imag-ining the unim-aginable

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IMAGINING THE UNIMAGINABLE

Over the past decade, technology has radically changed everyday urban life. Now, no one leaves home without a mobile phone – their portals to the online world of information and social contacts. New technologies are constantly being designed and applied in the city. Governments and tech companies have started collecting all kinds of data about urban life, ranging from air quality to traffic congestion. And, now, software can organise city life just as well as the program of urban planners. These technologies are being implemented into the urban environment without knowing exactly how they will affect people and their environment. But, we do know that they are already having a major impact on our behaviour and how we interact with each other.

How can we give more direction to (future) use, design, and applications of new technologies in public space, so that we can be less surprised by unintended consequences? How can we develop and visualise/design such scenarios that make experiential what will be critical in possible futures. With the intent to use those scenarios to fuel the social debate about the quality of public space and city life of the future?

The Learning Community Urban Interaction Design at the Amsterdam University of Applied Sciences issued an open call to design provocatypes (provocative+prototype) based on one of three speculative scenarios. A selection of received submissions are featured in this magazine. Interviews with lectors Martijn de Waal and Troy Nachtigall offer challenging perspectives on the future of the city. Author Dirk van Weelden ends the publication with a vision that leads us to hidden territories that, like the digital realm, prove to not be missed when imagining the unimaginable.

Marjolijn Ruyg, Senior Lecturer LC Urban IxD

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Martijn de Waal

Lector Research Group Civic Interaction Design, AUAS

“I’m really critical about the underlying development where everything in life becomes a transaction.”

Interview by Michelle Kasprzak

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Michelle Kasprzak (MK): How do you envision the city of Amsterdam in 2032? Do you think it’ll look much diffe-rent?

Martijn de Waal (MdW): One scenario is that the city itself probably is not going to look that different. But the way that life is structured in the city will become more organized through all kinds of digital platforms, which we might not notice directly. For instance, the ways in which a navigation system in a self-driving taxi could make a car avoid particular streets during the day -- we don’t see that. A more noticeable consequence could be that all of us have to adapt to these new technologies. Self-driving cars may demand that we become visible to them and the ways that they understand and see the world. Maybe you have to wear a reflective thing to be seen by them, because otherwise the cars cannot register you and you get into accidents. There’s a good chance that we’ll see more of us having to adapt our behavior and being disciplined to actually serve the smart infrastructure that’s there, rather than the other way around.

I also think there is an interest from the government in a level of transparency, that if our public spaces are operated through these algorithms, then somehow you would want to make that visible in public space, so you better understand what’s happening. My research group is working on the idea of ‘the city as a license’, as opposed to ‘the city-as-a-service’, which is this Smart City utopian idea wherein the city will be organized around you as an individual consumer, usually written from a white middle-class perspective. So, we’re trying to shift that discussion away from services for individual consumers to broader discussions about the city as a rights management system, and linking it up to discussions on rights to the city.

People are also experimenting with commons-based groups within their own housing blocks, and using their own management system to reward behavior or to take care of their own internal economy in their own sort of currencies, rather than doing it in Euros.

So, one of the consequences of all these developments could be that the city will become this opaque layering of all these different jurisdictions that evaluate you according to their logic and reward you accordingly – but maybe sometimes without you even knowing which jurisdiction you are really part of, and who has actually set the rules. Is it a private regulator like Google? Or is it the government?

MK: Do you think there is a way people can feel good about any of these evoluti-ons to the city where their data is being collected?

MdW: Those very same people probably use Google Maps for navigation, they maybe have a Fitbit, etc., I am using some of these services myself. The concern is the totalizing aspect of it. Where data is being collected in your physical landscape, you cannot opt out. And data collection could also be used towards a common good, it’s when all that data is used to profile and condition you as an ideal, individualistic consumer when we run into trouble.

MK: We're volunteering to be monitored and watched by carrying a mobile phone with certain apps on it.

MdW: It's very convenient to have Google Maps anywhere. We get something back for it, although we don't really realize how much privacy we are really giving up. I'm very critical of those services and at the same time, I also find them very convenient. The bad thing is that you don't have a choice – why can't we have a service like Google, but with data protection, data sovereignty?

MK: Google Maps has really changed the way that people experience their cities.

MdW: Yeah, that's been transformative, I think. And I think we will see much more of these transformative technologies than on the surface just look like a simple digital replacement of an analogue tool - like a digital map. For instance blockchain in a way is just another way to keep track of where things are, and who owns what. But it is potentially transformative in how we manage and think about rights management in the city. We did a speculative workshop, two or three years ago, where we came up with various scenarios for that. For instance, if you want to spread tourism throughout the city, then tourists would have to buy their own currency, which is worth more in less popular neighborhoods. Or, maybe they don't even get a license to enter the city, because they've been profiled as potential 'stag party participants'. It opens up all of these kinds of questions about the biases that are in the algorithms that are making those selections.

MK: Is that just speculation, or do you see a realistic path towards such futures? How would that happen?

MdW: I think there are two things happening simultaneously. One is the domestication of all these technologies, which comes in small steps. 20 years ago, we probably could not imagine the feat of Facebook, for instance. With QR codes right now, we have been taught that QR codes are a license to get into a restaurant, or that if we want to pay somebody we can send a Tikkie, or scan a QR code and go through to our banking app. That's only a small step from having some sort of a distributed system, where you have a QR code on your phone, and I'd scan it with my phone, and we can set up some sort of a transaction in a decentrally organized digital ledger system, outside of our current banking system.

Can one envision these systems and really understand how they could work? I think it's really imaginable, one little step at a time. Soon enough, we could find it totally normal that we have a QR code that gives you a right or not to enter a place. Or we can set up all kinds of alternatives, that we don't have just the Euro, but maybe 20 different currencies which we can use in different circles. Now, I am not advocating these futures, although there is also some potential there in the civic realm. But mostly, I'm really critical about the underlying development where everything in life becomes a transaction. I think transaction validation is also what the Metaverse is about, so that in both the real and virtual world, you can walk around, see something cool, and buy the NFT. The goal is not only to capture our data and monetize it, but also set up an infrastructure in which all kinds of social and cultural actions become economic transactions between users, where the platform can take a cut for enabling the transactions.

MK: Smart contracts will really normalize micropayments. Maybe that's where domestication is also coming in. Can we counteract that?

MdW: There should be alternatives that are more civic and local, so that the value is not extracted, but at least circulates locally, in a way that could stimulate local economies and interactions. One of the contributions for a journal issue I'm editing is from a group in Torino. They have been setting up a wallet for local community currencies, where people can set up their own administrations, and it could really spark off some local economies and forms of collaboration.

MK: All of these examples so far are not directly visible in the city. They are layers of sensors, software and interfaces that often do their work in the background, but they have an impact on urban society. Let's also discuss some of the media technologies that are more directly visible in public space. For instance, you have also been doing work on media façades. Could they play a role in strengthening more civic-inspired visions of the future city? For instance, could they invite serendipitous encounters to happen around these installations?

MdW: Obviously, as technologies such as LEDs, sensors and displays are getting cheaper, you see them becoming more and more built into façades, as well as buildings with interactive installations, and in lobbies, for example. I do think they have the potential for creating a sense of we-ness, a sense of place, or a sense of "us". I was once in Brazil doing a project with the biking community in São Paulo. And there, they had a bike counter, and it said how many people had biked on certain paths for that day. One of the people we were working with said "that's very important for us, because every time I bike past, I'm just there by myself. But now I know I'm not alone. Twenty-eight people who are also bikers were here today, it connects me with the larger community of bikers and their cause to change mobility in this city."

It's a prosaic way of displaying a sense of us, or a particular issue in a public space. There are also very interesting applications of media architecture in public space which bring out hidden layers or connections. I think that actual media architecture – physically realized as screens or interactive installations – could be one of the instruments that can bring out this sense of place, a sense of "us", and also act as a conversation piece, that through playful interaction invites us to talk to people you might not normally – or you don't even have to talk. It could just be exchanging a smile or doing something fun together. This could be a small first step in building up trust in communities.

Troy Nachtigall

Lector Research Group Fashion Research & Technology, AUAS

“How can shoe designers or city designers start to understand when and where people get tired?”

Interview by Pamela Nelson

**Pamela Nelson (PN):
How do you see the future of (smart) shoes in the (smart) city?**

Troy Nachtigall (TN):
I think smart shoes or the integration of shoes into smart apps allows us to really start tracking and planning what shoes to wear each day. When you dwell in urban and metropolitan areas, it’s very important to understand that you’re going to be doing a plethora of different activities in a day. City shoes should allow you to do business, sport, and all kinds of other activities, as you typically move dynamically from one arena to the other. Most shoes are designed for specific use – you can think of the dress shoe being business appropriate, and you can think of the sports shoe or the trainer being appropriate for casual occasions. Most people get around this by just wearing a nice sports shoe, but that has its limitations within certain arenas. And so, there’s this need for really having a shoe that understands the entirety of the use of the individual.

The data gathered from smart cities gives an insight into where people are, what they’re doing, and how their shoes blend in with that. If we look at apps like Google Maps or 9292, it’s really interesting that they always cover the tram, the train, the metro, the bike, even the taxi… but they never considered that last little walking part. They’ll show it to us on the map, but it’s not really considered in how you want to get there and what kind of activity you want to do. When you open and close Google Maps, it also takes a picture; if you look at these pictures, one of the very interesting things is that users’ shoes are often in the picture. Yet no one has ever used AI to really pull those shoes out and start to question this data. If we can understand what shoes people are wearing, we can also understand how much mobility they have that day. Then, if we were to combine this with the accelerometer data that your phone and your watch are already gathering, we start to understand how mobile you are in these shoes and if they are appropriate for your lifestyle and physical needs.

PN: Could you explain how you see smart shoes could increase citizen well-being in the city?

TN: In terms of citizen wellbeing, getting your ‘steps’ in for the day, i.e. walking, is really important. It’s fundamental for healthy living. Lately people have been playing with the idea of how we can have meetings while walking, and how to make an active lifestyle also part of the business lifestyle. I find the real limitation and the barrier to this being footwear. If I’m wearing my dress shoes and I want to go have a walk around the campus, then my feet are going to be sore at the end of the evening and perhaps my back and neck too. The city, our personal electronics that make up our personal area networks, our wearable electronics, and our fashion electronics can start to actually help me plan that out so that we can have healthier lifestyles.

PN: Can you explain what you mean by "data as a material for design"?

TN: Everyday we each choose our look or feel for society or social integration by what we wear. There are a lot of different considerations happening there about how we should present ourselves. For example, when should we dress comfortably or when should we dress professionally?

There's a conflict of negotiation that happens at that moment. In this sense, data should be used as a material that tells us how those shoes worked out for you that whole day. We can see the difference in the accelerometer data from how fast you were walking. We can see that you're tired in the data. So there's a materiality of the data of tiredness. Tiredness is not just a physical feeling anymore. It's something that we can physically document as a data point. There's a materiality to being tired. Then, we should ask ourselves: How can shoe designers or city designers start to understand when and where people get tired? Can we change the design of the shoe to make it so they don't get tired? Design has this unique opportunity to really start saying 'okay, we can actually design to this person's situated-ness.'

PN: Could you elaborate on your views of how fashion and architecture intertwine?

TN: During my PhD work, I had the opportunity of working with quite a few architects, and it was really interesting to think about the shoe or the dress as a small building for one. When we talk about shoes, we are really talking about two buildings that undergo earthquake-level impact all day long – approximately 2,250 times per shoe per day. Thinking of shoes as really tiny buildings that are constantly undergoing earthquakes is pretty fun.

We have lots and lots and lots of programming and software interfaces that allow us to do earthquake simulations. If we can turn that software and that knowledge towards our shoes and our clothes, something really interesting starts to happen. We can also use the same shoes and the same dresses to tell us something about the environment around us. If we see ourselves as just tiny little buildings that are constantly moving around each other, that interaction of what's happening is very interesting. We are able to understand the texture of the road just from the accelerometer data (many people walking on it). If we can understand what shoes they're wearing, then we can start to come to second and third order mathematical equations through AI that tell us the exact surface the people are walking on.

It is interesting to think of people as small little buildings of architecture that are integrating with other buildings and communicating with each other. It really tells us what can happen if we take this idea of group activity recognition – this idea of how people move around each other within a city – and apply it to the actual architectural level. How do buildings relate to each other? How do cars relate to each other? What is the group doing as a whole, and what does the group need? We can get some really interesting urban analytics happening there, as we start to compare those two data sources to each other. We need to bring that understanding from architecture that we are designing for real people in fashion.

PN: What are you doing at the Wearable Data Studio?

TN: We are really trying to explore: How can we take data that's generated by the city, by the room, by the people, and by their shoes and use it to generate new types of shoes for people. We take our 3D knitting machine, and we take our 3D printers, and we try to see how data can actually inform the construction of the shoes. For example, can we 3D print structures inside the shoe that massage your feet during the day?

We see that it's about guiding people to use what's in their wardrobe, effectively, to make them more physically, socially, and psychologically happy. As these data sources come in, they have to be negotiated because sometimes you have to have a really nice looking shoe but you just want to wear your ratty old sneakers that feel great. We have those conflicts that happen, and we, as designers, have to negotiate out those conflicts and help you negotiate those conflicts in your everyday life.

OPEN CALL

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The main purpose of the Imagining the Unimaginable project was to explore how speculative design could be used to involve citizen perspectives in the urban planning process for the technologized city of the future. To research this space, the editorial team created three speculative scenarios and disseminated them in an open call to artists, designers, architects, makers and other creators around the world. The call invited them to develop a speculative provocatype based on one of the three future scenarios.

In the following pages, you will find the speculative scenarios, the technological trends that informed these futures and the chosen submissions from the open call. The goal of the open call was to understand the values that citizens have about the future and how they imagine what this world would be like.

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#1

Trends #1
MOBILITY

Sidewalks can now often be found filled with electric scooters and roads are crowded by delivery bikes. Not just the people enjoying these services, but all urban citizens are being confronted with the effects that these technologies have on public spaces. The innovation in mobility (transportation of people and things) has hugely increased over the past couple of years. Recently we've seen new routes (urban waterways and airspace) being explored, vehicles becoming autonomous, and real estate turning into warehouses for on-demand delivery services.

In the speculative scenario to follow, you will be transported into a future where all goods are delivered by drone throughout the city. This future prioritizes efficiency by moving restaurant and retail businesses into warehouses and transforms their previous locations into much-needed housing for the growing population.

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Drone delivery pilot in Amsterdam Sources: Marineterrein Amsterdam. (2022, February 9). Test met Bezorgdrone Boven de stad amsterdam. https://www.marineterrein.nl. Ploeg, S. van der. (2022, March 29). 5 belangrijke Inzichten uit het responsible drones report. Amsterdam Smart City. https://amsterdamsmartcity.com. Photo: Marineterrein Amsterdam. **Autonomous boats in Amsterdam canals** Sources: Roboat - Amsterdam gets world's first fleet of autonomous boats. AMS Institute. https://www.ams-institute.org. Roboat project. https://roboat.org/. Photo: AMS Institute. **Autonomous delivery in Singapore** Sources: Whizz mobility. https://www.whizz.sg/. Charlton, A. (2020, July 8). These 7 robotic delivery companies are racing to bring shopping to your door. Gearbrain. https://www.gearbrain.com. Photo: Nanyang Technological University. **Virtual traffic jams** Sources: Weckert, S. (2020). Google maps hacks. SIMON WECKERT. http://www.simonweckert.com. Photo: Simon Weckert.

DRONE DELIVERY PILOT
In October 2021, Amsterdam Drone Lab ran a delivery pilot where drones fly straight from pick-up to delivery through the (now still) empty airspace of the city. The main purpose of this pilot was to measure the impact on the social and physical environment. They found that drones can raise a sense of misgiving amongst citizens. Clear communication about a possible future with drone delivery will help increase public acceptance and enable citizens to speak up.

AUTONOMOUS BOATS
Roboat is working on a fleet of autonomous boats to start using urban waterways for urban mobility. To navigate the canals, the boats use Lidar sensors to map their environments. These boats can potentially be used for passenger transportation, delivery services, garbage collection and even on-demand infrastructure.

AUTONOMOUS DELIVERY
Whizz is one of the many delivery robot projects currently being developed around the world. These delivery robots have been navigating the streets of Singapore in a (semi-)autonomous manner to deliver food since the summer of 2020.

VIRTUAL TRAFFIC JAMS
Simon Weckert created several virtual traffic jams using a cart to transport 99 phones running Google Maps. By turning a street from green to red in Google Maps, Simon was able to influence the routes people drive. This illustrates how a (not always correct) virtual representation of our world influences the choices people make on a daily basis.

#1

Scenario #1

RESTAURANT AND RETAIL ARE NO MORE

It's late on a Sunday afternoon, and you're looking forward to having a relaxed evening before the start of the week. You're sitting in your home which used to be the shoe section on the third floor of a major department store. It doesn't feel like that anymore, though. It was recently converted into an apartment complex to accommodate the rising population in the city.

From the couch, you call out to your voice assistant on the other side of the room: "Hey, can I get some lab-grown tuna sushi?" It replies: "Yes, I will place your order… It should arrive in fifteen minutes."

Two blocks away there is a warehouse filled with chefs preparing food for efficient delivery by drone. It is no longer possible to go out and buy things in-person anymore. Now, drones fill the sky, delivering food, clothing, medicine and other packages to homes all across the city.

Suddenly you feel a rush of cold air. The window in your home detected the drone outside and opened itself to let it in. You shout out, "Hey, I'm over here!" The drone zips through your entryway and into the living room. In a friendly voice, it asks how you're doing today. You begin to explain how stressed you've been with work lately. As you talk, the drone expels a blue fingerprint pad and you place your right index finger on it without hesitation. After a few seconds, a green light appears, and the lock on your sushi releases with a click. The drone interrupts you mid-sentence by saying, "Enjoy your food." You pause and reach for the box.

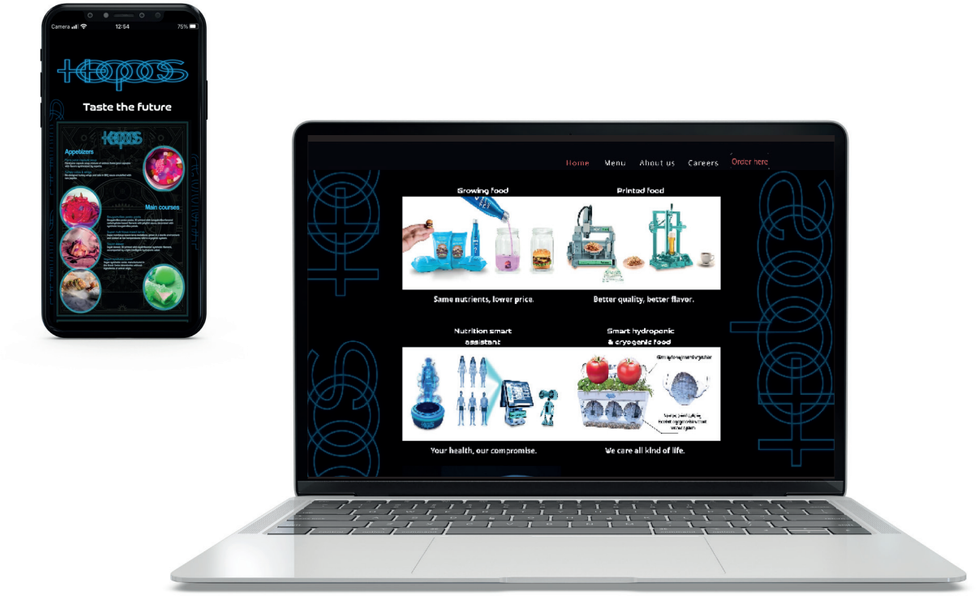
"Thanks for your order. See you next time," it says. The drone flies back through your home and out your window.

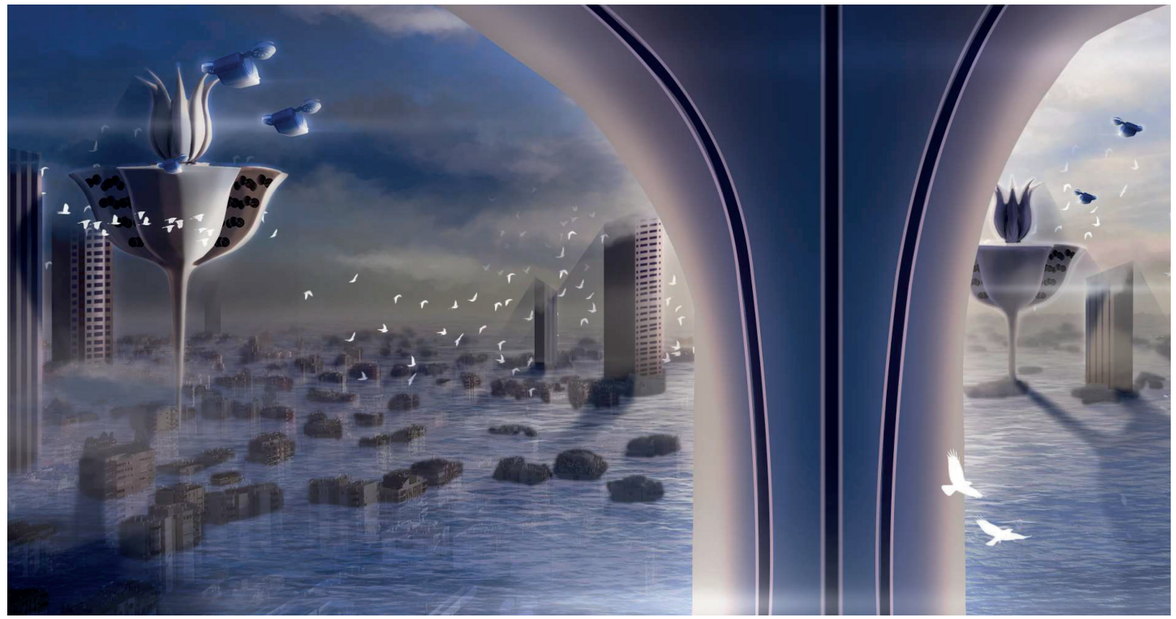
Now you are left with your sushi to eat on the couch by yourself. You think about calling a friend to enjoy the meal together by hologram.

SUBMISSION BY 1ST SEMESTER STUDENTS FROM DESIGN AND INNOVATION, SANTIAGO DE QUERÉTARO, MÉXICO

"In 2062, in the face of food shortages, Hoopos with 15 years of experience in the restaurant industry, provides various food services to ensure human survival. Within these services, Hoopos restaurants have molecular food capsules that grow with a liquid formula. This service provides enough nutrients that a human being needs to survive at a very affordable cost. Printed food service provides the same nutrients, but with better quality flavor, at a higher cost. Hoopos also integrates a nutritional assistant, "We Know You" (WKU) that will determine the diet necessary to survive with the least amount of nutrients and resources possible. Finally, the ingredients of Hoopos are harvested within their molecular laboratories in order not to exploit the scarce fertile lands and not to harm the few animal species that remain in the world. Hoopos flies over different points of the cities in a zeppelin to be able to distribute its food through drones to its customers to reach every corner and manage delivery times. With the growth of Hoopos, its own cryptocurrency has been developed which serves as a unit of exchange between our services and users."

https://dijuliolorenzana.wixsite.com/hoopos-food

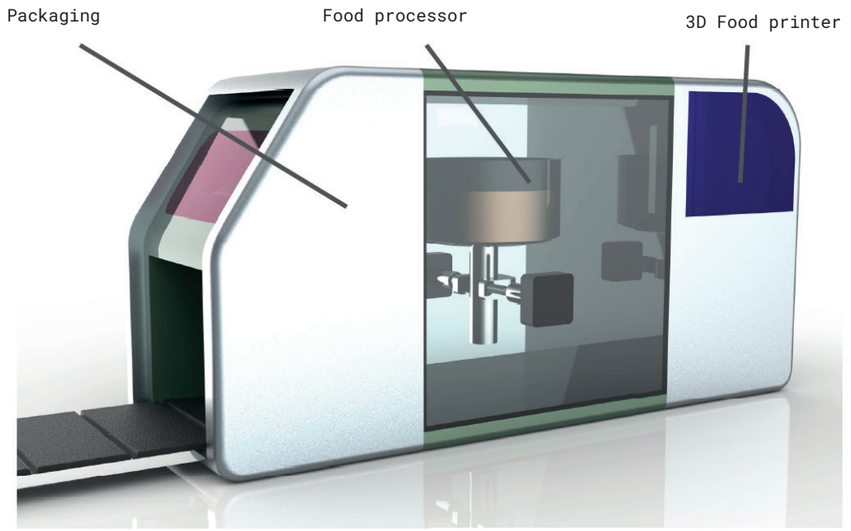


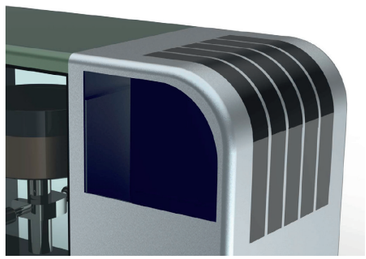


SUBMISSION BY ROGER NG WEI LUN, SUN RUI TONG, JIANG YUTING, SINGAPORE

"The population has grown beyond land constraints. There is no space for humans to live. In addition, global warming has caused the sea level to rise far beyond human control. Buildings have sunk, roads have disappeared. Humans are forced to relocate above the still-rising sea level. They had no choice but to migrate higher into the sky. Only necessary services were allowed to have a space of their own, for space is now the priciest asset. Gyms and parks were the first to disappear, followed by retail and restaurants, because food can now be prepared and delivered to your house by drones."

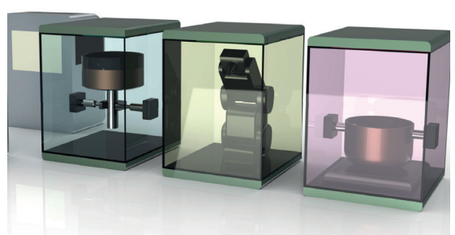
Wind-power Turbine
Wind powered turbines were built to generate sustainable energy to power the city. Inside these turbines, food factories work busily around the clock to prepare food. The massive population would otherwise starve with no other food options available. This is where food delivery drones are constantly on standby, ready to depart whenever food is ready to be served.

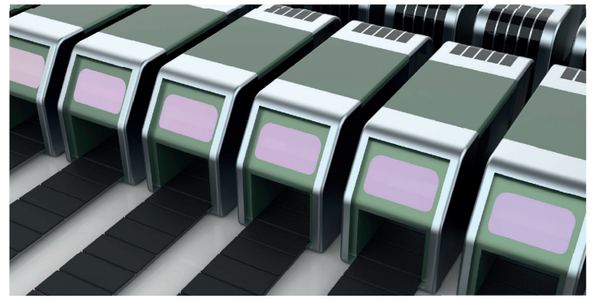


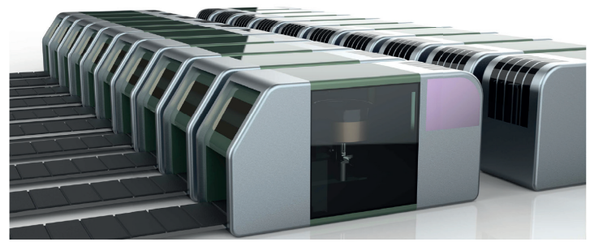


Replacable Food Filament

Modular Food Processor

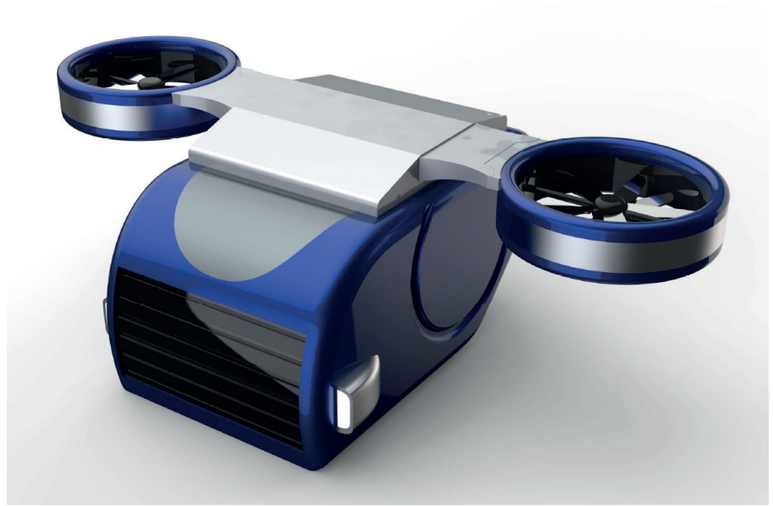


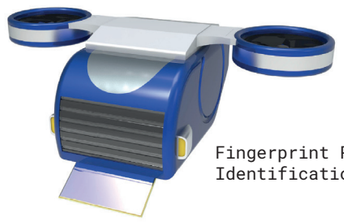




Food Factory
Inside the food factories, 3D food printers are placed neatly in rows. Each printer comes with a food processor and a packaging system. Everything, from making the food to packaging the food is done within the modular system. No manpower is required. These 3D printers are the chefs. This is how food is made in 2101, no farms, no kitchens and no service crew. The food processor can be switched according to cooking methods: robotic hands for sashimi, boiling systems for soups, and grilling mechanisms for barbeque.

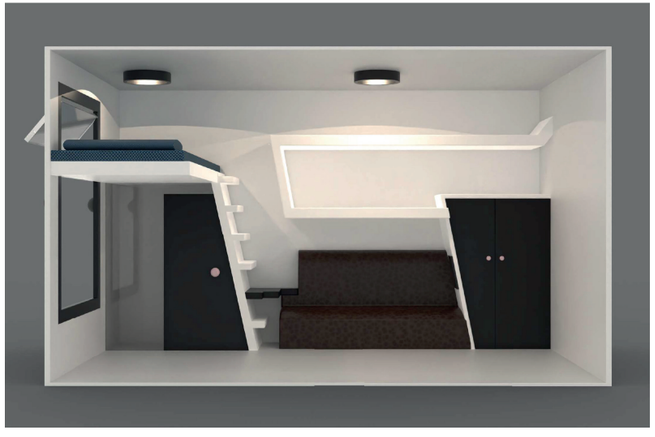
Food Delivery Drone
The food delivery drones come in various sizes, compatible for different food and serving sizes. The storage compartment for food has a sliding door that slides upwards, convenient for customers to take out the food from the drones. The inside of the drone is thermostatic and helps to keep the food warm/cold, ensuring customers receive their food in the best condition. The blue fingerprint pad is hidden underneath the drone and expels out when identification of customers is required. The wings of the drones are retractable and foldable. Retractable wings make repairing convenient should there be anything and folded wings save space when not in use.

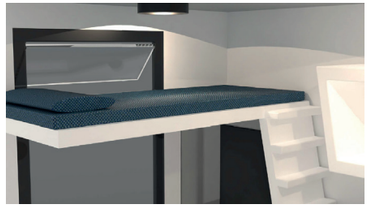




Fingerprint Pad for Identification

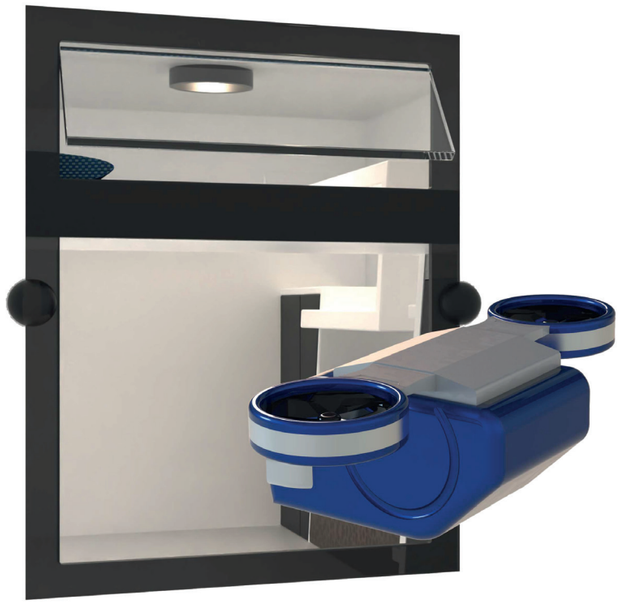
Retractable and Foldable wings



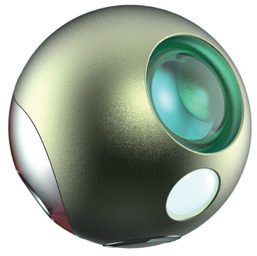


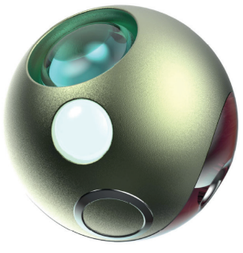
House
These houses are converted into apartment complexes from department stores. Due to limited space, they are shaped into small rectangular boxes and come with one window each. The wardrobe, sofa and bathroom are all fitted into one side of the room to maximise space. At the side of the wardrobe, a foldable table is attached for use when seated at the sofa. The bed is elevated to save space as well. One of the steps of the stairs up to the bed is extended and can be used as a study table too. The other side of the room has a projection screen for daily use.

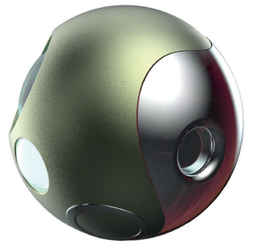
Scenario #1 imagined by Roger Ng Wei Lun, Sun Rui Tong, Jiang Yuting, Singapore



Drone entering house
The outside of the window is attached with 2 sensors that can detect the drones and will open up automatically when drones are arriving. screen for daily use.







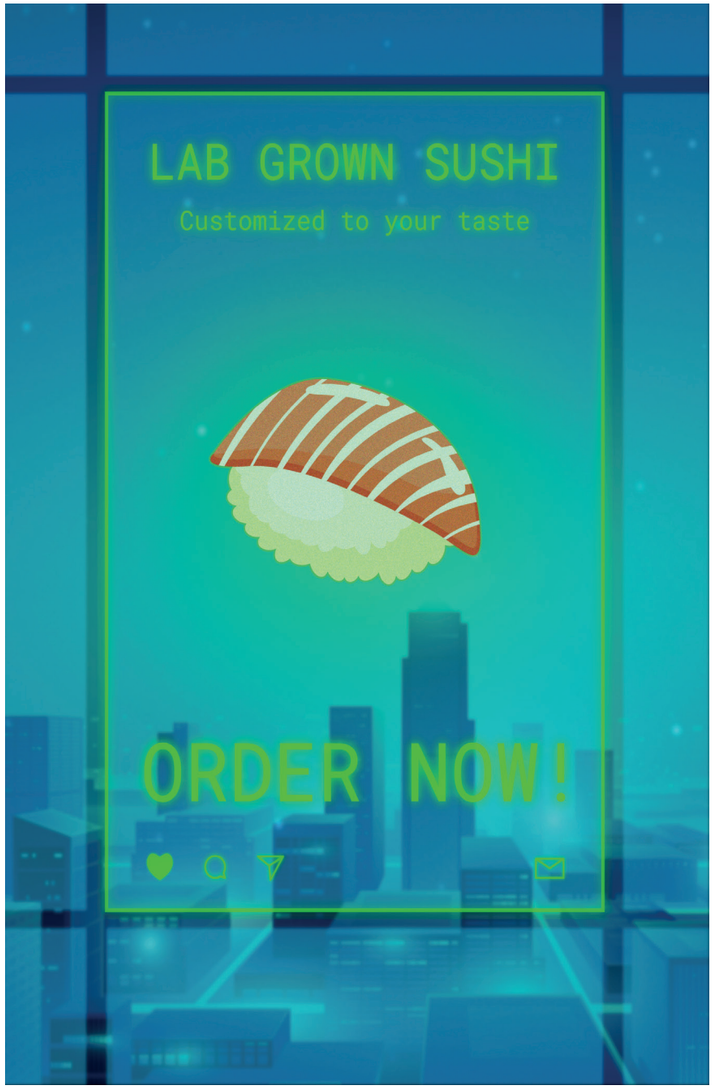
Hologram
These smart assistants help with various daily activities, which includes a holographic projection that allows you to video call a friend amidst other functions.

SUBMISSION BY BHARAT & NUPUR, AMSTERDAM

“You tried calling your friend but the call went into their AR avatar call recorder. You leave your friend a holographic video-mail showing their favorite sushi order and asking them to call you back.

You then tell your voice assistant, “Hey, I want to unwind.” It responds: “Sure. Let me help you relax now.” It enables your shape-shifting furniture that converts into a couch while the 3D projected plants fill you with the nostalgia of surrounding yourself with real nature. After five minutes, your eyes wander to the window portal, which gets activated as it tracks your eyeballs.

You call out your voice assistant,” Hey, show me the latest episode of the “Drone Show”. It replies: “Ok, switching on Drone Show in 60 seconds.” As your eye moves towards the glass window in front of you, the integrated glass-TV springs to life and the un-skippable targeted ads fills the screen. You now open the sushi box and indifferently wait for the ads to finish so that you can enjoy your meal watching the show. While waiting, you distract yourself looking outside the window filled with drone traffic!”



01

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02

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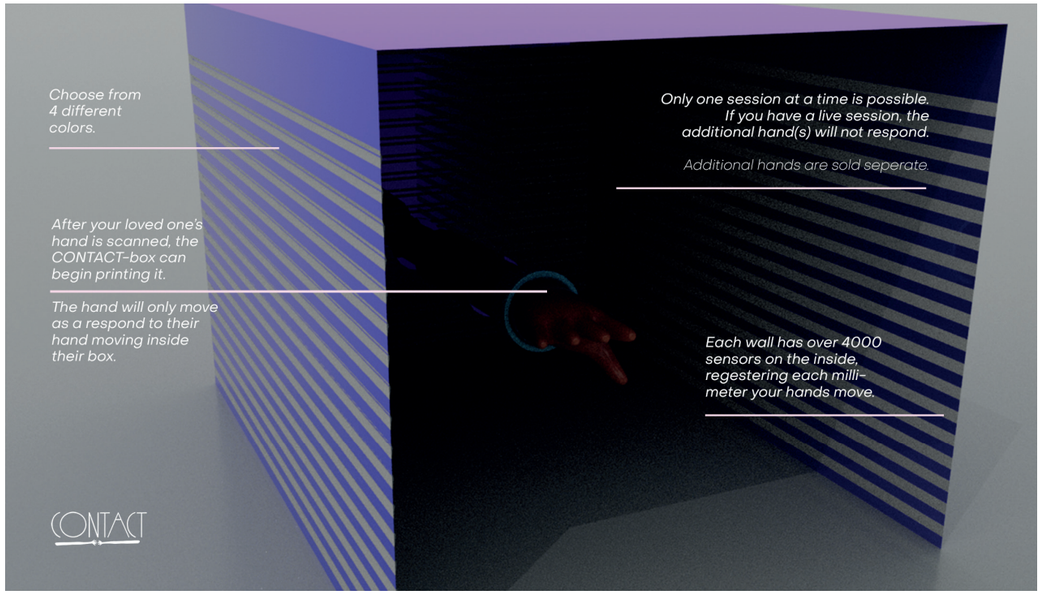
Now, open the app & hold your phone in front of the poster above.

SUBMISSION BY LUDVIG STIGELL, AMSTERDAM

“I was mostly drawn to the first scenario, where everything is done for you and physical meetings are lost. In this future I also see how it can be in companies interest to have people staying inside, where their habits and buying patterns are easier to register. It could also be in the interest of a government to want less travel, since this would result in less flying, less risk of spread of diseases, etc. Or maybe because they semi-closed their border due to climate immigrants.

I saw a future where some countries have introduced special travel permissions to drastically bring down the amount of travel. What would that mean for couples and families living in different parts of the world? While they could still communicate effectively, they wouldn’t be able to touch each other. That’s where CONTACT comes in. I explored a product that enables people who haven’t met in a long time, to hold hands again.

The CONTACT-box scans you hand, and then prints a copy of it in the other person’s box. When both’s hands are printed, the box senses your hand’s movement inside the box, and updates the hand in the other person’s box. In order words, you control the 3D-printed version of your hand, with your own hand.”



#2

Trends #2
ACCESS

It is becoming more and more common to use digital technologies to grant access into public and private spaces.

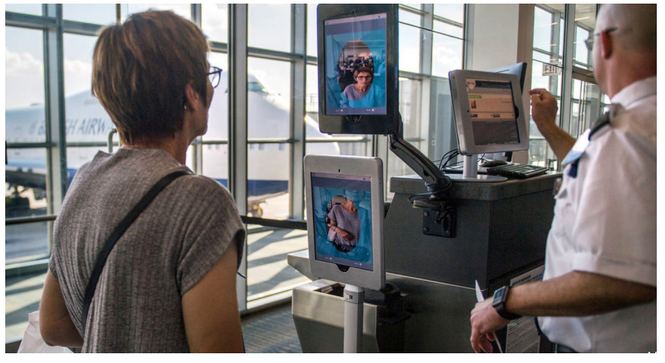
Digital access control measures are increasingly prevalent in our daily lives. We use them for entering our homes, traveling, attending social events and even locking away our personal belongings at the office. Some access control systems require chip-cards, others may use login codes, facial recognition, thermal imaging technology (particularly since the pandemic began) or a combination of the above. While attention is paid to keeping citizens, their homes and their personal belongings safe, it is equally as important to remain critical of these technologies. We can do so by asking questions like; Who are we letting in and who are we keeping out? Who manages these systems? Is the data of citizens being sufficiently protected?

The speculative scenario for the theme of "access" explores both the future of access into public spaces and also the future of how to access ourselves in a world of technological intervention and connectivity.

>>

Thermal Scanners Source: SmartCitiesWorld news team. (2020, April 22). Thermal Imaging Service developed to protect against the spread of coronavirus. Smart Cities World. www.smartcitiesworld.net. Photo: RODNAE Productions. **Facial Recognition in Airports** Source: Street, F. (2019, October 8). How facial recognition is taking over airports. CNN. edition.cnn.com. Photo: AFP. **Tesla Server Outage** Source: Hyatt, K. (2021, November 20). Tesla server outage allegedly leaves owners unable to drive their cars. Roadshow by CNET. www.cnet.com. Photo: Tesla. **Fraudulent Covid-19 Certificates** Source: Grieshaber, K. (2022, April 5). Considering a COVID booster shot? A German man got nearly 90 of them, police say. Los Angeles Times. www.latimes.com.

THERMAL SCANNERS
Since the beginning of the Covid-19 pandemic, many organizations and businesses such as schools, restaurants, and concert venues have been using body temperature as a way to determine whether a person is healthy enough to be granted access.



FACIAL RECOGNITION IN AIRPORTS
Biometric technology, and especially facial recognition, is becoming more widespread in airports across the world. It is being used during boarding processes as an alternative to showing your personal identification documents.

TESLA SERVER OUTAGE
On Friday, November 19, 2021, Tesla owners worldwide were unable to get into their cars due to a server outage. This resulted in them receiving an error message in the app, which many people use as the key to their car. The outage lasted about five hours.

FRAUDULENT COVID-19 CERTIFICATES
In Germany, a 60-year-old man was caught having received up to 90 covid-19 vaccines under different names to produce vaccine certificates for people who did not want to get inoculated. During the height of the pandemic, these certificates granted citizens freedoms such as traveling, going to bars, and entering events.

#2

Scenario #2

THE LIBRARY TAKES ON A NEW PURPOSE

Finally, it's Wednesday! You get to go to your off-line analog meet-up with your three best friends. Every week, you four meet after work at the library to make use of their digital-detox social pods. Each local library has made a commitment with the city to preserve free space for human connection without electronic intervention. This is the only hour in the week where you can exist without technology. They are very popular and getting a spot can take a long time –you spent 4 months on a waitlist!

Back home, you wave to your colleagues in your VR workspace and say, "Bye, everyone! I'm heading out to my pod appointment at the library. See you tomorrow." Your colleagues respond with jealousy and wish you a nice time. You take off your VR headset and swap it out for smart glasses as you run out the door. At a red light, you send a message to your friends through your glasses with your eye movements to say that you might be a few minutes late.

Finally, you arrive at the library. You stand at the entrance while the body scanner retrieves your identity. You hear a 'ding', indicating that the scan was successful. The sliding glass doors open and a voice says, "Welcome to the library. Please take a box from the table and place all of your electronic devices into it." You take off your glasses first, then your smart watch, your phone, your heart monitor patch and then you reach behind your back to remove your posture corrector. When you are done, you place the box into a locker on the wall and take the metal key. The action of removing the key from the locker opens the next set of doors.

You have now entered the Re-Accessing Room. It is lit with calm, blue light. A voice comes on and says, "Welcome. Before you enter the library, you must take a moment to access yourself again. Please close your eyes… Take a deep breath in through your nose. Hold it for 1, 2, 3 seconds. And now, release out through your mouth. Great job. Repeat this three times… Now, you are ready. Please proceed into the library."

Scenario #2 imagined by Katy Barnard, Amsterdam

SUBMISSION BY KATY BARNARD, AMSTERDAM

"I am very concerned about the amount of e-waste and rare earth metal mining that will result due to an increase in personal electronic devices. It is imperative that we develop sustainable (preferably circular) recycling systems to manage this electronic waste. Here, you can see the trash bins in Amsterdam Oost offering a place for neighborhood residents to discard their e-waste in a convenient manner. Currently in Amsterdam, you have to travel to a waste collection point (6 locations in the whole city) to dispose of electronic waste properly. I imagine a future where recycling electronic waste is as easy as recycling paper and glass – and that these materials are actually disposed of responsibly or reused in other devices."

#3

Trends #3

GOVERNANCE

Digital technologies are being more frequently implemented within governmental realms. Inevitably, these applications affect the lives of citizens, if they like it or not. Whether they are being implemented for increased efficiency, automation, surveillance, or something else, it is important to watch these trends and discuss if this is a world we want to live in.

These trends informed the third speculative scenario, which is about a mass surveillance system that learns citizens' routines and alerts the city government about unusual behavior. If the concern relates to a health or safety issue, citizens can be alerted through their smartphone to help take action.

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PATROL ROBOTS

Singapore is testing out the use of patrolling robots that roam the streets to signal undesirable behavior. For example, the robot can speak out when it sees people smoking in non-smoking areas, make a note when bikes are not parked correctly, and even alert people when they are not standing 1.5 meters apart when social distancing is required.

E-RESIDENCY

As a move towards being a digital nation for the world, Estonia is the first to launch an e-residency program. With this, global entrepreneurs can form an EU-based company and use e-Estonia's resources including banking, digital document signing, company formation, taxation, and payment processing.

MOVEMENTS TO BAN FACIAL RECOGNITION

Across the world, citizens are rising up against the use of facial recognition for mass surveillance. One such initiative is the Reclaim Your Face petition in the EU. The debate on ethics of this technology is gaining strength as its application has become widespread and its flaws in areas such as race and gender identification come to light. In 2019, San Francisco was the first U.S. city to ban the use of facial recognition by local agencies.

USING BIRDS TO CATCH DRONES

In 2016, the Dutch Police began a program to train birds of prey to knock down unwanted drones from the sky. They are the first in the world to attempt this method. After a year, the police force ended the program because it was not being used as much as anticipated, the training was expensive and complex, and the birds were not always cooperating.

Patrol Robots Source:[Media Release] HTX Ground Robot on Trial at Toa Payoh Central to Support Public Officers in Enhancing Public Health and Safety. (2021, September 5). www.htx.gov.sg. Photo: HTX. **E-Residency** Source: Republic of Estonia. (2021, November 5). What is e-Residency. www.e-resident.gov.ee. Photo: Republic of Estonia. **Movements to ban Facial Recognition** Source: Dubal, V. (2019, May 30). San Francisco was right to ban facial recognition. Surveillance is a real danger. The Guardian. www.theguardian.com. Sign the Petition for a New Law Now. Reclaim Your Face. (2021, September 6). www.reclaimyourface.eu. **Using birds to catch drones** Sources: Zijlstra, J. (2016 , September 11). Roofvogels Klaar om gevaarlijke drones Te Vangen. NOS. www.nos.nl. Politie stopt met anti-dronevogels en speurratten. NOS. (2017, December 6). www.nos.nl. Photo credit: Netherlands Police.

#3

Scenario #3:

THE CITY KNOWS WHERE YOU GO (AND DON'T GO)

It's a nice sunny Saturday afternoon, and you have a long list of errands to run today. You step outside your apartment and go straight to your bike. Your first stop is the hardware store, then to the bakery and across the bridge to the outdoor market for fruit and vegetables. You decide to take the long way home through the park for some peaceful time to yourself. In the middle of your leisurely ride, you receive a government alert message on your phone. It reads:

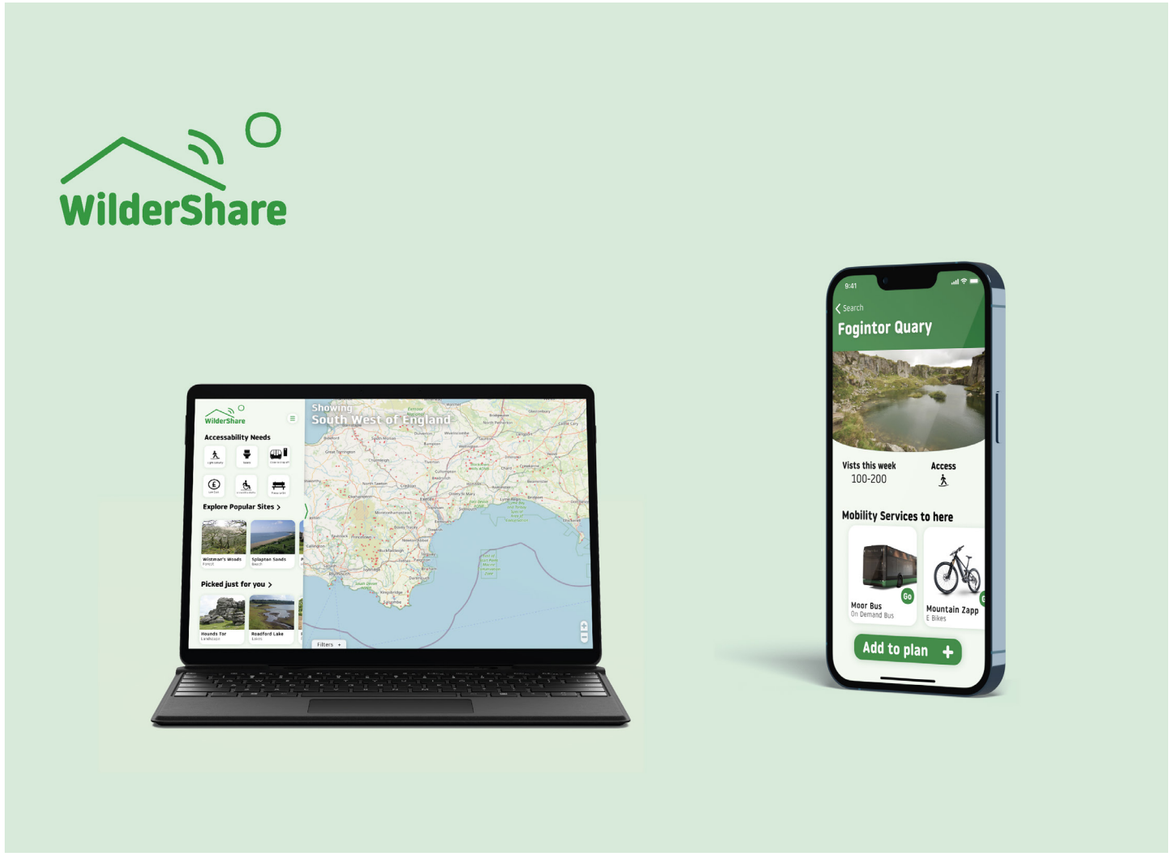
"Hello. We are concerned about your next door neighbor. She has not left the house for three days. This is unusual for her. She is 83 years old and suffered a minor heart attack two years ago. We need your help to check on her. After all, that's what neighbors are for. If you can help, please select 'Accept' below. Otherwise, click 'Decline'."

This message worries you. You immediately hit "Accept", as you recall all of the friendly waves you have exchanged with this neighbor in the past. You turn your bike around and rush home as quickly as possible.

This alert about your neighbor was detected by a networked surveillance system around the city. All day and everyday, small cameras capture and track your whereabouts. These cameras are nearly indistinguishable from the surfaces they sit on. Facial recognition is used to identify you, and an AI algorithm learns your habits and alerts the city when there is unusual behavior. The data is typically only accessible to you and the city government, but it can be shared if a suspected health or safety threat arises.

You arrive home in 10 minutes and run up the stairs to your neighbor's door. You ring the doorbell once. No answer. You ring again, this time calling out the name written on the white plack to the right. You hear a frail voice respond, "I'm coming…" You feel relieved when you hear her footsteps near the door.

Scenario #3 imagined by Mischa Price, Plymouth, England



SUBMISSION BY MISCHA PRICE, PLYMOUTH, ENGLAND

"Wild spaces act as a respite from the bustle of urban life. Whether its vast national parks or remote coastlines, our preserved natural spaces have a lot to offer. Access to natural spaces has been shown to improve health, with opportunities for recreation and spaces free of many of the pollutants of cities. Currently, the easiest ways to access these types of spaces is in a private car, meaning most people come and go, (hopefully) not leaving a significant trace. In a future moving beyond privately owned vehicles, how can we maintain the spontaneity and adventure of exploring far off places when our transport system is defined by waypoints, and algorithms leading people to be following the same paths?

WilderShare would be both a MaaS (Mobility as a service) hub and detailed mapping experience showing both suggested places people like to go, and places that are not so often traveled.
Our current system leaves many people who may not be able to afford cars or who have accessibility challenges unable to access these spaces. WidlerShare would try to cut through some of those barriers by highlighting a wide spectrum of access needs. WilderShare presents a new model for understanding human exploration in natural places if we can kick our dependence on private cars and embrace shared mobility. Increasing access to these spaces and helping conservationists understand where the pressure might be on ecosystems that can be flooded by tourist and recreational traffic."

SUBMISSION BY NINA FLOOR POST, AMSTERDAM

“Are you getting sick of not finding the right soulmate? Don’t you want to waste any more time on finding love and focus for instance on your career? Now there is a solution: Reflection Mate.
You simply upload the data of you and your habits conceived by the Cities AI into your RM. RM can visit (digital) dating rooms to project you next to other singles, to see if there is a right match.
You can also allow RM to let it follow you to have more insight in who you really are and what you need in a future partner.
Reflects back to you:
If a match is found, you are not obligated to date directly with a match, you can let RM do the further dating to see if there’s any future with this match.”

SUBMISSION BY PAMELA NELSON, AMSTERDAM

“For me, this provocotype belongs to a future in which we have lost touch with our sense of responsibility for each other. How and when we should care for our neighbour has been reduced to mere push notifications and alerts. Snap reactions of accept or decline, what does it really mean anymore? I sFor me, this provocotype belongs to a future in which we have lost touch with our sense of responsibility for each other. How and when we should care for our neighbour has been reduced to mere push notifications and alerts. Snap reactions of accept or decline, what does it really mean anymore? I see this scenario as the beginning of the story of how human beings lost their instinct to care for each other in an authentic way. The intrinsic intuition to mind and love becomes automated from this point, it is controlled and soon is rendered meaningless. Humanity is unravelling. ee this scenario as the beginning of the story of how human beings lost their instinct to care for each other in an authentic way. The intrinsic intuition to mind and love becomes automated from this point, it is controlled and soon is rendered meaningless. Humanity is unravelling.”

Dirk van Weelden
Author

The Soil and the Future

Amsterdam 2035, Harbour City

>>>

While strolling around, on this sunny but windy spring day, she wonders if she would want to live here: in a not-too-large but bright apartment overlooking the IJ to the north on Zaandam with a balcony to the West so that in clear weather you can see sunsets over the dunes at IJmuiden. She is at the end of the Hemweg not far from where the ferry goes to Zaandam, open, with the city right in the back.

She has been coming here for ten years now with her team from the Soil Life department of the Municipal Subsurface Service in Amsterdam (afdeling Bodemleven van de Gemeentelijke Dienst Ondergronds Amsterdam). At the time it was a vast wasteland, sandy, with little vegetation. There were only a few construction companies with their storage facilities. Then there was a company that unloaded and transported minerals at the Carel Reyniershaven, and the large fields with oil tanks at the Ijsellinxhaven, and of course the grounds of the Bulk Terminal of OBA: the enormous coal mountains that ran over the kilometre-long covered conveyor belt from the Sonthaven to the old Hemweg Power Plant. The power plant was already closed by then and it was converted into a hydrogen factory when work began on preparing this peninsula for construction work as part of Amsterdam Harbour City.

Ten years have been spent on experiments, hard work, and conflicts with other municipal services and contractors that are active here. It had not been an easy task. Simultaneously with the development of the residential area the Soil Life department had to clean the heavily polluted soil of this port area organically. In other words: the planting of shrubs and trees right from the start, the transplantation of fungal networks, keeping a close eye on whether the desired ecological connections are made and also determining over the years that the right fungi are thriving, namely those that can break down oil, kerosene, toluene and other toxic substances. At the same time the task on this peninsula that the municipality called Hemhaven was to have at least 8% of the surface area fertile enough to grow vegetables without chemical pesticides, providing urban gardens for the neighbourhood. It remains to be seen whether the desired goals will be achieved if most of the projected people will be living here in five years time, but overall she is satisfied with the regeneration of the soil from what was once an industrial wasteland.

From the control car, parked on a green strip between an apartment complex under construction and the site where a primary school will be built, her colleague Saïd gestures. The wind is from the northeast and she smells the scent of cocoa from the Zaan region as she walks to the car in her rubber boots. They are a bit too warm for this type of weather, she thinks as Saïd points to two screens as soon she climbs into the car.

‘This is very strange compared to what we measured on the left by the soil probe with the data map of Ondergronds Amsterdam on the right. This!’

He taps the screen. Julia clamps her graying dreads behind her ears and blinks a few times to get the sharpest look. In-between the fine-mesh networks of worm spores, fungal threads, and tree roots which are intertwined as patterns of different colors she sees a few straight red bars. They are straight in the line west-south-west and east-north-east,at a depth of about four meters. On the right screen are sewer pipes, bundles of electricity, and data cables, foundations that can also be seen on the left screen but nothing remotely resembling these alarming beams. What are they doing there? Where do they come from?

“Damn, if they go all the way East to the gardens, and we have to dig, we’re going to destroy a lot in the underground. It will take a year to recover.” She sighs.

“Is our probe still underground?”

“Yes, it sits still there.” He points on the map of Hemhaven lying on the table.

“The battery has half an hour left.”

“Let’s figure out where that line ends if it continues straight East.”

“And then?” Saïd grins. “We don’t even know what it is.”

“Look at the map what lies to the East besides the gardens here at Hemhaven?”

‘The IJ, the Achtersluispolder, Oostzaan, just about.’

‘Yes, and the Noorder IJpolder, the largest ecological hub on the north side of Harbour City.’

Saïd nods. Julia has bad premonitions about those red bars on the screen.

“When we’re done here, we’ll raise the probe and lower it back to the IJ bank to see if they’re crossing over there and if so, in which direction.”

First, they finish their work to carry out biochemical measurements throughout Hemhaven to supplement to the aboveground ecological inventory of the area. At the end of the afternoon, they send the probe from its last location to the work pit on Westhavenweg and then hoist it up.

The thirty centimeters long dull steel tube with pointed ends and a diameter of ten centimeters looks a bit like a torpedo that can go both ways, or an XXXL stainless steel cigar. At the bottom are four scoops that resemble fins and at the bottom is an Archimedes screw that provides locomotion. The skin of the probe is speckled with ten small plastic or glass beads behind which are sensors.

Julia’s service uses about twenty measuring instruments throughout the city to collect information about the development and quality of soil life without having to dig. Together with what is observed above the ground and from fixed measuring stations, the instruments give a good picture of the progress of improving the soil. The goal is to give Amsterdam healthy soil with robust biotopes where many healthy vegetables can grow, but also where shrubs and trees can grow that accommodate water storage, recreation and air purification. ’The future of Amsterdam rises from the soil’ is the slogan of the Amsterdam Underground Service which also builds underground sports and cultural facilities in the city center, under the canals, and the Amstel. The service aims to ensure that cars no longer need to be parked in the center, with everything underground, electric, or on hydrogen. The Service also supports the major renovation of water and sewer networks and the construction of protected trenches for cables throughout the city. Caring for the soil according to the idea of the city council is the basis for a healthy, green, and fairer city. Despite having some reservations about it, Julia is devoted to the life of the city’s soil and stimulating it everywhere, seeing to it that gardens and parks thrive.

From a work pit on the banks of the IJ, the probe is inserted perpendicular to the shore, past the point where the red beams should pass, according to their calculations.

“Aren’t you hungry? I think we still have sandwiches in the fridge. Cup of tea?” Saïd always wants to make it cozy in the control car and he likes to go out with Julia. She is rather quiet, but very relaxed and experienced, with a dry and disturbing sense of humour. This leads to funny situations, especially in confrontations with contractors, construction workers, and guards.

Julia hums in agreement and clasps the levers she uses to control the probe, eyes fixed on the screen. The loudspeakers emit whooshing and regular humming sounds.

After a few minutes and two big bites of the grilled vegetable sandwich with ricotta the beams appear on screen. When she moves the probe around it it becomes clear that they are, in fact, cylinders.

“Fuck, so they are tubes, I was afraid of that. Straight to the Noorder IJ polder.”

“Is someone trying to pump that lake dry? Isn’t there enough water everywhere?” Saïd stirs his tea and shrugs.

“Or someone somewhere in Westpoort is dumping poison at the bottom of that lake while Public Works is making that sand pit shallower to give underwater life a better chance. Probably they think they can operate unnoticed.’

They’ve been on the road since 7:30, Julia rubs her face, she’s all done. She needs to unwind at home, take a bath, read, and listen to music. Tonight she is having dinner with the children and her ex, who has returned from a long stay at a research camp in the South Pole. Surely he will come with gifts and tall tales, and hopefully he will be happy after all those months of loneliness and routine.

That same week, the Amsterdam Underground Service has been able to establish that a double pipeline had indeed been illegally drilled to the bottom of the Noorder IJpolder. In Westpoort, in the back of a large warehouse owned by a letterbox company in Almere, a group of handy guys had set up a company that offered their services to dump chemical waste (for example, from drug labs or illegal drug production) via this pipeline.

Christel comes from City Hall to the Soil Life Department office to thank the team for their swift and alert action. Her address covers the uproar in the media about the rounding up of the organisation that drilled the illegal dump pipes. You can safely call criminals with such advanced technology the most dangerous underminers of society, Christel says in a slight Drenthe accent. Around the table is a motley crew of ecologists, fungal experts, biochemists, and technically-savvy people who nod and wait for her to finish.

As soon as the lady from the town hall with her high buttoned white silk blouse is gone everyone jumps up to get a refill.

Julia clears her throat and demands attention.

“It’s great that we saw this early and that everything has been rolled up. But we also have another job to do. At least that’s how I see it. Just like when we come across an ancient well or a layer of clay, or the remains of a prehistoric settlement, we need to think seriously about what to do with that pipeline. That those people wanted to do something bad with it is now unimportant. There is a double connection, something that can be used in either of its directions, between the Noorder IJpolder plas, under the IJ and Hemhaven, to somewhere in the middle of Westpoort. How can we use these pipes to improve and strengthen the soil life in the Noorder IJpolder, in Hemhaven or Westpoort? Any ideas?”

Sasha raises his hand. His voice is monotonous and his Russian accent sometimes undermines an understanding of his words but his idea is immediately accepted: using adapted probes to make the tubes porous, then bringing these openings into contact with the soil. From there, it’s possible to distribute anything that’s useful in speeding up the regeneration like insects, fungi, bacteria, worms or minerals -- anything to fuel the soil.

Saïd, who himself has a weakness for aquatic life, wants a separate use for

each part of the tubes that run under water, and to make them accessible from above. This is for the use of probes, but also to close off certain parts, and making it easier to distinguish between the parts that run under water and those that run underground.

Toby the small but confident Korean expat asks in English not to make a hasty job of this.

“First, let’s take a look very precisely where those pipes run, what is there, and what can be expected. Perhaps we would like a network of porous pipes like this under the whole of Hemhaven. Or we might discover a way to leave one closed and use it for transporting something. What would we like to bring from Westpoort to Noorder IJpolder or vice versa?

Maybe first we look around, and let’s make not too many hasty assumptions about what’s a useful application. Perhaps we should first look at how the benthic life reacts to the presence of those tubes. What does the soil want?”

Julia decides to schedule five half-days in two small teams in the coming month to work out proposals. This is followed by a presentation to the staff of the Amsterdam Underground Service.

Dirk van Weelden, 2022

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Centre of Expertise for creative innovation

Amsterdam University of Applied Sciences

imagining the unimaginable

“We need moral imagination: the ability to dream up and morally assess a range of future scenarios.”
Cennydd Bowles

The Learning Community Urban Interaction Design at the Amsterdam University of Applied Sciences issued an open call to design provocatypes (provocative+prototype) based on one of three speculative scenarios. A selection of received submissions are featured in this magazine. Interviews with lectors Martijn de Waal and Troy Nachtigall offer challenging perspectives on the future of the city. Author Dirk van Weelden ends the publication with a vision that leads us to hidden territories that like the digital realm prove to be not to be missed when imagining the unimaginable.

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