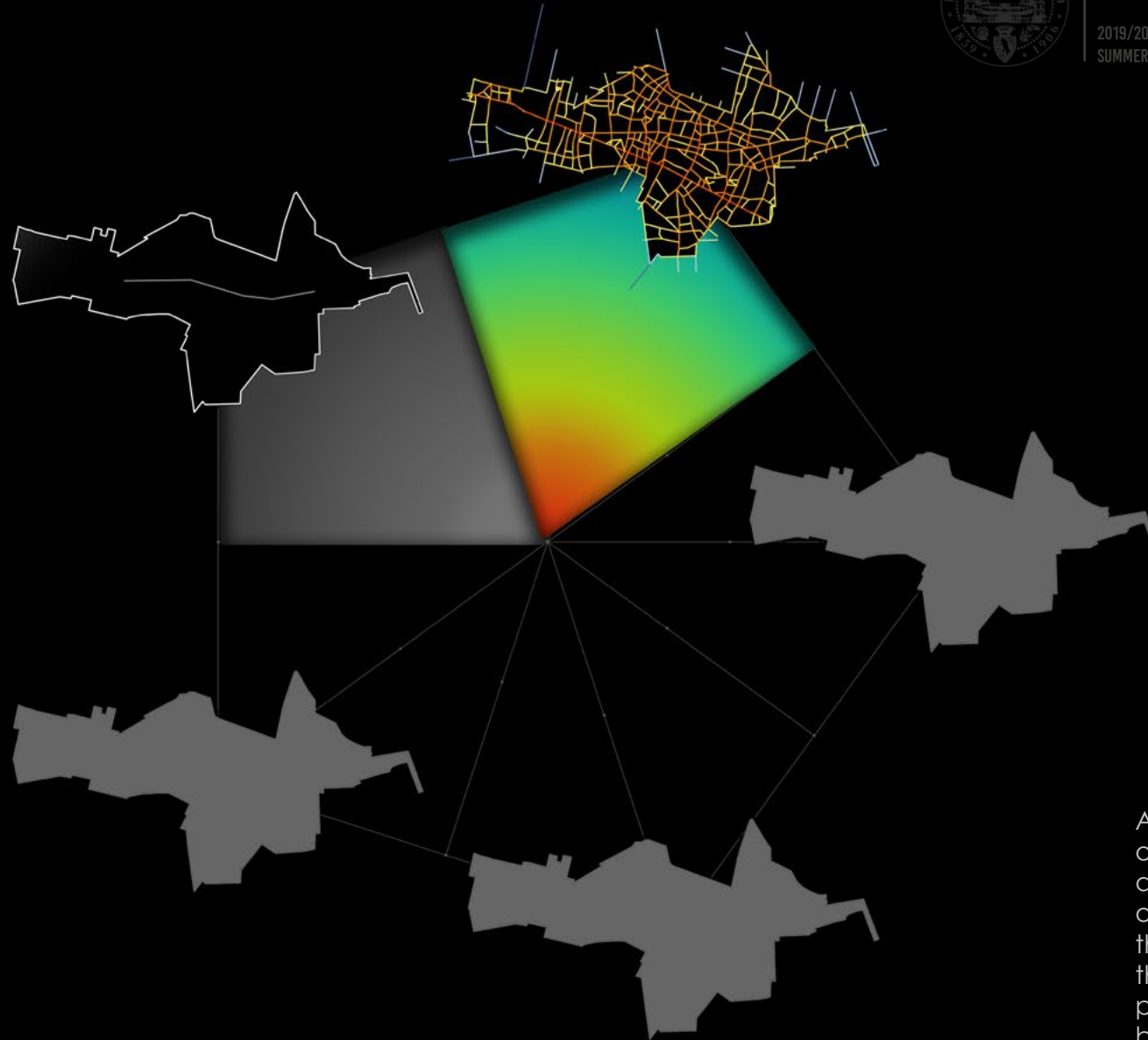


## 2.2.ACCESSIBILITY OPTIMIZATION



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DESIGN E  
2019/2020  
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Accessibility is the second variable that is defined as a goal for optimizing throughout the design process that is going to be implemented on Flaubert District.

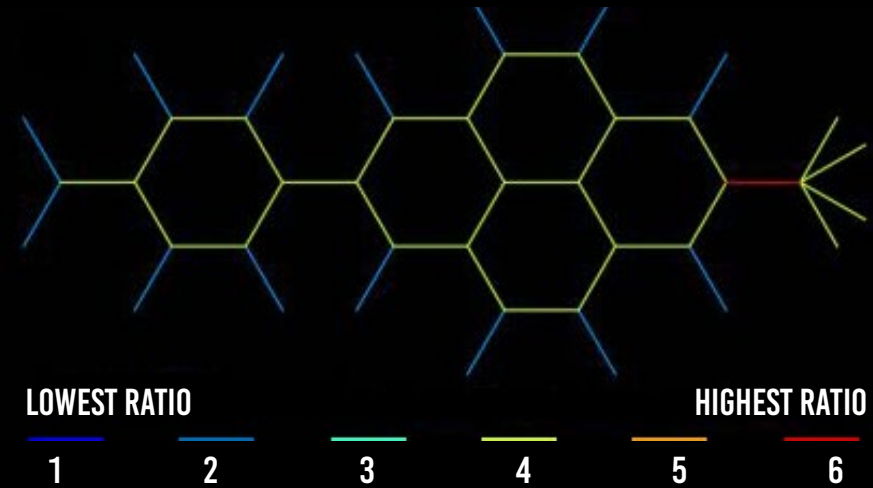
## 2.2.1. ACCESSIBILITY CONDITION

Cours Jean Jaurès Boulevard



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DESIGN E  
2019/2020  
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It can be seen that the Cours Jean Jaurès boulevard is the main road that connects to the northern and the southern parts of the Grenoble by checking the results of space syntax analysis. However, it also means that the boulevard is carrying the **traffic load of the whole city** and which is not sufficient.

## 2.2.2. STREET GENERATION EXPERIMENTS



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ATELIER URBAN  
DESIGN E  
2019/2020  
SUMMER

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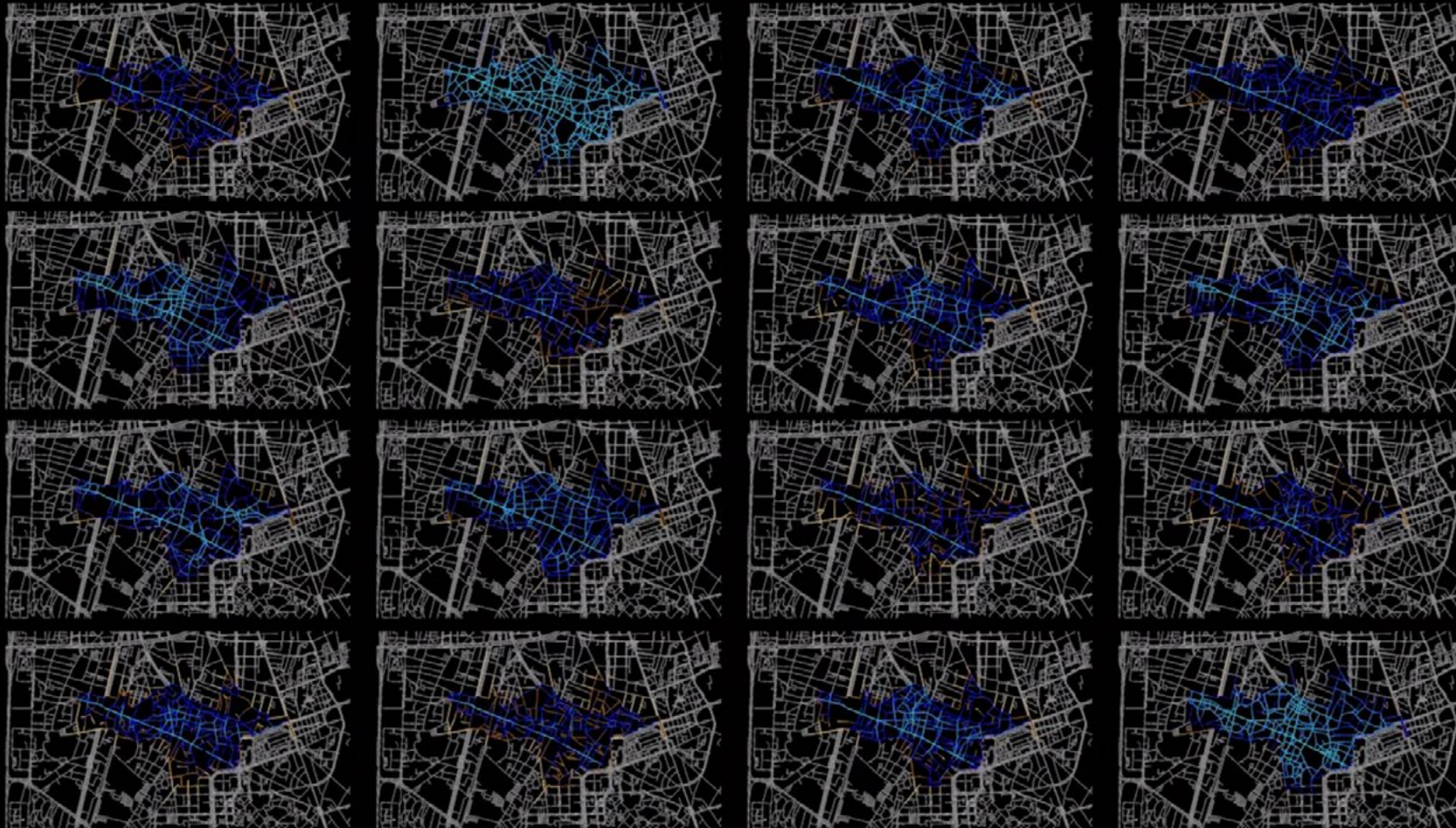


Figure shows the results of the optimization experiments which are created with grasshopper > galapagos plugin.

<< <https://www.youtube.com/watch?v=emNIIo7lYVg> >>

## 2.2.3. STREET GENERATION RESULTS

### REPORT:

**GENERATION TIME: 12 HOURS**

**PRODUCED ALTERNATIVES: 1256**

**ACCESSIBILITY RATIO:**

**%20 = 96 DESIGN OPTIONS**

**%40 = 256 DESIGN OPTIONS**

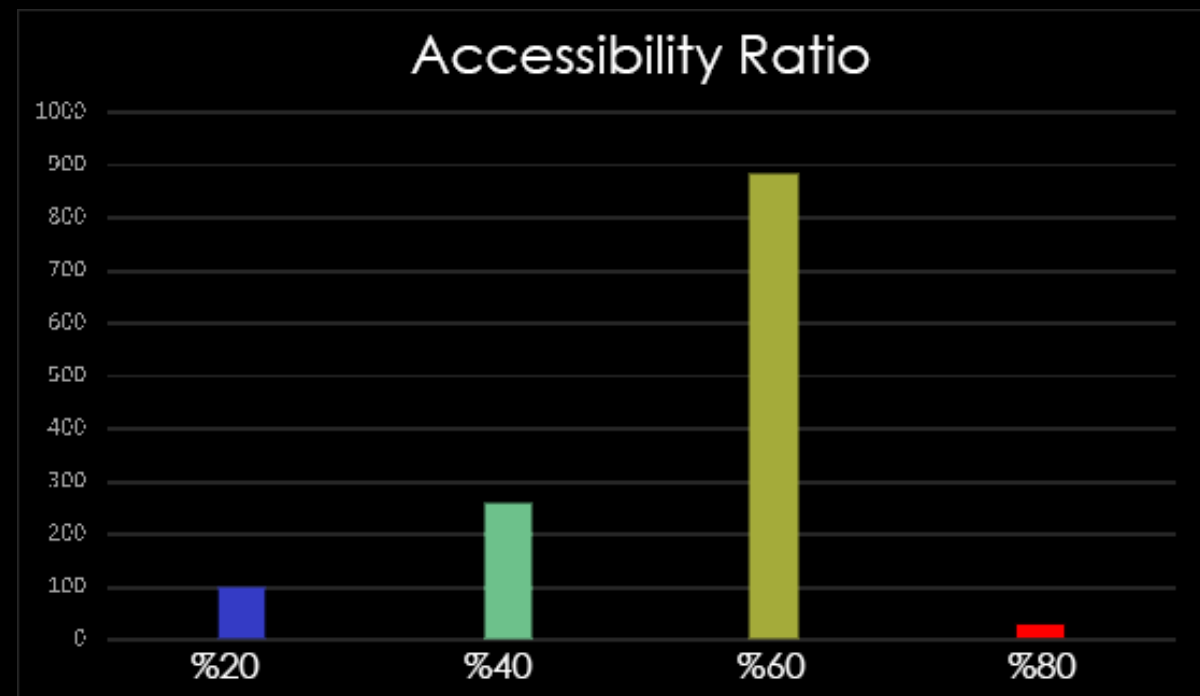
**%60 = 878 DESIGN OPTIONS**

**%80 = 26 DESIGN OPTIONS**



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## 2.2.4. SELECTED RESULTS

### EXAMPLES:



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%20



%40



%60



%80

Even though experiments create an optimized street network for the Flaubert district, it can be seen that while the new street network has the best accessibility ratio on the other hand it will cause a high density of building settlements. Consequently, more sophisticated and innovative solutions need to be created.

## 2.3. PROPOSED INTERVENTIONS

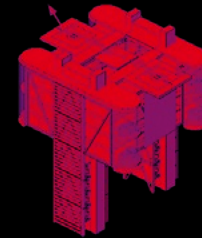


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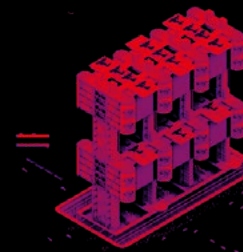
### FIRST CONSTRUCTION

180 landings per hour



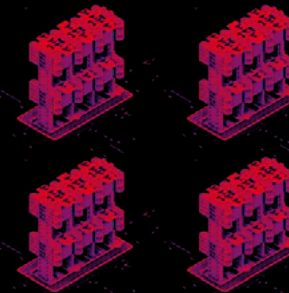
### NEXT 10 YEARS (X6)

> 1000 landings per hour



### AFTER 10 YEARS

It can be implemented to different locations



The problems that we are facing today such as the increasing population, air pollution, climate change etc. will require new and radical preventions. Based on this idea, for increasing to connectivity of the City of Grenoble, a **next generation urban aviation transport system** is suggested.

“Uber Sky Tower: Pickard Chilton.” Uber Sky Tower | Pickard Chilton, [www.pickardchilton.com/work/uber-sky-tower](http://www.pickardchilton.com/work/uber-sky-tower).

# 2.3.1.CASE STUDY

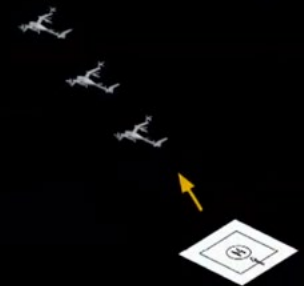
## UBER SKY TOWER



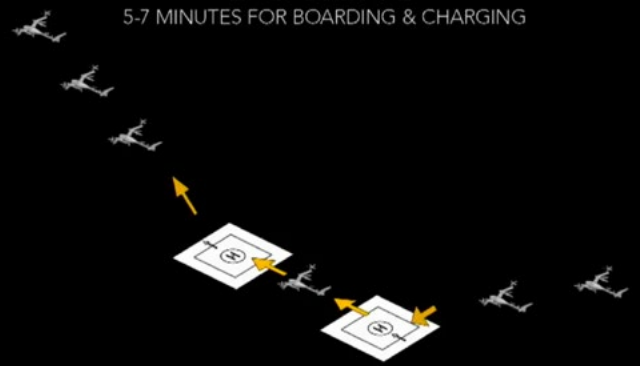
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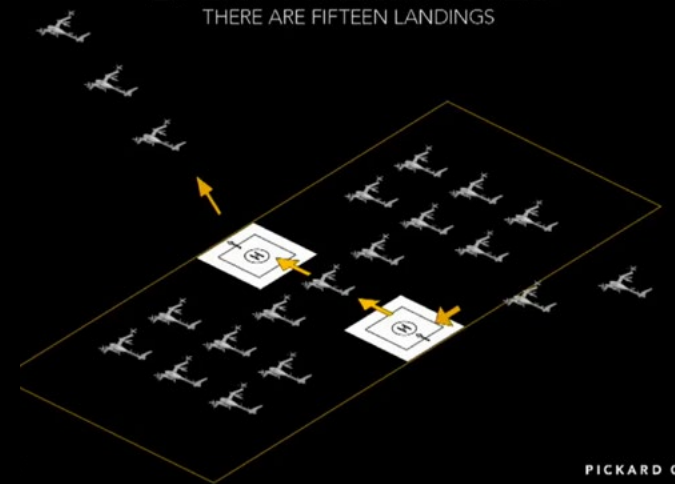
**TAKEOFF**  
EVERY 20 SECONDS / 3 PER MINUTE / 180 PER HOUR



**DOCKING**  
5-7 MINUTES FOR BOARDING & CHARGING



**EVERY FIVE MINUTES**  
THERE ARE FIFTEEN LANDINGS



PICKARD C

PICKARD C

PICKARD C

**LOS ANGELES INTERNATIONAL AIRPORT**

**URBAN AVIATION HUB**

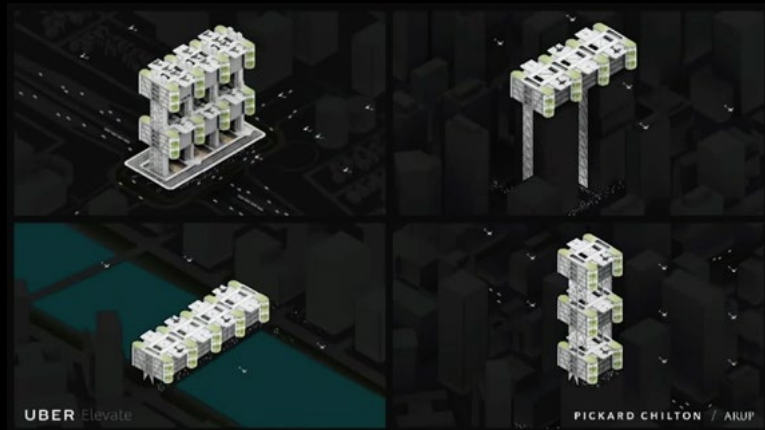


**20,000** PASSENGERS / HR

**10,000** PASSENGERS / HR

**3,500** ACRES

**≤ 3** ACRES



UBER Elevate

PICKARD CHILTON / ARUP

UBER Elevate

PICKARD CHILTON / ARUP

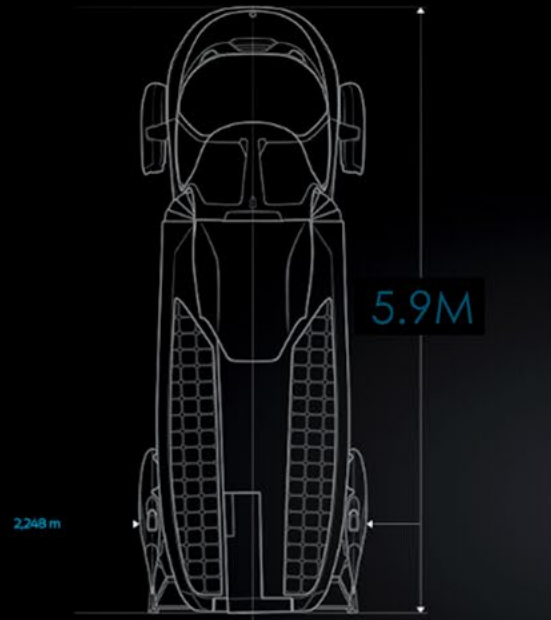
“Uber Sky Tower: Pickard Chilton.” Uber Sky Tower | Pickard Chilton, [www.pickardchilton.com/work/uber-sky-tower](http://www.pickardchilton.com/work/uber-sky-tower).

# 2.3.2.RESEARCH > AVIATION CAR CONCEPTS 1



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### Size / Capacity / Weight

- > Automotive Dimensions – 5.9 m (L), 2.2 m (W), 1.5 m (H)
- > Aerospace Dimensions – 5.8 m (L), 8.8 m (WS), 1.4 m (H)
- > Max Take Off Weight – 960 kg (useable load 240 kg)

### Power

- > AeroMobil custom 2.0 l turbo charged 4-cylinder boxer ICE.
- > Dedicated electric front wheel drive system incorporating electronic differential.
- > Adaptive transmission delivering both road-going functionality and direct drive during the flight.
- > Automotive Power – 80 kW (110 BHP) via twin E Motors
- > Aerospace Power – 224 kW (300 BHP) via Turbo charged ICE (Euro 6)
- > Direct Drive variable pitch propeller (speed 2 400 rpm)
- > Overall Power plant weight 110 kg

### Operating Range

- > Automotive Range (estimated using NEDC cycle) 4.2 l / 100 km
- > Aerospace Max Cruise Range – 750 km @ 75 % (I 200 m, ISA)
- > Fuel Capacity 90 ltr (95 RON Gasoline)

### Performance

- > Automotive – Top speed 160 kph, 0-100 kph 10 sec.
- > Aerospace –  $V_s$  /  $V_c$  /  $V_D$  – 112 / 259 / 360 km/h
- > MTOW Take Off Distance ground roll / 50 ft – 397 / 595 m

### Safety

- > Airframe Parachute System
- > Occupant Restraint Systems – Airbags, Pyrotechnic Load limiting seat belts.
- > Integral Carbon Fiber Structure & Occupant cell.
- > Autonomous Flight via current autopilot technology (optional)

### Key Features

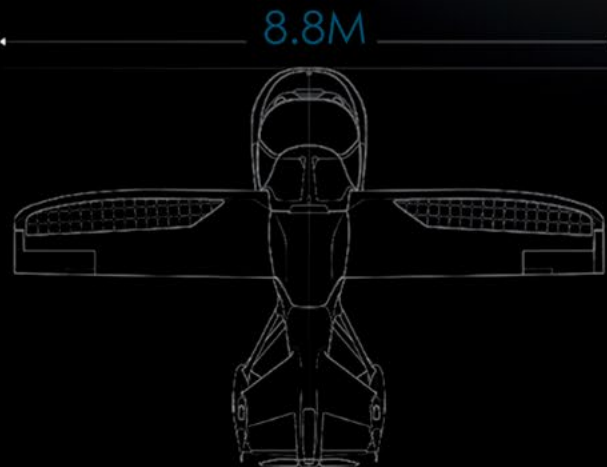
- > Full transformation into flight mode in less than 3 minutes.
- > Adaptive Flight control surfaces and vehicle suspension for optimal take-off and landing.
- > Advanced controls and avionics in both Fly and Drive mode.

### Certification Basis

- > Automotive: EWVTA / MI (EU) & 49 CFR 571 (US)
- > Aerospace: CS 23 Rev 5/ELA 1 (EU) & 14 CFR 23 Rev 5 (US)

### Wheels

- > Wheels Wheel and tyre size front: 165 / 65 / R15 on 15x6 rim
- > Wheel and tyre size rear: 145 / 65 / R15 on 15x4.5 rim



“AeroMobil 4.0 STOL.”  
Aeromobil. Accessed  
June 11, 2020. [https://  
www.aeromobil.com/  
aeromobil-4\\_0-stol/](https://www.aeromobil.com/aeromobil-4_0-stol/).

# 2.3.3.RESEARCH > AVIATION CAR CONCEPTS 2



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### Terrafugia Transition properties

- Cruise Speed: 100 mph
- Useful Load: 500 pounds
- Range: 400 miles
- Maximum Altitude: 10,000 feet
- Engine: Rotax 912iS
- Fuel Burn (at cruise): 5 gph

Dimensions (Drive Mode): 6.5' x 7.5' x 19.5' feet = (1.98m x 2.28m x 5.94m)  
 Dimensions (Flight Mode): 6.5' x 26.5' x 19.5' feet = (1.98m x 8.00m x 5.94m)

Terrafugia is excited to premier the new Outer Mold Line for the TF-X™, the four-seat, vertical takeoff and landing (VTOL) hybrid electric aircraft that will make flying easier and safer than ever before.

[Submission to European Transport Conference 2013](#)

**Title:** Personal air vehicles as a new option for commuting in Europe: vision or illusion?

**Authors:** Decker, Michael; Fleischer, Torsten; Meyer-Soylu, Sarah; Schippl, Jens

**All:** Karlsruhe Institute of Technology, Institute of Technology Assessment and System Analysis

**Corresponding author:** jens.schippl@kit.edu

(PAV = Potential Air Vehicle)

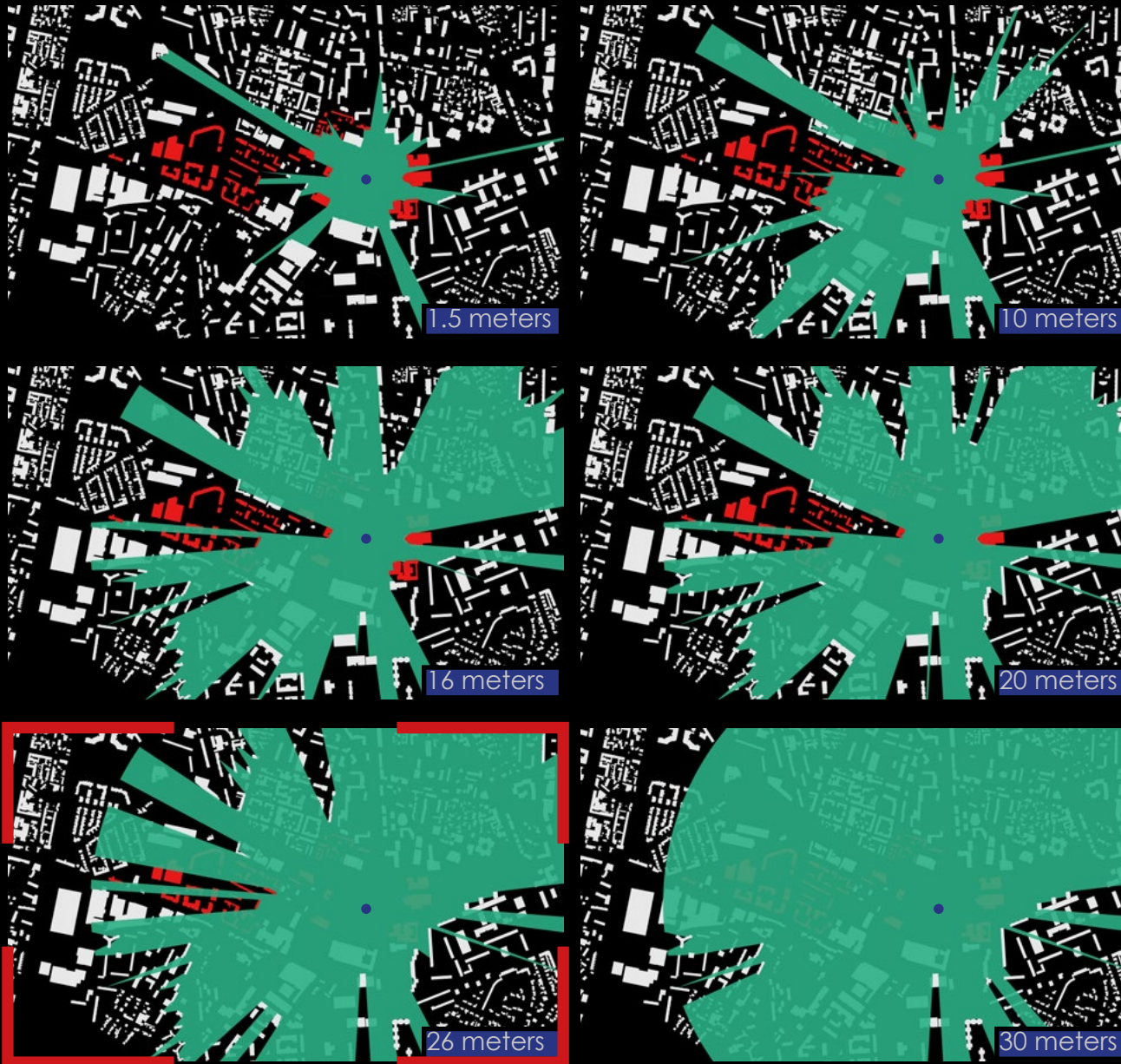
**Table 1: Specifications of the "Reference PAV" in MyCopter**

physical specifications	
number of seats	1+1
dimension of PAV	"garageable": size of a large/mid-size car
kind of propulsion technology	preferable electric
max. take-off weight of PAV	450kg
performance	

"An Overview of Current Research and Developments in Urban ..." Accessed June 11, 2020. [https://www.researchgate.net/publication/334363765\\_An\\_Overview\\_of\\_Current\\_Research\\_and\\_Developments\\_in\\_Urban\\_Air\\_Mobility\\_-\\_Setting\\_the\\_Scene\\_for\\_UAM\\_Introduction](https://www.researchgate.net/publication/334363765_An_Overview_of_Current_Research_and_Developments_in_Urban_Air_Mobility_-_Setting_the_Scene_for_UAM_Introduction).

"The Flying Car - 'Transition': Terrafugia." Arch2O.com, January 14, 2018. <https://www.arch2o.com/the-flying-car-transition-terrafugia/>.

## 2.3.4. ISOVIST ANALYSIS



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One of the simplest methodologies for conducting a view analysis is to use an isovist. An isovist is the volume of space visible from a given point in space.

In this case isovist analysis shows the visibility range of architectural and urban space in a 1km diameter circle. When we compare the isovist analysis from different levels it can be understood that the best level for creating the landing platform starts from 26 meters above from the ground. Under that level surrounding buildings will have a risk to create a block effect on flying routes of the cars.

# 3.MASTER PLAN



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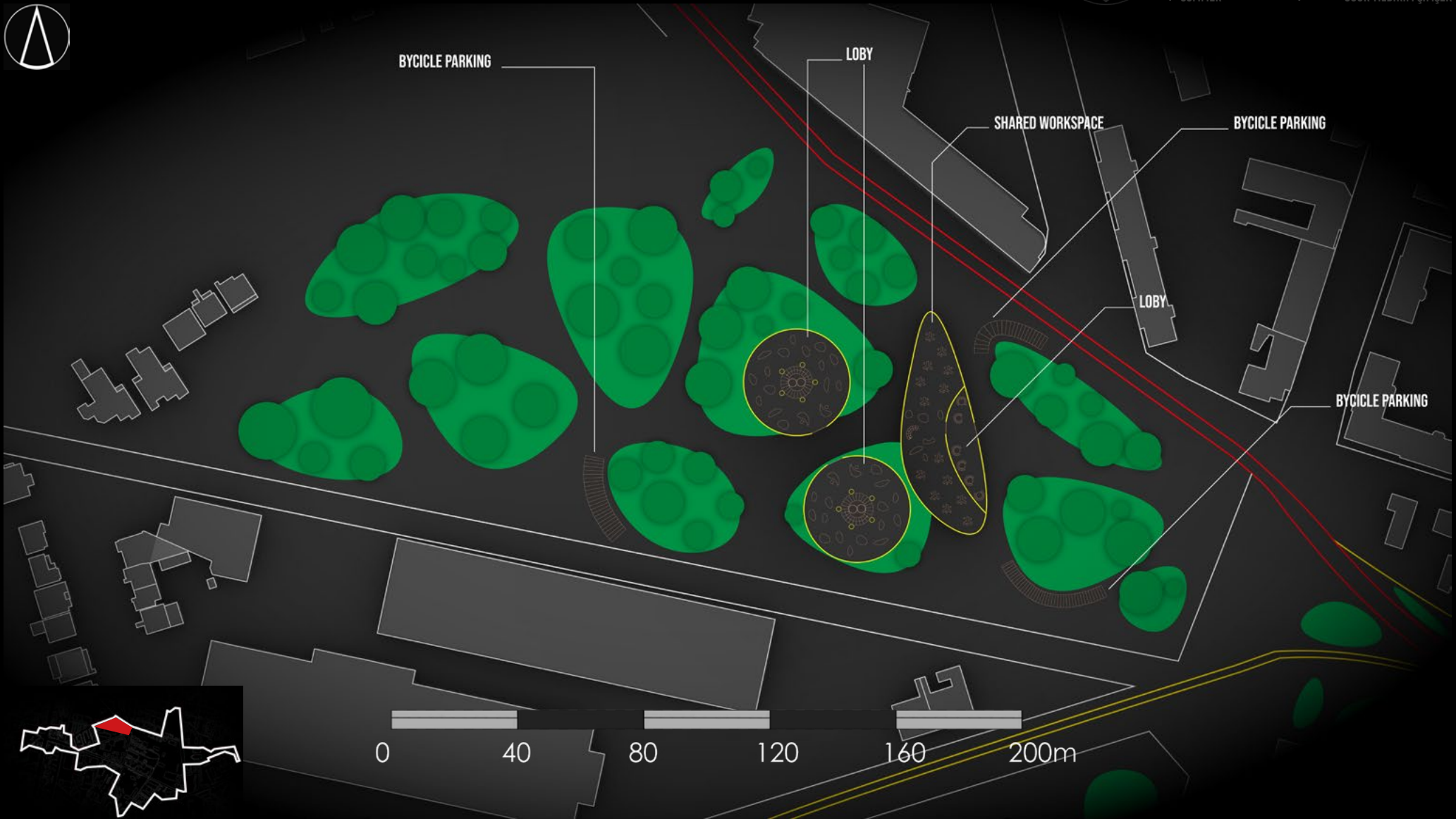
- GREEN AREA
- TECH PARK BUILDINGS
- PEDESTRIAN PATH
- BIKE PATH
- BICYCLE AND E-CAR PARKING
- URBAN AVIATION TRANSPORTATION HUB
- PUBLIC HOUSING

# 3.1.DETAILS OF TECH PARK



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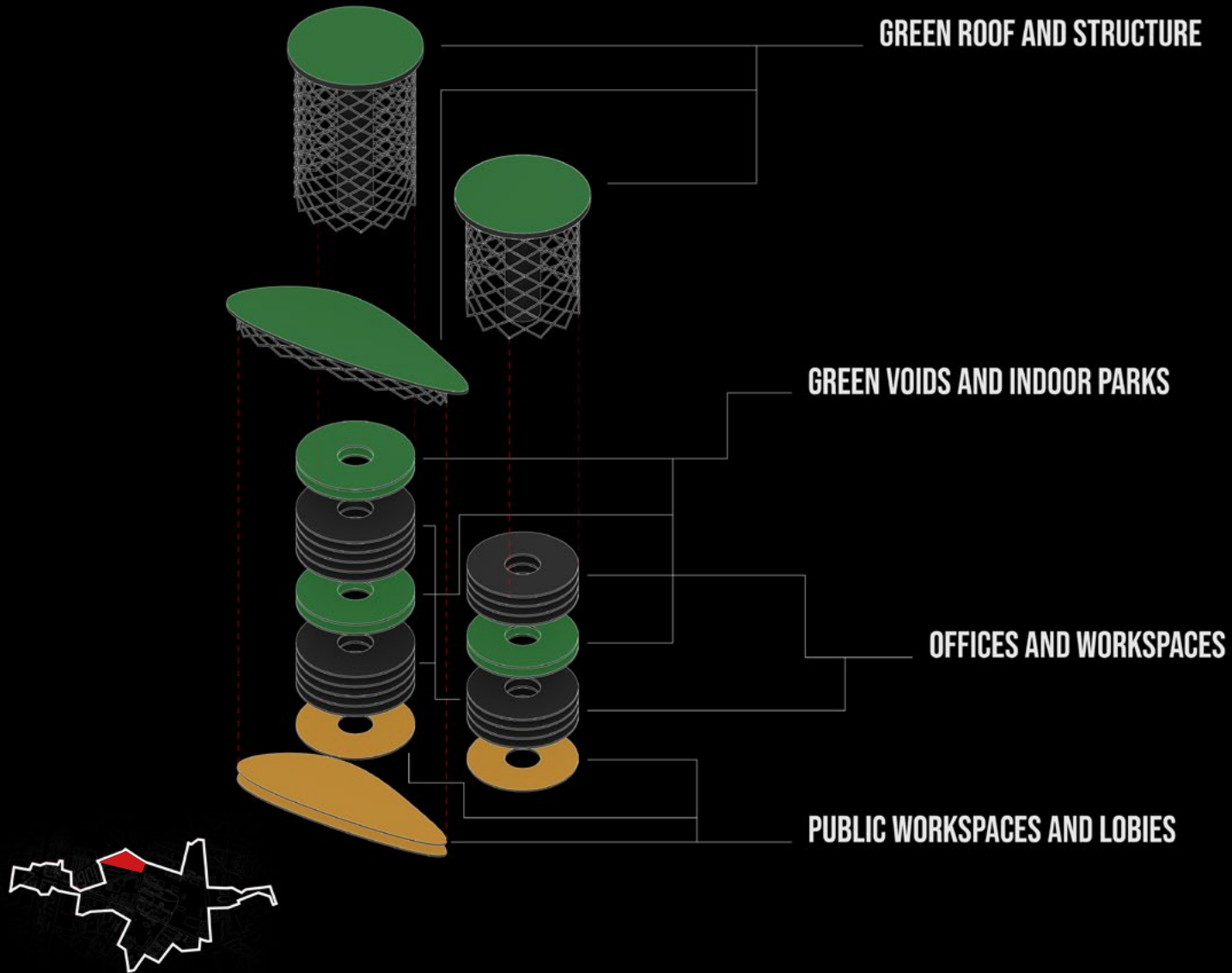


# 3.1.1.DETAILS TECH PARK



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Tech Park numbers and details:

Site:

Area: 33723 m<sup>2</sup>  
Green Area: 14393.5 m<sup>2</sup>  
Green Ratio: 0.42

Sharing Workspace:

Foot Print: 2624.7 m<sup>2</sup>  
Floors: 2  
Height: 6.5 m

Smaller Tower:

Foot Print: 1949.5 m<sup>2</sup>  
Floors: 11  
Height: 33.65 m

Larger Tower:

Foot Print: 1949.5 m<sup>2</sup>  
Floors: 15  
Height: 46 m

# 3.2.DETAILS OF PUBLIC HOUSING



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AMIRSALAR MAZAKERMANI  
UĞUR YILDIRIM ŞİMŞEK

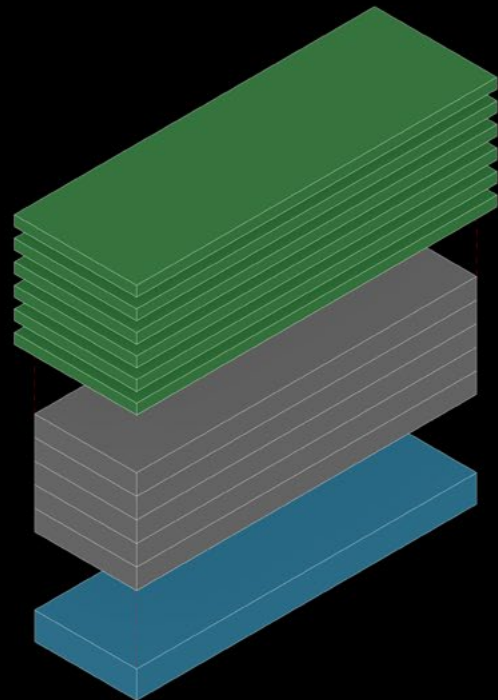


# 3.2.1.DETAILS OF PUBLIC HOUSING



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GREEN ROOF AND BALCOONIES

APARTMENTS

COMMERCIAL AND LOBBY

New Public Housing:

Site:

Area: 21024 m<sup>2</sup>  
Green Area: 10903.7 m<sup>2</sup>  
Green Ratio: 0.51

Buildings(x4):

Foot Print: 954 m<sup>2</sup>  
Floors: GF+5  
Height: 20.5 m

# 3.3.DETAILS OF PIAZZA



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# 3.3.1.A-A' PERSPECTIVE SECTION OF PIAZZA



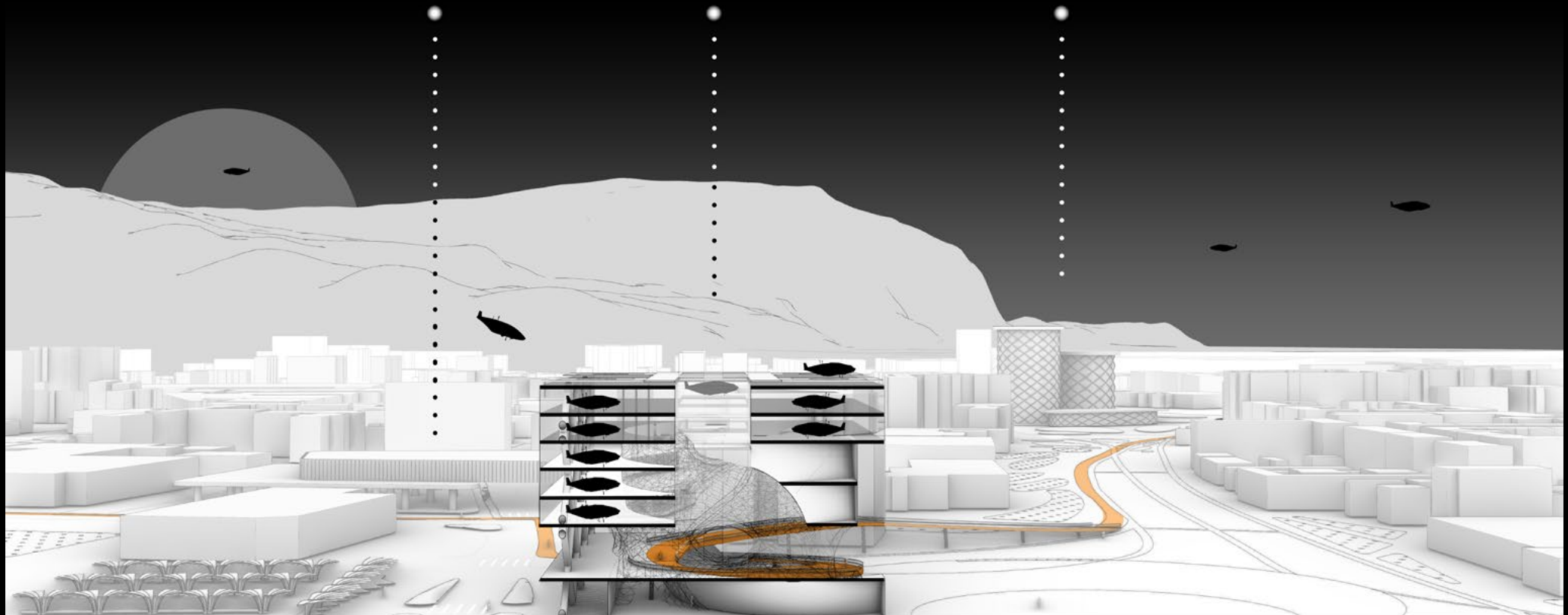
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AMIRSALAR MAZAHERKEMANI  
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E-CAR AND BICYCLE PARKING

URBAN AVIATION HUB

TECH BUILDINGS



PARKING AREA

E-CAR SHARING

SHUTTLE PARKING

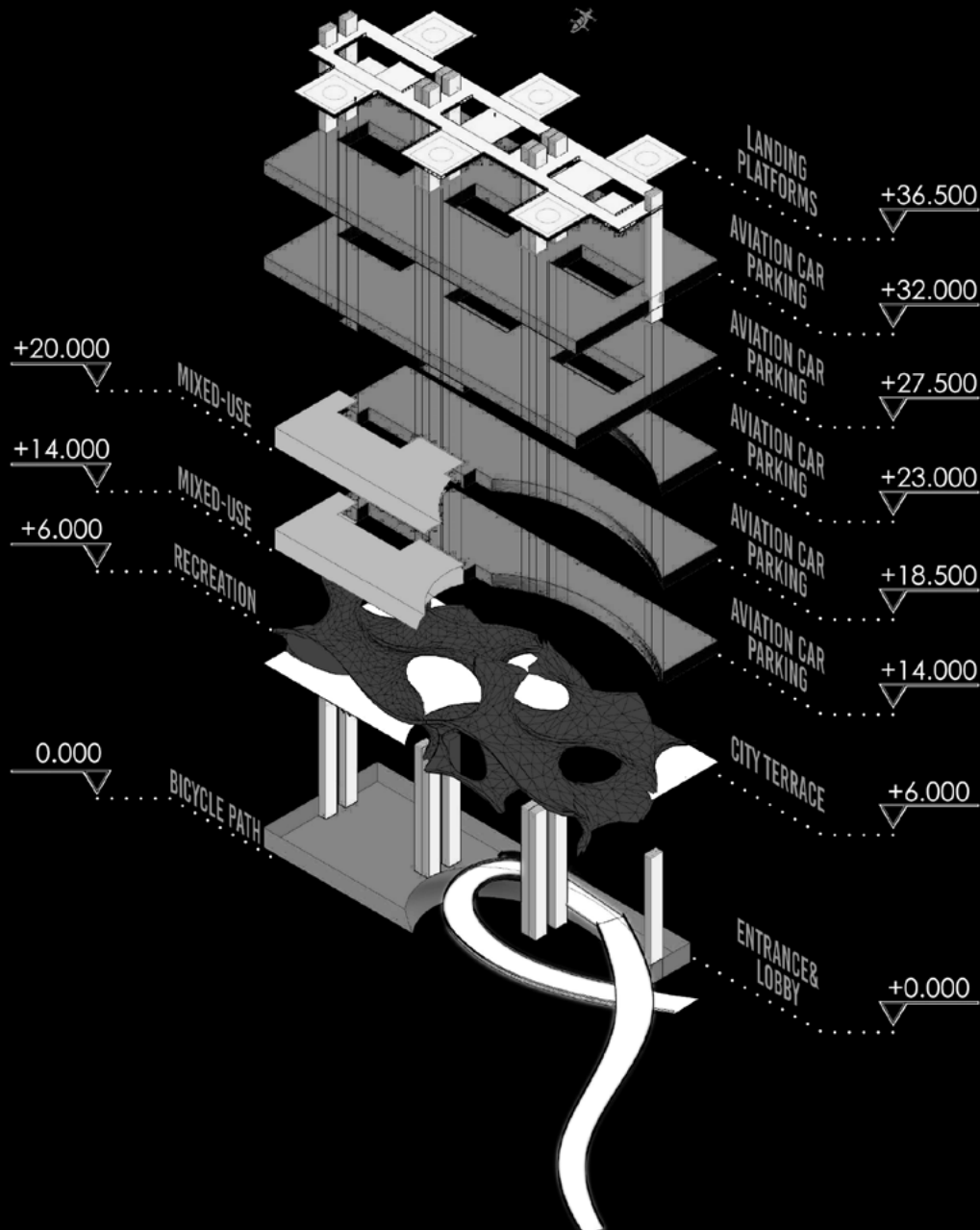
PIAZZA

# 3.4.DETAILS OF URBAN AVIATION HUB



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UĞUR YILDIRIM ŞİMŞEK



## LANDING PLATFORMS

2750 sqm

6 Landing platform for Aviation transportation vehicles

## AVIATION CAR PARKING

4770 sqm

22 Aviation transportation vehicle

## AVIATION CAR PARKING

4770 sqm

22 Aviation transportation vehicle

## AVIATION CAR PARKING

1850 sqm

11 Aviation transportation vehicle

## AVIATION CAR PARKING

1850 sqm

11 Aviation transportation vehicle

## AVIATION CAR PARKING

1900 sqm

11 Aviation transportation vehicle

## MIXED-USE AREA

1000 sqm

commercial and entertainment areas,

## MIXED-USE AREA

950 sqm

commercial and entertainment areas,

## CITY TERRACE

3400 sqm

sport fields, bicycle path, climbing walls, recreation areas, observation areas, mobil cafe...

## ENTRANCE & LOBBY

2700 sqm

entrance, lobby, galleries

# 3.4.1.DETAILS OF URBAN AVIATION HUB

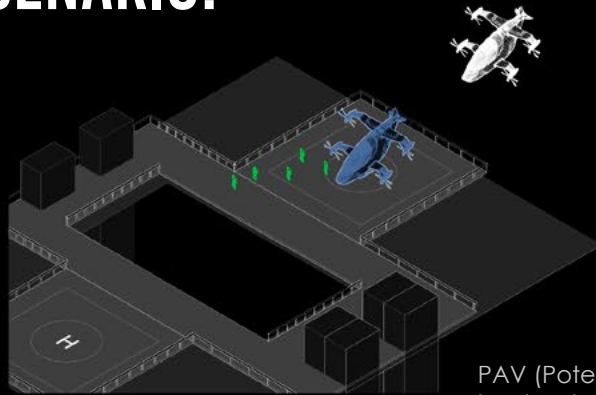
## SCENARIO:



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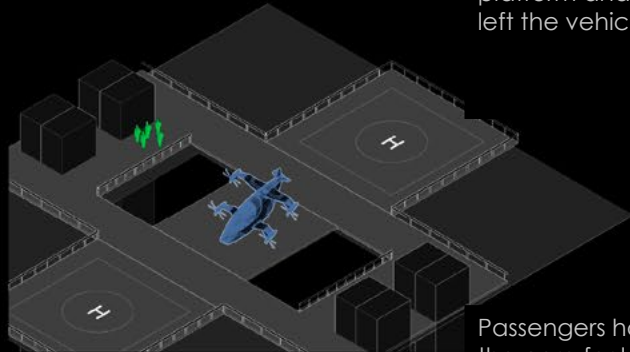
PROF. DANIELLA CIAFFI  
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PROF. FEDERICO GUIATI  
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1



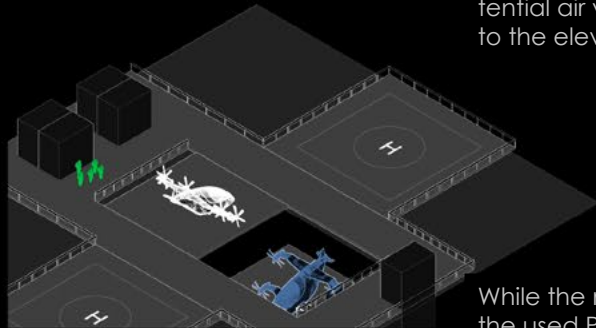
PAV (Potential air vehicle) has landed on the landing platform and the passengers left the vehicle.

2

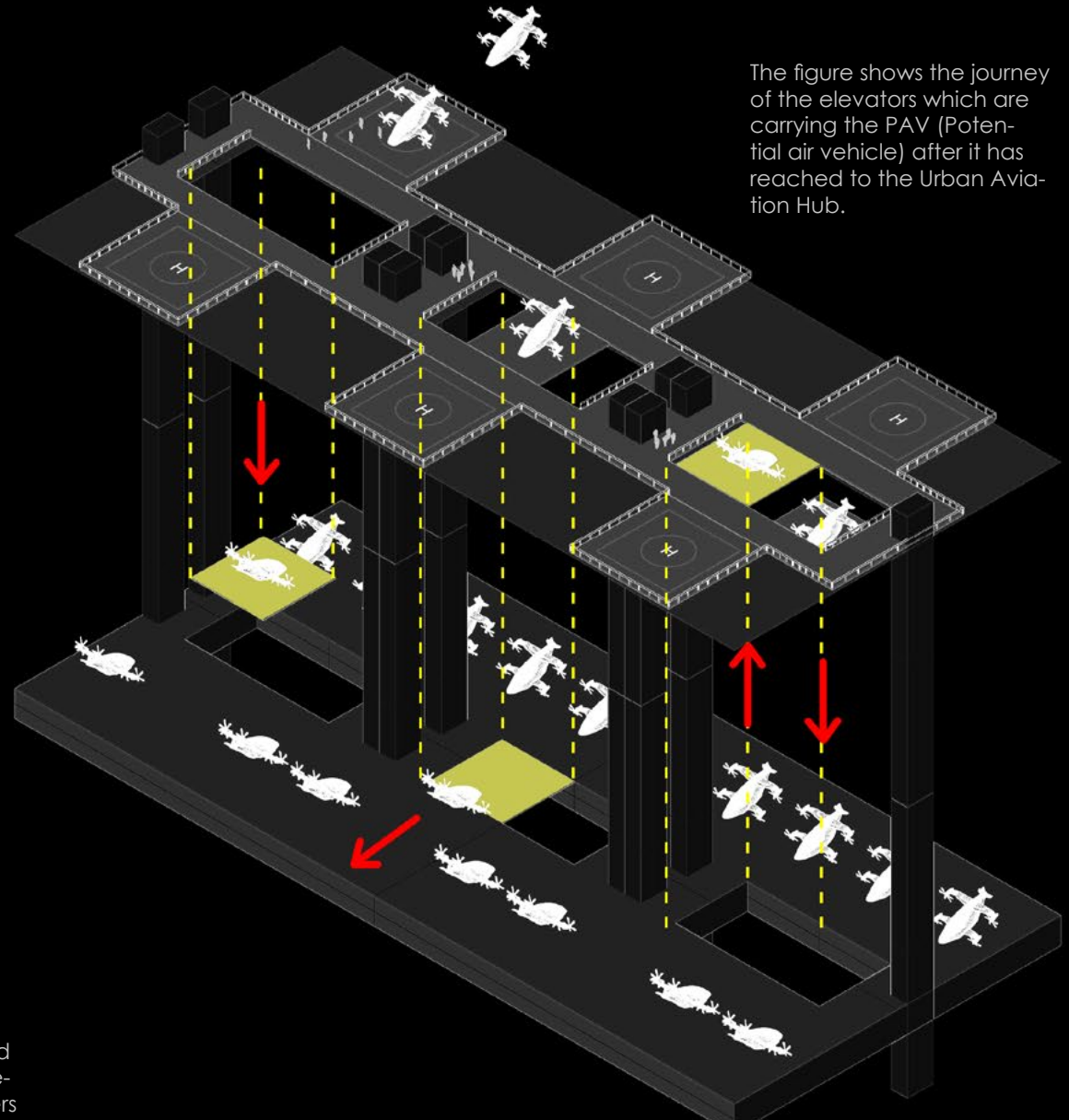


Passengers have reached to the core for leaving the hub. In the meantime, PAV (Potential air vehicle) is driven to the elevator.

3



While the new PAV is arriving the used PAV has been carried to the parking floor with an elevator. Potential new passengers have arrived at the platform.



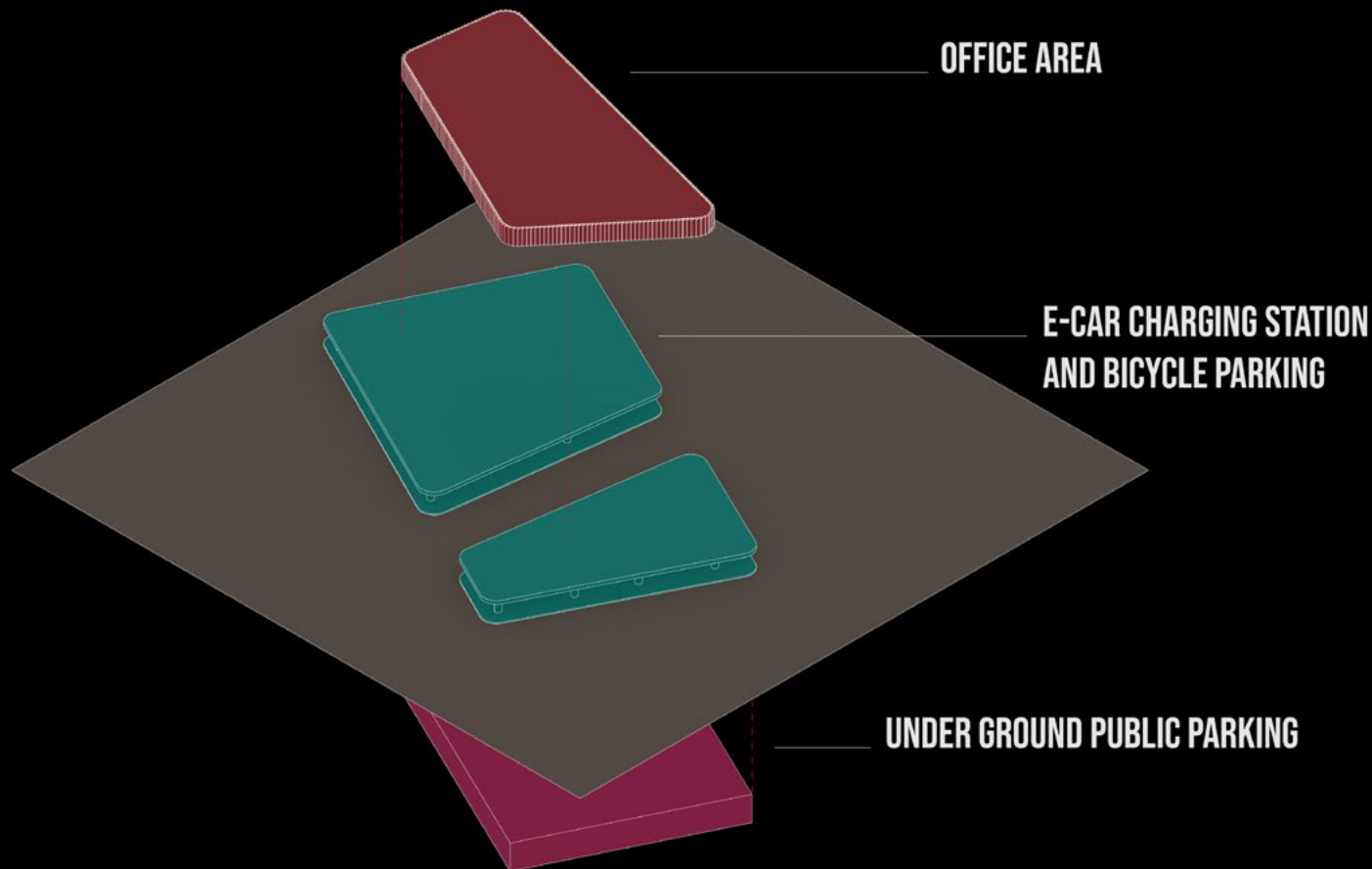
The figure shows the journey of the elevators which are carrying the PAV (Potential air vehicle) after it has reached to the Urban Aviation Hub.

## 3.4.2.DETAILS OF PARKING AND COMMERCIAL CENTER



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UĞUR YILDIRIM ŞİMŞEK



New Public Parking and  
Commercial Center:

Site:

Area: 17650 m<sup>2</sup>  
Green Area: 3473 m<sup>2</sup>  
Green Ratio: 0.19

Buildings(x4):

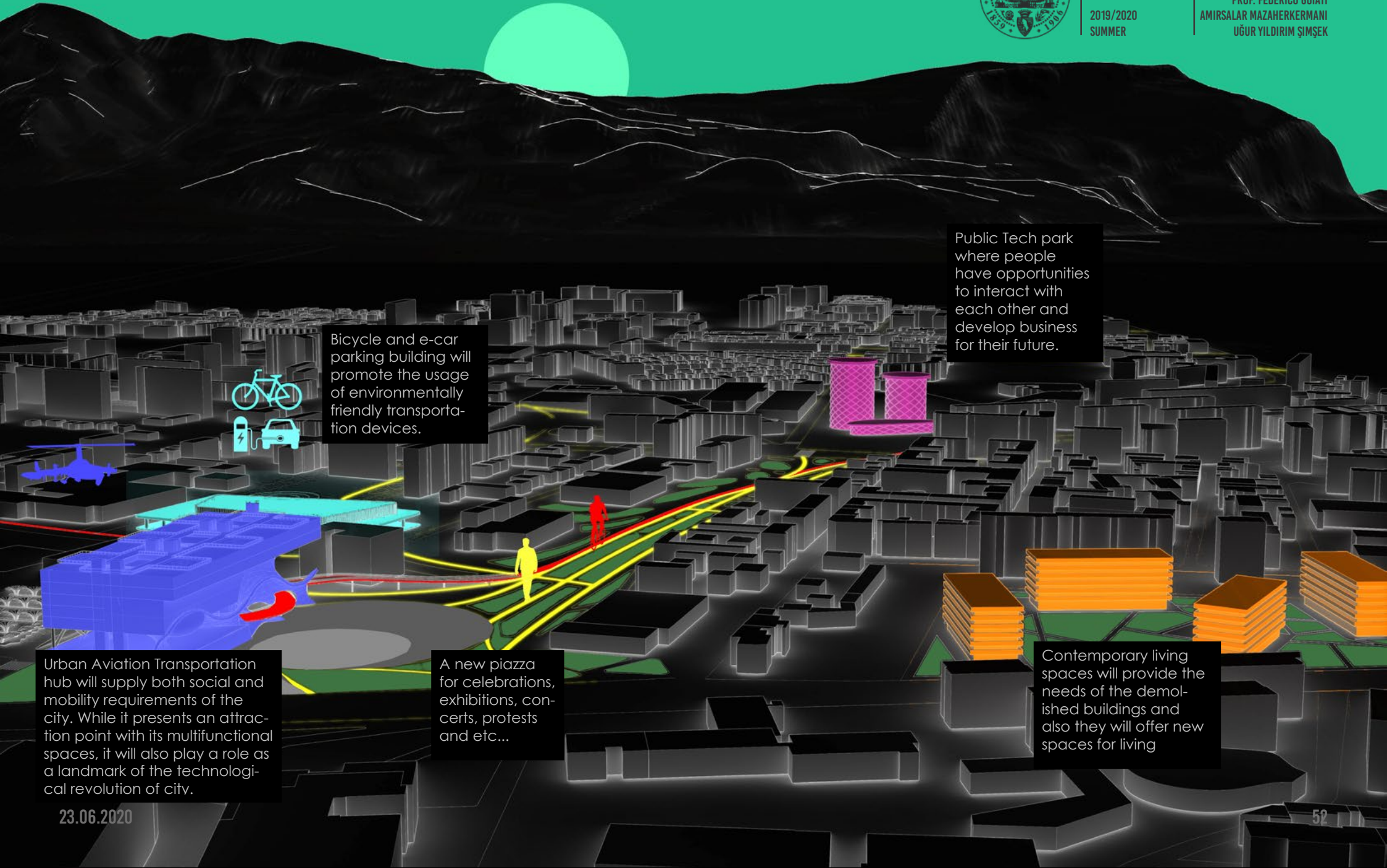
Foot Print: 6414 m<sup>2</sup>  
Floors: UG+2  
Height: 11.5 m

# 3.5.3D PERSPECTIVE



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Bicycle and e-car parking building will promote the usage of environmentally friendly transportation devices.

Public Tech park where people have opportunities to interact with each other and develop business for their future.

Urban Aviation Transportation hub will supply both social and mobility requirements of the city. While it presents an attraction point with its multifunctional spaces, it will also play a role as a landmark of the technological revolution of city.

A new piazza for celebrations, exhibitions, concerts, protests and etc...

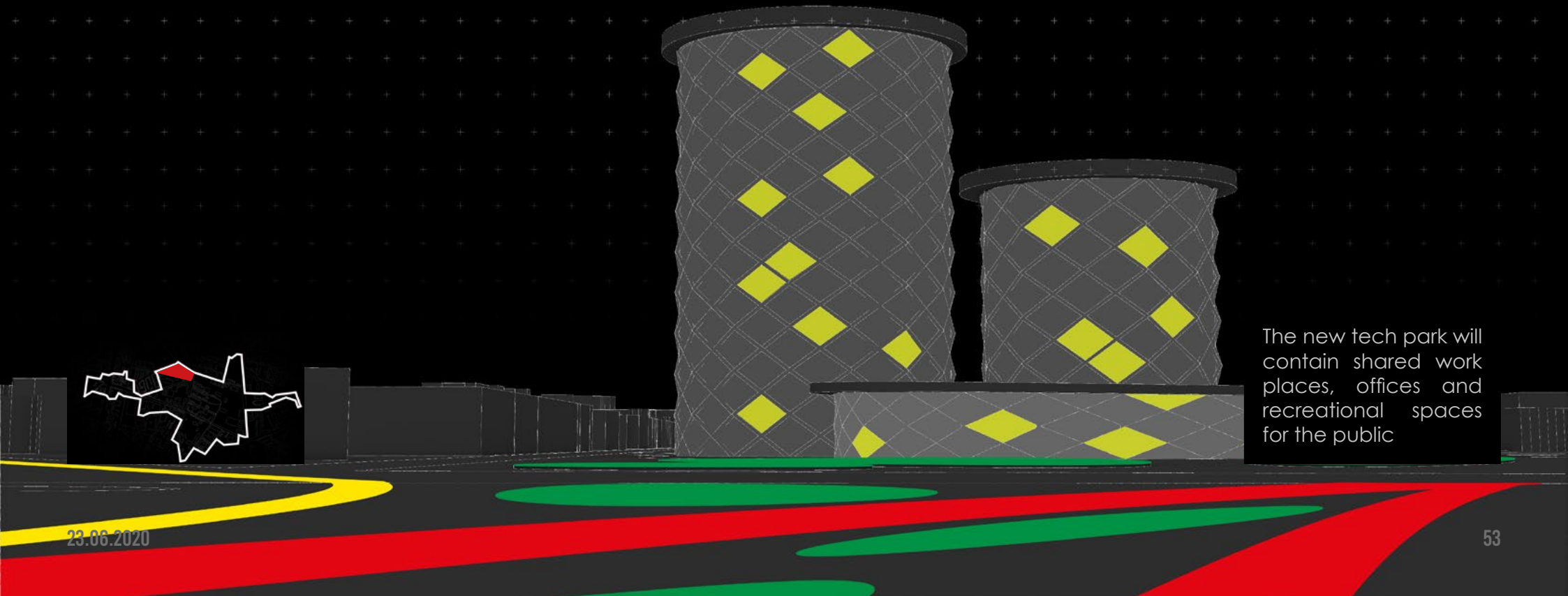
Contemporary living spaces will provide the needs of the demolished buildings and also they will offer new spaces for living

# 3.6.1.TECH PARK



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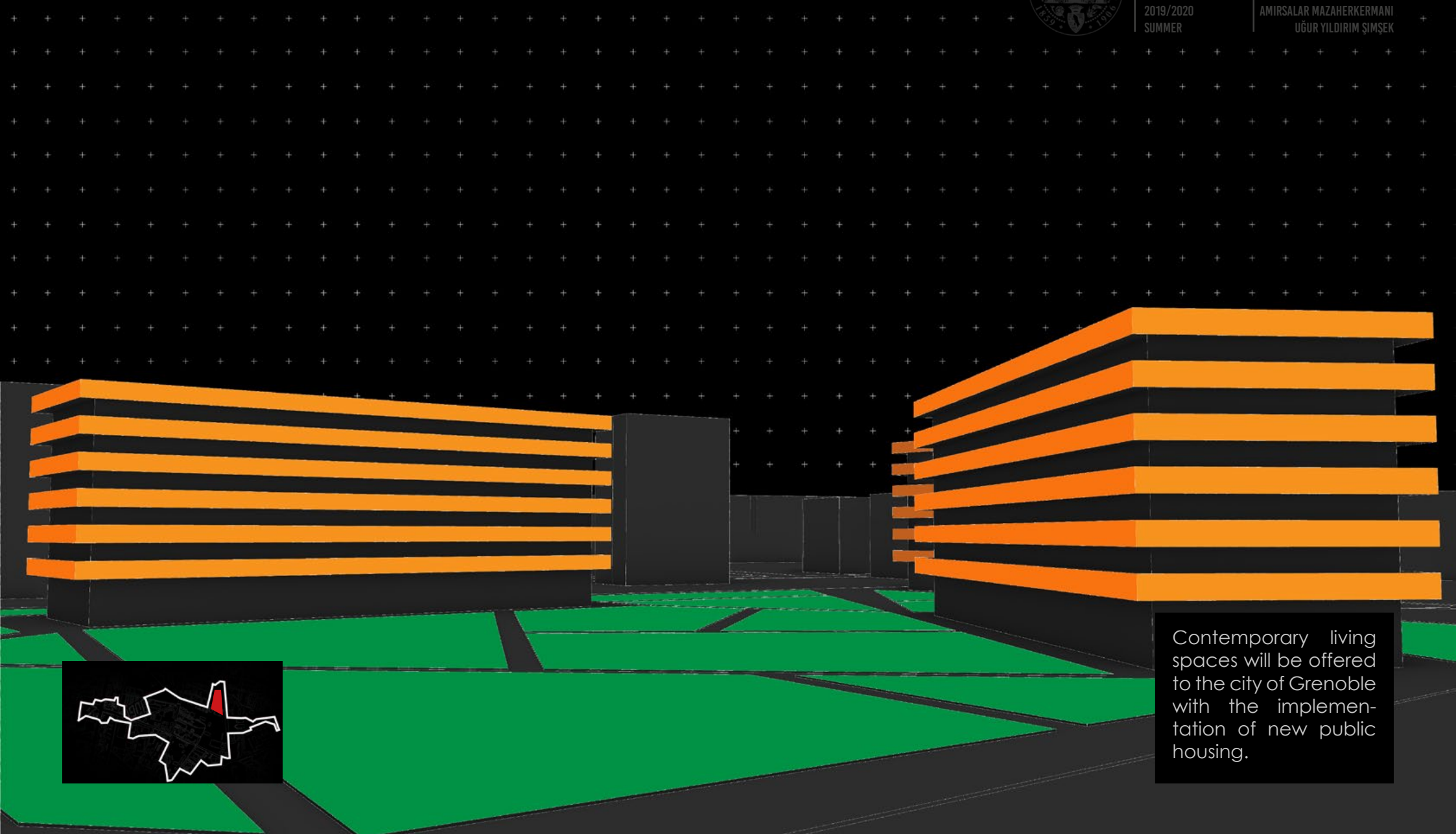
The new tech park will contain shared work places, offices and recreational spaces for the public

# 3.6.2.PUBLIC HOUSING



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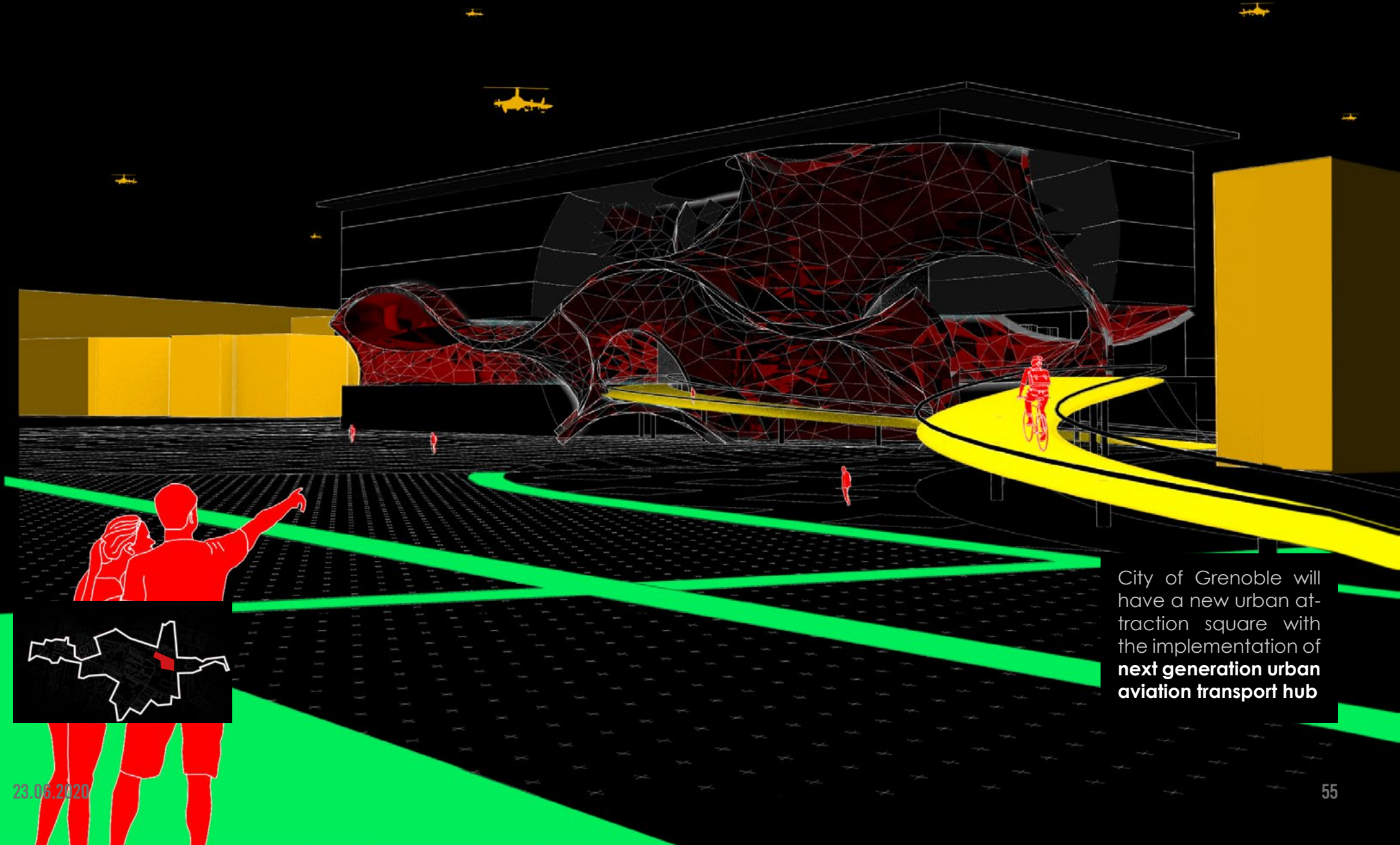
Contemporary living spaces will be offered to the city of Grenoble with the implementation of new public housing.

# 3.6.3.URBAN AVIATION TRANSPORTATION HUB



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AMIRSALAR MAZAKERMANI  
UĞUR YILDIRIM ŞİMŞEK



City of Grenoble will have a new urban attraction square with the implementation of **next generation urban aviation transport hub**

