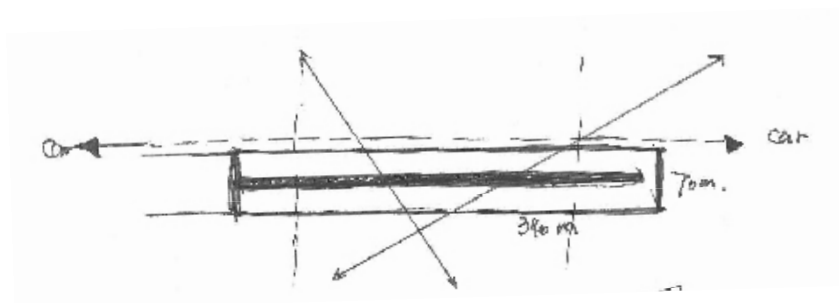


LOGBOOK

GRADUATION PROJECT FOOD TERMINAL



MA+U
TIANYI XUE

Food Terminal

Tianyi Xue

MA+U Tilburg Graduation project

PROJECT BACKGROUND

When we look into the future, the population growth will bring out a great demand for food. In 2050, the world population will be projected to hit 9.1 billion people with 66 percent lives in the city. For fulling cities’ increasing demand of food, the traditional farming in the countryside where grow the most food we consume, is not enough to provide sufficient food anymore. Along with that, the food production needs to be doubled to meet the need for food. In the other hand, there are not much natural resources can be used, 70% of it already used

Nowadays, the food system is linear type which includes phases of production, processing, distribution, consumption and waste. From the phase of production to the phase of consumption, food is losing freshness to a great extent because of shipment distance. It will be full lead to waste issues. As an architect, to create a space to show the future food type,at same time to let people aware of the issue we are facing, is our extra responsibility.

FOOD IN THE NETHERLANDS

The Netherlands has a rich history regarding food production. “The land, much of which had been reclaimed from the sea, was working overtime to feed the population” says Carolyn Steel in her book Hungry City3. Because of the struggle with a scarcity of land, which was also difficult to cultivate, the Dutch became the forerunner in innovative agriculture.

Since 2004, Dutch government established the Foodvalley. Foodvalley is the primary knowledge-intensive agrifood ecosystem. This ecosystem is characterized by many world class innovative agrifood and food-related solutions and by the cooperation between companies, knowledge institutions, education and governments.

Foodvalley located in the center of Netherlands, is area from north city Barneveld end to south city Wageningen. Wageningen university is leading this subject by researching, experimenting and cooperating to contribute and to play an important role in Foodvalley. It is the primary knowledge-intensive agrifood ecosystem in the Netherlands as well.

LOCATION

The project area is the military terrain next to the Ede-Wageningen train station. It is the entrance and interaction where the Food business and Food research (Wageningen University) coming together as new development in the future. Additional, The factors of A big empty space with two historical buildings, and diverse types of soil are surround are offering opportunities idea of new type of food complex architecture.

In spatial context, people using this area as temporary commuting point. It takes half hour by bus from the train station to Wageningen campus or city center. It has really remarkable potential quality to become a new “stay” for students from Wageningen university , an “entrance” of food for visitors and a social space for locals.

HYPOTHESIS

Designing a place that enforces loop food system in one space in order to indicate the new food production and reduce food waste, simultaneously stimulates social interaction, awareness and education within our society.

Mater plan

The area is separated as “Food entrance”, “Food Expo”, “Food with working” and “Food with living” base on existing axis. The new connection from train station to the bus station across the area as food terminal. It divide plot as “past”, “now” and “future” of agriculture to experience and aware of the food.

The pattern of Bocage Normandy agriculture land represent of “past” as entrance landscape; Dutch typical agriculture land pattern is using for “now”; Agroforestry is the “future” agriculture. A land use management system in which trees or shrubs are grown around or among crops or pastureland. This intentional combination of agriculture and forestry has varied benefits, including increased biodiversity and reduced erosion.

Architecture

Food terminal is linear along the connection from the train station to the bus station. It follows the masterplan concept of “past”, “now” and “future” mix with functions of 5 food phases. Each phase has their own inner courtyard as social interaction. To connect those 5 different food phases by functioning Cooking process from preparation to waste along walking path.

Indoor farming with three different types: “Hydroponics”, “Aquaponics” and “Aeroponics” to produce effectively for the food demands in the terminal. It is also a green café where offering the space for studying meeting etc. The phase of processing and distribution not only server the self-cooking space in the middle, but also interact with outside agriculture land. Consumption space including restaurant, supermarket, open market, taste library and event space is gathering the people with their new food products. In the end of terminal where meet the exhibition of waste for awareness of food in our future.

SUSTAINABILITY STRATEGY

To make different loops sustainability strategy is key in food terminal. “Food Expo” can be seen as the most food demand component, transferring the food waste as new energy to be reused in other area as energy loop. Water purification from “black water” and rain water from the “Food with living” to be used for indoor farming as water loop. The indoor farming and outdoor productive green space close up the green loop creating a new social loop. Closed Loop through the provision of packaging, waste management and returning organic waste to the soil is the key in the food terminal food system.

SOCIAL INTERACTION, AWARENESS AND EDUCATION

Food terminal is creating different size and function spaces for visitors students and locals. Social interaction through food to each group can make new idea about food for our future. It is also a place where can let people are aware of what are we facing about food for the next generation.

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OO_PREPARATION

ARCHITECTURE COMPLEX EXPERIENCE AND
EDUCATE NEXT GENERATION
A HEALTHY LIFESTYLE





Kurt Salmon
Part of **Accenture Strategy**

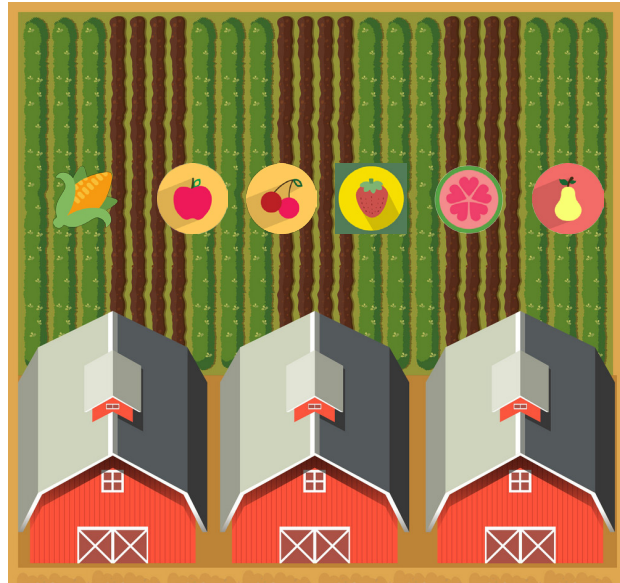
THE FUTURE OF FOOD:

**NEW REALITIES
FOR THE
INDUSTRY**



Food cycle in the city

Integration of food cycle in the city context



Future Food Production

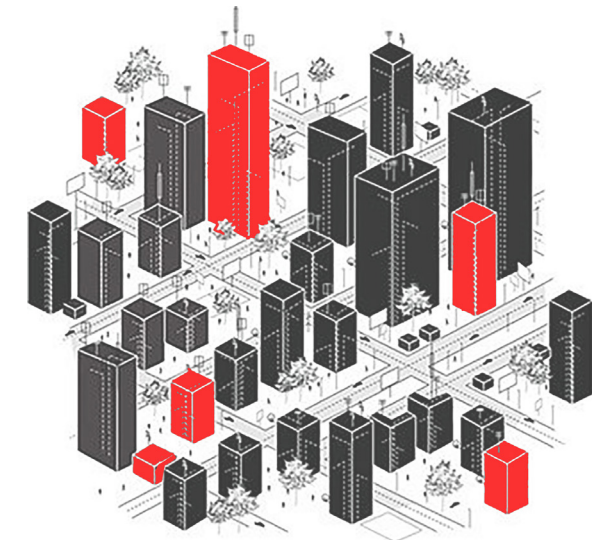
In 2050 the world population is projected to hit 9.1 billion people with 66 percent lives in the city. Along with that, the food production needs to be doubled to fulfill the needs of foods.

At current situation, the foods that we consume mostly grow in the countryside. The distribution of food from countryside to the city is not sustainable. It reduces the quality and freshness of the food, it needs long infrastructure lines to deliver the food. Beside of that it burns energy which also pollutes the environment. Imagine if the food production is doubled by 2050. It will be a burden to countryside!

For the future city need to be food-self-sufficient. This is a challenge as it needs space to grow food. Where we can grow it then?



Based on these two main issues, the opportunity arises. Food production in the city needs space and the building vacancies provide space. The vacant space will integrate the food cycle to the city context. How the cityscape will change when the food cycle is integrated in the city?



Vacancy of existing building in the city

At the moment a lot of cities are posed with the issue of vacancy. A lot of floor spaces in the city are vacant. There are various types of huge buildings which are vacant, industrial sites, corporate buildings, and commercial buildings.

This vacant space need programs to be alive again. What content can fill the vacant space so it can benefit the city?

fact / issues

In food system

- population in the city is growing
- food production demand is growing
- currently the food miles is too far
- not sustainable (energy wasted, food not fresh)

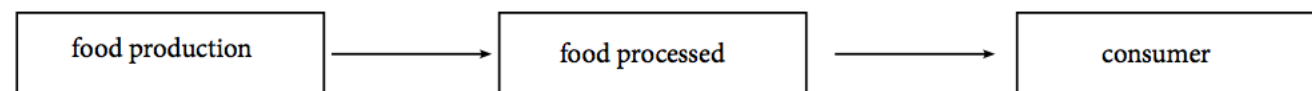
In architectural aspects

- building vacant in the city

the future of food production

New food alternatives

- cell-grown meat / in-vitro meat
- insect
- artificial animal product
- crop diversity for food



the future of food production

Urban Agriculture (zero-acreage farming)

- rooftop gardens
- vertical farms
- rooftop greenhouses
- indoor farms

Z-Farming (Zero-acreage Farming)

Urban agriculture which is focused on synergies between agriculture and buildings.

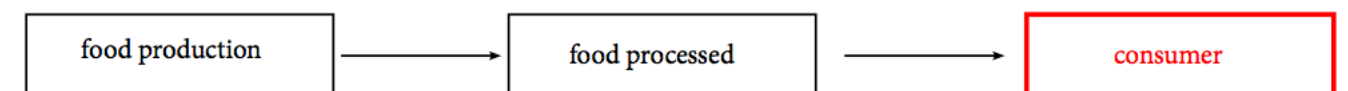
The idea behind ZFarming is to link the food production and buildings with multiple uses of residential or industrial waste resources (e.g., waste water, waste heat, organic waste) to establish a small-scale food system.

Benefits :

- saving & recycling of resources
- reduced food miles
- improving community food security
- povision of (food) education facilities
- linking consumer to food production

Challenges :

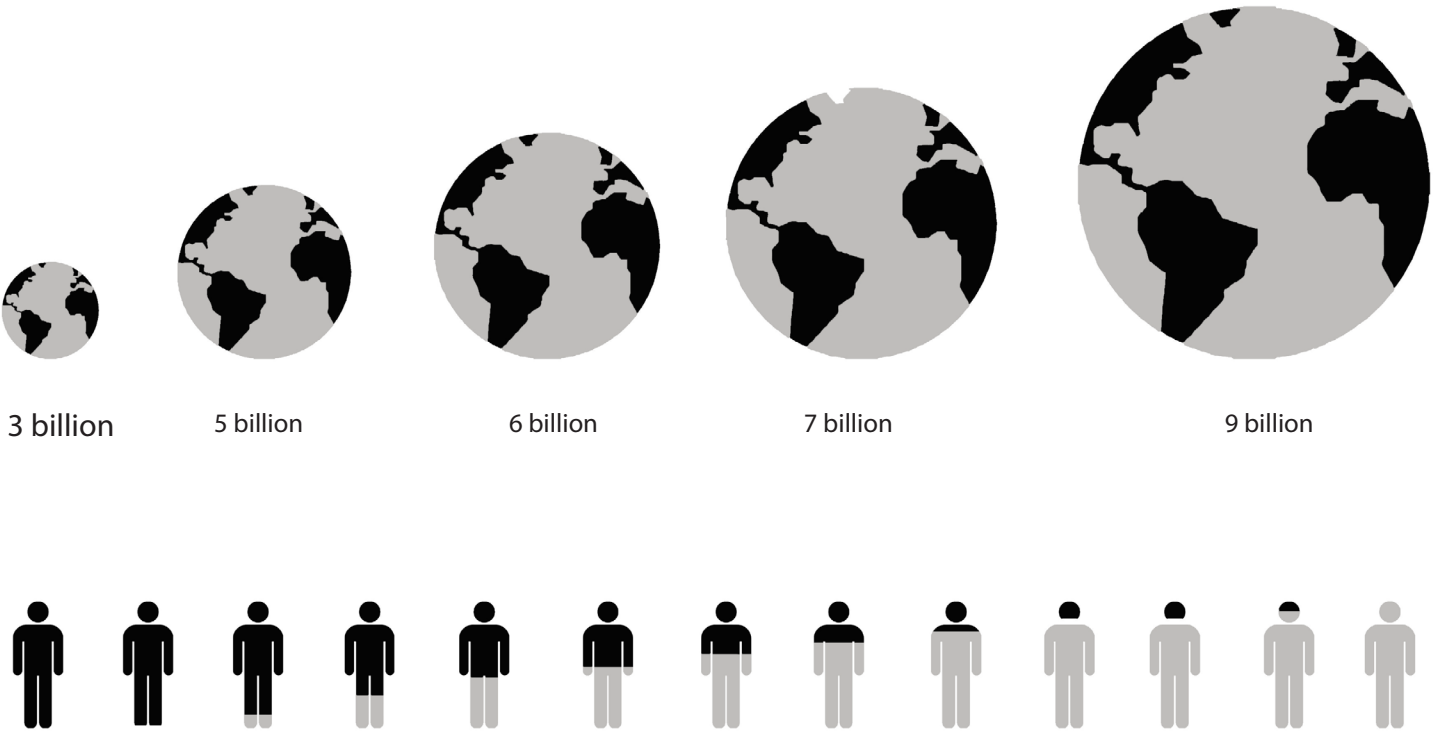
- High investment cost
- Relatively new method, the technology are there but it is not been used or combined in that way before



O1_SURVEY

PROBLEM STATEMENT

OVERPOPULATION AND FOOD DEMAND

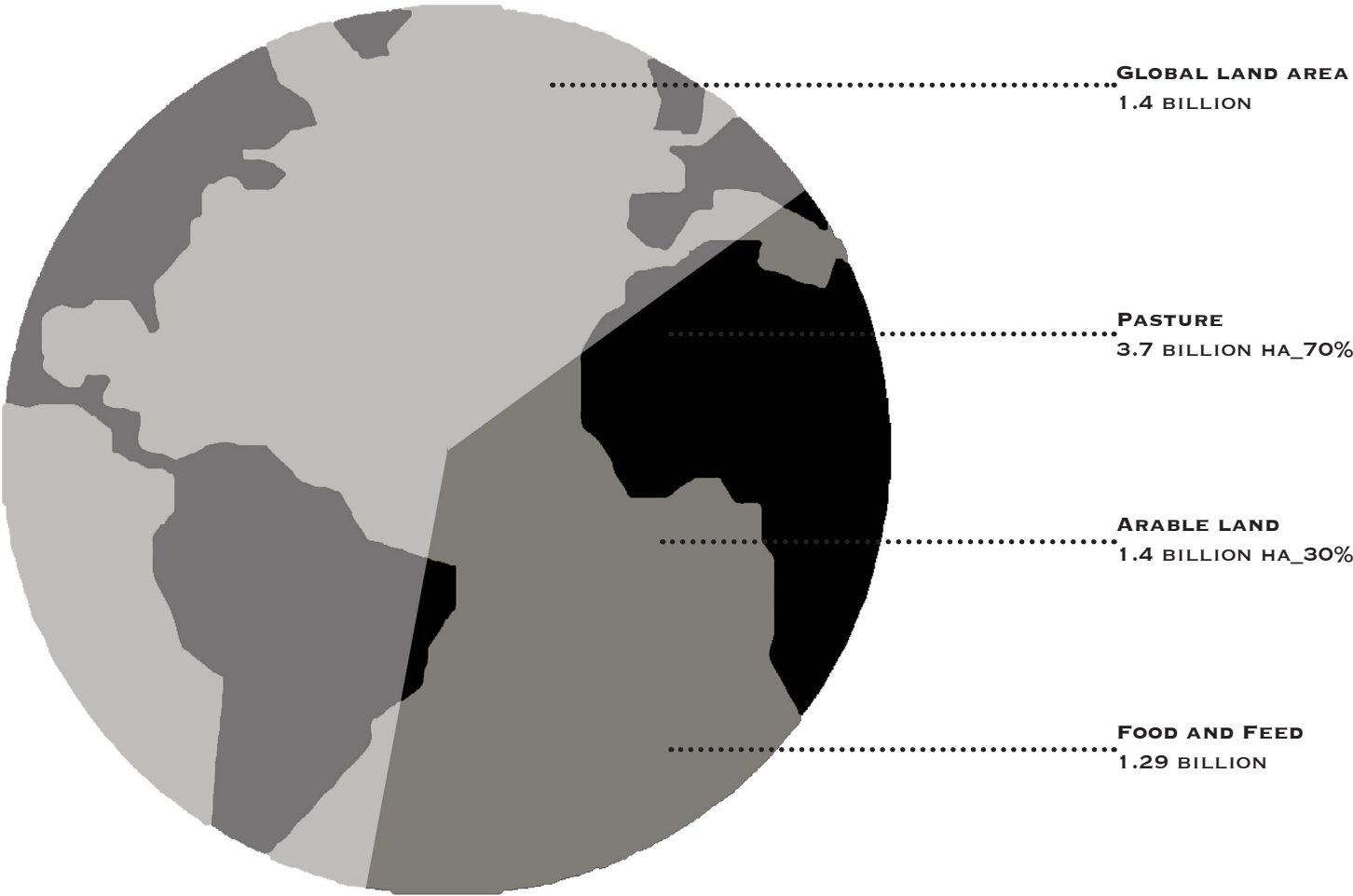


THE WORLD’S POPULATION IS EXPANDING, THUS FOOD PRODUCTION MUST RISE.

BY 2050 WE NEED TO INCREASE FOOD PRODUCTION BY 70%

PROBLEM STATEMENT

FOOD PRODUCTION OCCUPIES ALMOST 1/3 OF THE WORLD'S ENVIRONMENTAL FOOTPRINT



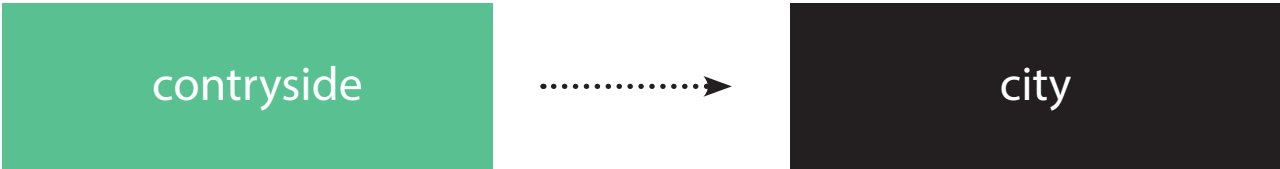
PROBLEM STATEMENT

FOCUS ON THE **FOOD ISSUE** IN THE FUTURE

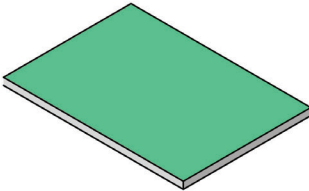
RESEARCH

IN TODAY, 4 TYPOLOGIES URBAN FARMING

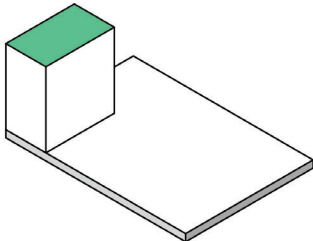
IN THE PAST, THE FOOD PRODUCTION WAS IN THE COUNTRYSIDE



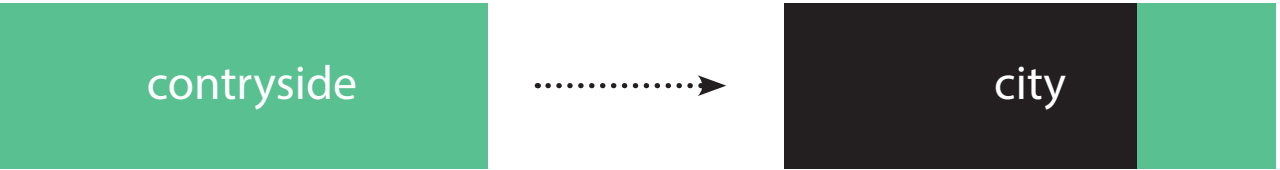
CITY GARDEN
SOCIAL



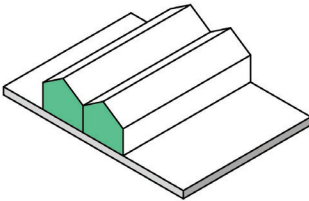
ROOF GARDEN
SOCIAL



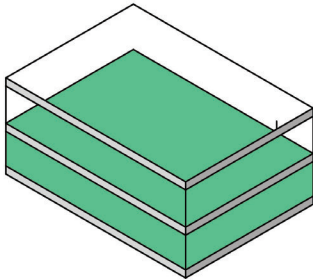
IN TODAY, THE FOOD PRODUCTION IS HAPPENING IN THE CITY



GREENHOUSE
EFFECIENCY

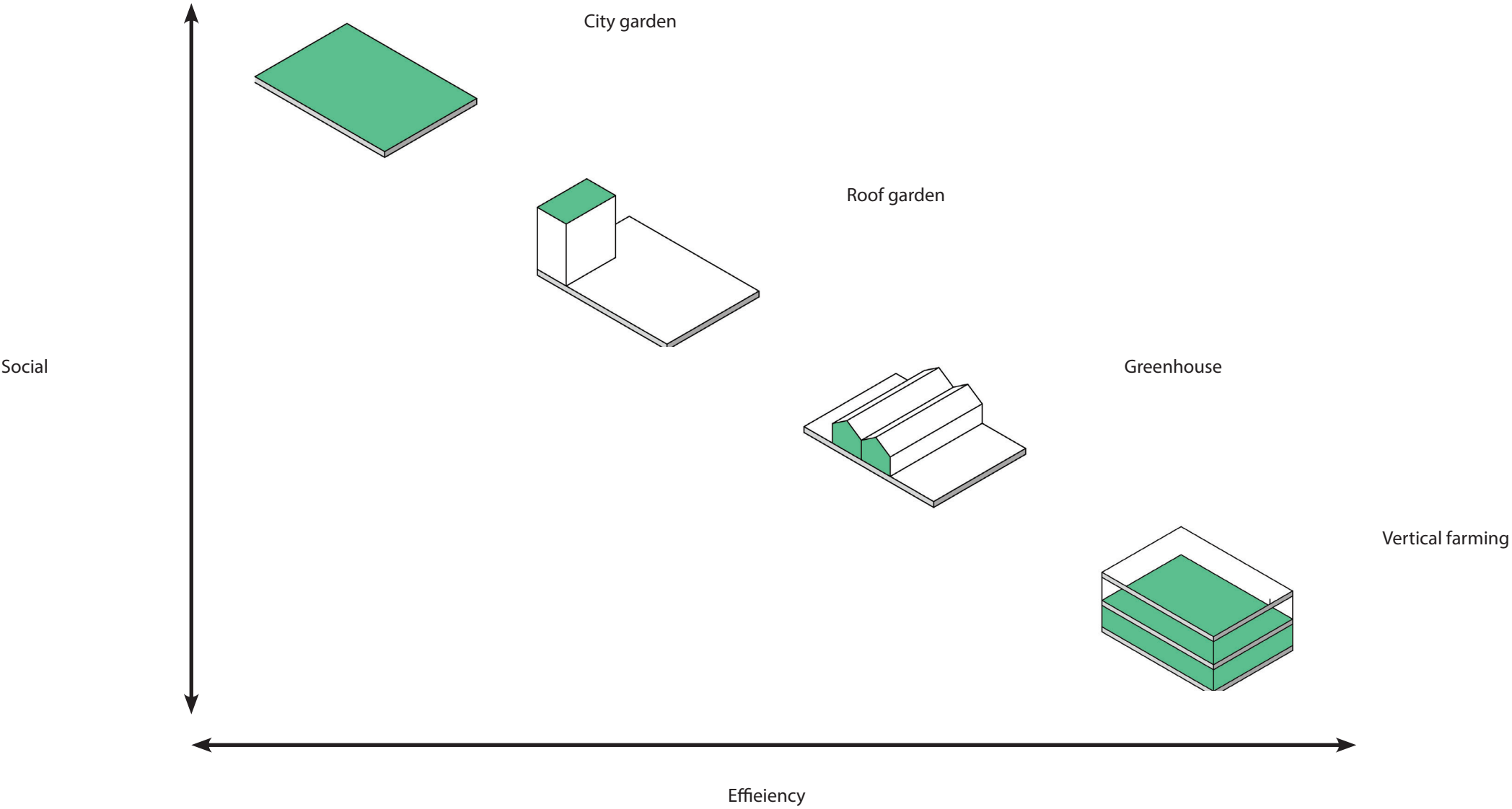


VERTICAL FARMING
EFFECIENCY



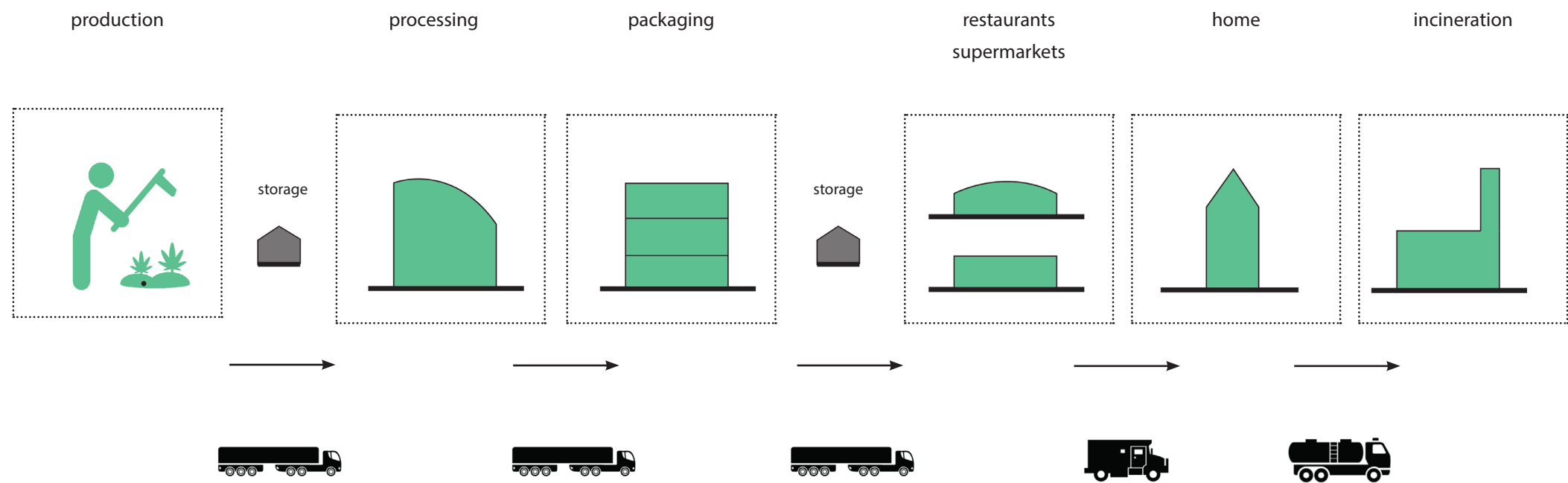
RESEARCH

URBAN FARMING: SOCIAL AND EFFECIENT



RESEARCH

THE FOOD SYSTEM INCLUDES: PRODUCTION, PROCESSING, DISTRIBUTION, CONSUMPTION WASTE



PRODUCTION IN NETHERALNDS

PRIVATE	• Farmers	Profit, provide healthy and qualitive food. They can also be sustainably oriented	■ ■ ■ ■
	• Industrial farmers	Profit within competitive sector, efficient and good quality of food	■ ■ ■ ■
	• Farmers Association	Ensure and coordinate competitiveness and entrepreneurship between businesses	■ ■ ■ ■
	• Schiphol Airport	Profit, centralized logistics (connection of flows)	■ ■ ■ ■
	• Food Technology Industry	Profit & growth of (also sustainable) innovation within production (i.e. producing on air, water etc.)	■ ■ ■ ■
PUBLIC	• NS & other food transportation companies	Transport goods	■ ■ ■ ■
	• Digital retail companies & new technology companies	On-line exchange between farmers; Help farmers implement new technologies	■ ■ ■ ■
	• Ministry of Infrastructure and Water Management	Invest or plan for local habors/waterways/roads etc.	■ ■ ■ ■
	• Port of Amsterdam	Centralized logistics (connection of flows)	■ ■ ■ ■
	• Municipalities	Security and accessibility to food	■ ■ ■ ■
CIVIL SOCIETY	• Universities and institutions	Create awareness on food (industries)	■ ■ ■ ■
	• Ministry of Economic Affairs and Climate Policy	Regulating imports/exports, financially healthy and prosperous Netherlands within the global sector	■ ■ ■ ■
	• Ministry of agriculture, nature and food quality	Support sustainable agriculture, restore and maintain natural areas	■ ■ ■ ■
	• Planning authorities	Plan for new area for agriculture	■ ■ ■ ■
	• Citizens	Get involved in urban farming and other forms of production; Raise their awareness of sustainable food system	■ ■ ■ ■
	• NGOs	Advocate and monitor different aspects associated with production (i.e. supporting innovation, sustainable environment, safety and transparency)	■ ■ ■ ■
	• Environmentalists & animal activists	Care about nature conservation (i.e. biodiversity, land degredation etc.) and a clean, healthy environment; Care for health and well-being of animals	■ ■ ■ ■
	• Neighbourhood community	Raise awareness	■ ■ ■ ■

DISTRIBUTION IN NETHERALNDS

PRIVATE	• Dutch distribution centres	Profit by storing food for distribution to retail	■ ■ ■ ■
	• Schiphol	Profit by ensuring locations for distribution and storage centres	■ ■ ■ ■
	• Storage industries	Profit by storing food	■ ■ ■ ■
	• Energy suppliers	Profit through providing energy to storage centres (i.e. cooling, heating goods)	■ ■ ■ ■
PUBLIC	• Port of Amsterdam	Ensure place for distribution and storage centres	■ ■ ■ ■
	• Education (universities and schools)	Create awareness on food (industries)	■ ■ ■ ■
	• Ministry of infrastructure and waternet	Ensure access and mobilty to and from processing industries	■ ■ ■ ■
	• Ministry of Economic Affairs and Climate Policy	Strong international competitive position and protect sustainability	■ ■ ■ ■
	• Ministry of agriculture, nature and food quality + NVWA+ EFSA	Ensure food safety	■ ■ ■ ■
CIVIL SOCIETY	• Adjacent (not many) households	Minimalise disturbance	■ ■ ■ ■
	• NGO's	Advocate and monitor different aspects regarding Distribution and storage (i.e. supporting transportation, sustainable development, safety and transparency)	■ ■ ■ ■

PROCESSING IN NETHERALNDS

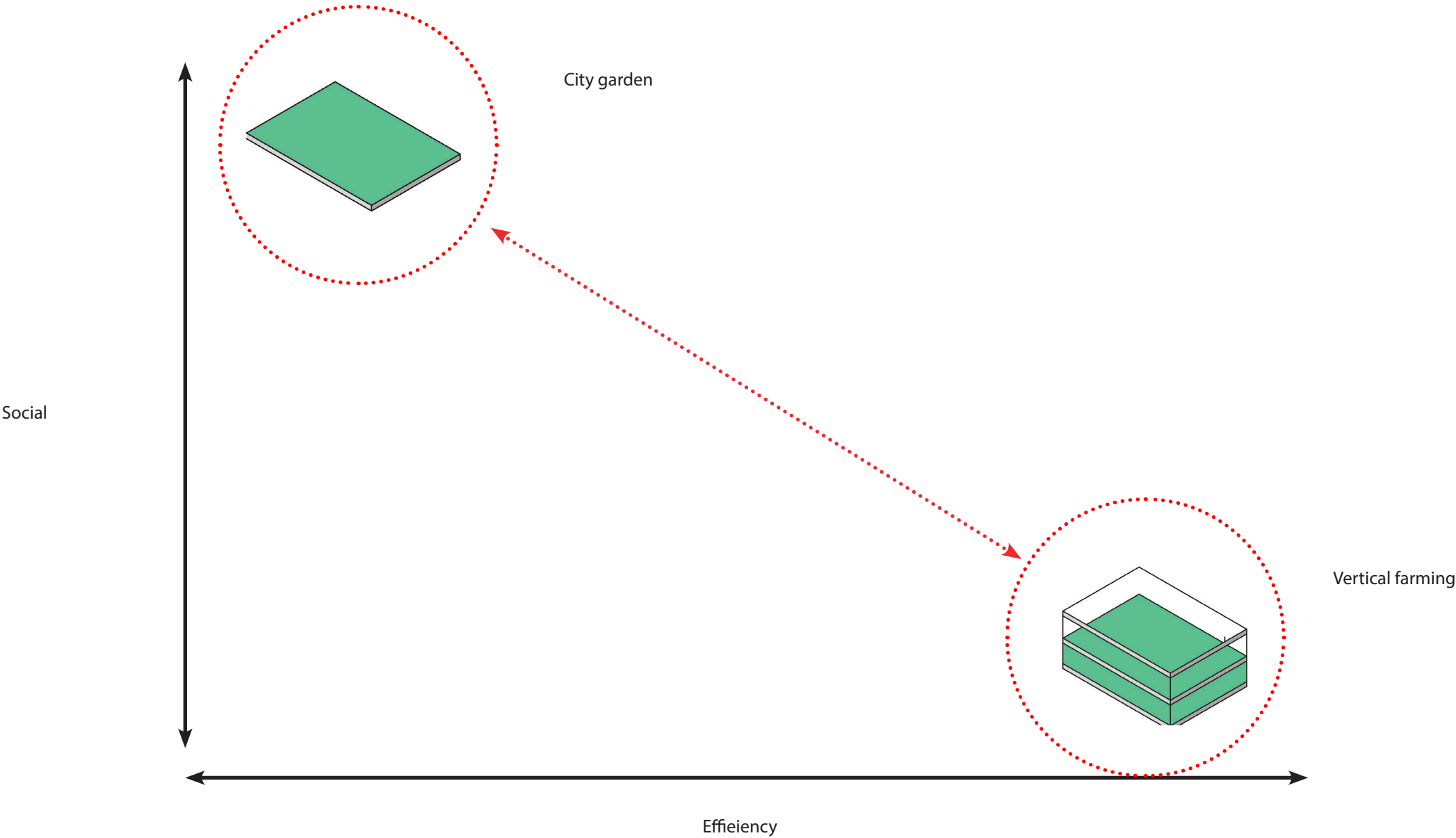
PRIVATE	• Processing factory (slaughterhouse, dairy industry, vegetables etc.)	Profit through efficient processing, good quality of products	■ ■ ■ ■
	• Packaging facilities/manufacturer	Profit through processing within an efficient system	■ ■ ■ ■
	• Energy supplier	Profit through a coordinated centralized energy system	■ ■ ■ ■
	• Labor/workers association	Protect the rights of the people that are part of the union	■ ■ ■ ■
	• Independent food inspection businesses	Ensure healthy and clean food	■ ■ ■ ■
PUBLIC	• Food Technology Industry (also educational institutes)	Profit by innovation of processing businesses (i.e. new machinery)	■ ■ ■ ■
	• Regional and municipal governance	Ensure safe and healthy products,	■ ■ ■ ■
	• Ministry of agriculture, nature and food quality	Ensure good prospects, safe and healthy products	■ ■ ■ ■
	• Netherlands Food and Consumer Product Safety Authority (NVWA)+ European Food Safety Authority (EFSA)	Ensure safe and healthy products	■ ■ ■ ■
	• Ministry of Social Affairs and Employment	Foster a socially and economically vigorous position of the Netherlands, with work and income security for everyone.	■ ■ ■ ■
CIVIL SOCIETY	• Ministry of Infrastructure and Water Management	Ensure access and mobilty to and from processing industries	■ ■ ■ ■
	• Adjacent neighbourhoods and households	Minimal disturbance and or nuisance from processing industry, clean, healthy environment	■ ■ ■ ■
	• NGO's	Advocate and monitor different aspects regarding processing (i.e. supporting innovation, sustainable environment, safety and transparency)	■ ■ ■ ■
	• Animal activists	Care for health and well-being of animals	■ ■ ■ ■
	• Environmentalists (ecologists)	Care about nature conservation (i.e. biodiversity, land degredation etc.) and a clean, healthy environment	■ ■ ■ ■

CONSUMPTION IN NETHERALNDS

PRIVATE	• Hospitals	Ensure and protect the health of people	■ ■ ■ ■
	• Restaurant and catering businesses	Provide safe food	■ ■ ■ ■
	• Grocery stores/supermarkets	Provide safe food	■ ■ ■ ■
	• Health insurance companies	Profit from the health of people	■ ■ ■ ■
	• Advertising companies	Influence diets and consumer patterns	■ ■ ■ ■
	• Voedingscentrum (government)	Raise awareness on diets	■ ■ ■ ■
PUBLIC	• Ministry of agriculture, food quality and nature	Ensuring accessibility to food and drinks, healthy, clean and sustainable	■ ■ ■ ■
	• Municipalities within the AMA	Providing food, protecting and ensuring accessibility	■ ■ ■ ■
	• Netherlands Food and Consumer Product Safety Authority (NVWA)+ European Food Safety Authority (EFSA)	Ensure safe and healthy products	■ ■ ■ ■
	• Schools and universities	Provide safe foods	■ ■ ■ ■
CIVIL SOCIETY	• Foodbanks	Nourish People, build nutrition, build solutions	■ ■ ■ ■
	• Society (people)	Consume safe products	■ ■ ■ ■
	• NGO's	Advocate and monitor different aspects associated with consumption (i.e. transparant, healthy, accessible food)	■ ■ ■ ■

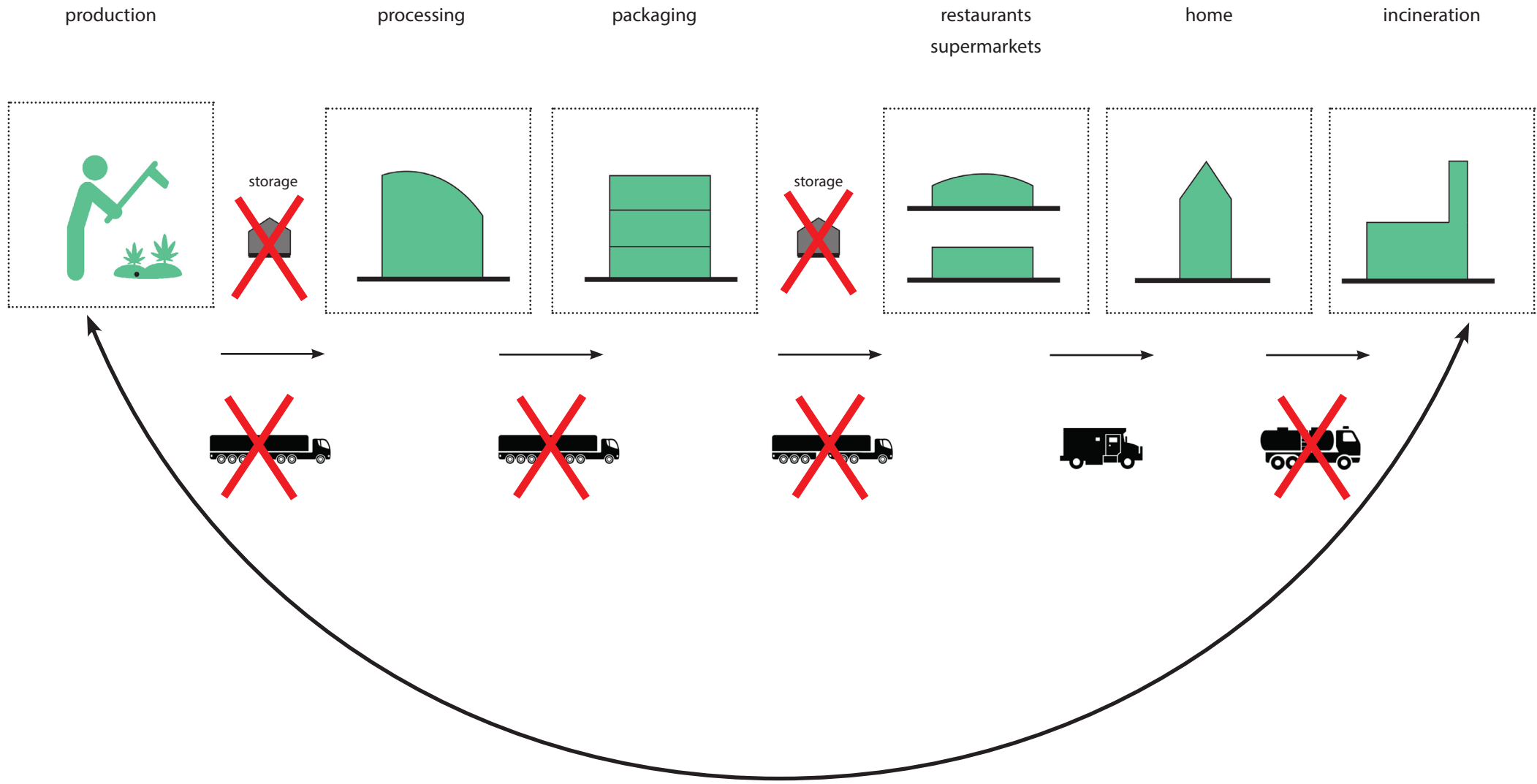
CONCLUSION

SOCIAL AND EFFECIENT IN THE SAME SPACE



CONCLUSION

SHORTER THE LINES FROM EACH SECTOR IN FOOD SYSTEM AND MAKE LINEAR TO BE A LOOP





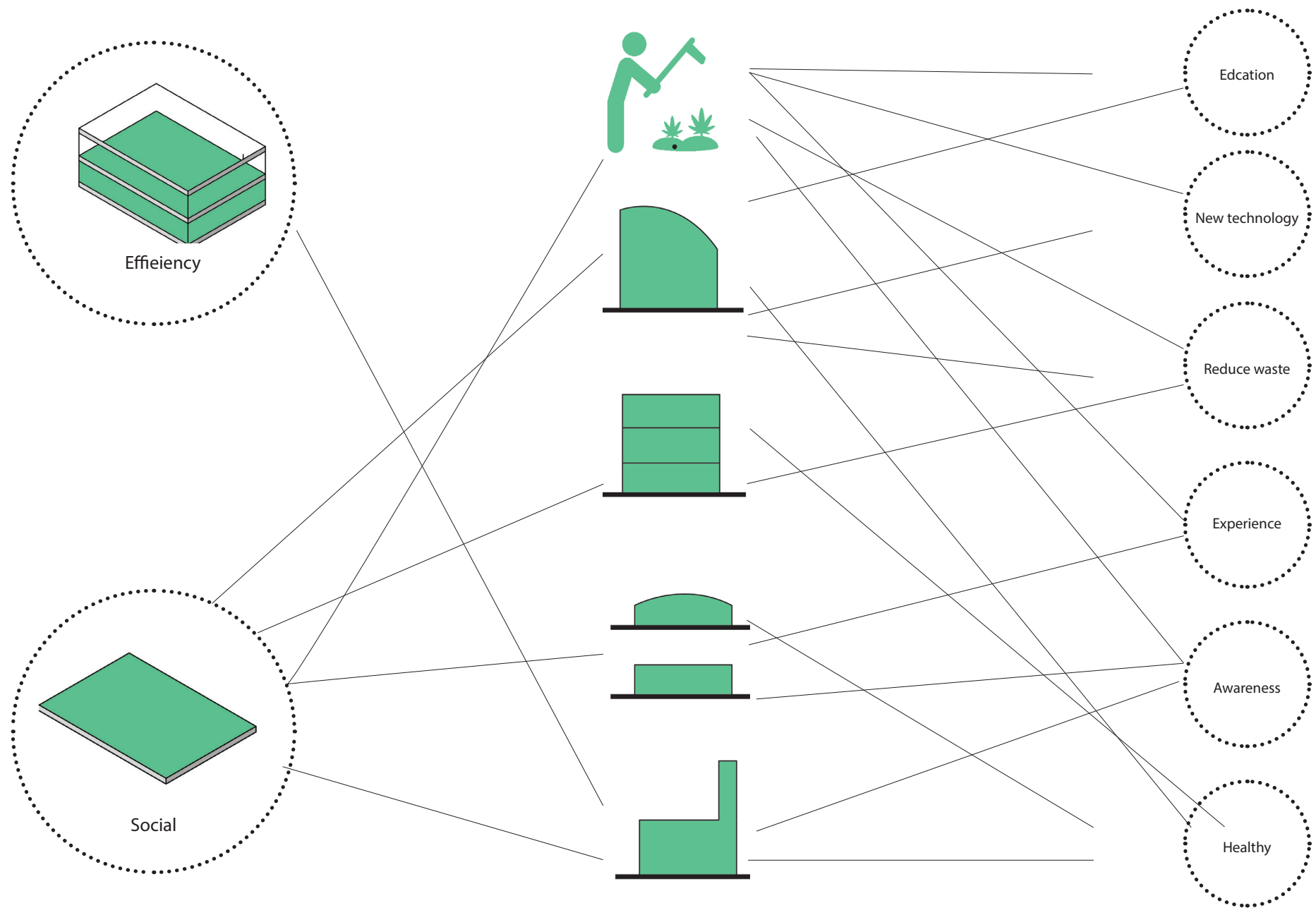
ASSIGNMENT

DESIGN GOAL

1. **WHAT** IS MY PROJECT

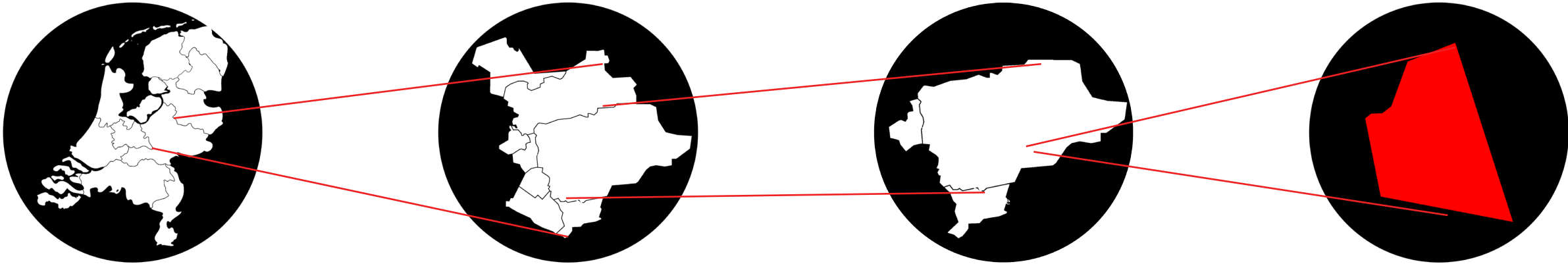
DESIGNING A PLACE THAT ENFORCES **LOOP FOOD SYSTEM** IN **ONE SPACE** IN ORDER TO INCREASE FOOD **PRODUCTION** AND REDUCE FOOD **WASTE**,SIMULTANEOUSLY STIMULATES **SOCIAL INTERACTION, AWARENESS** AND **EDUCATION** WITHIN OUR SOCIETY

MY PROJECT



LOCATION

1. WHERE IS MY PROJECT LOCATION



IN THE CENTER OF NETHERLANDS



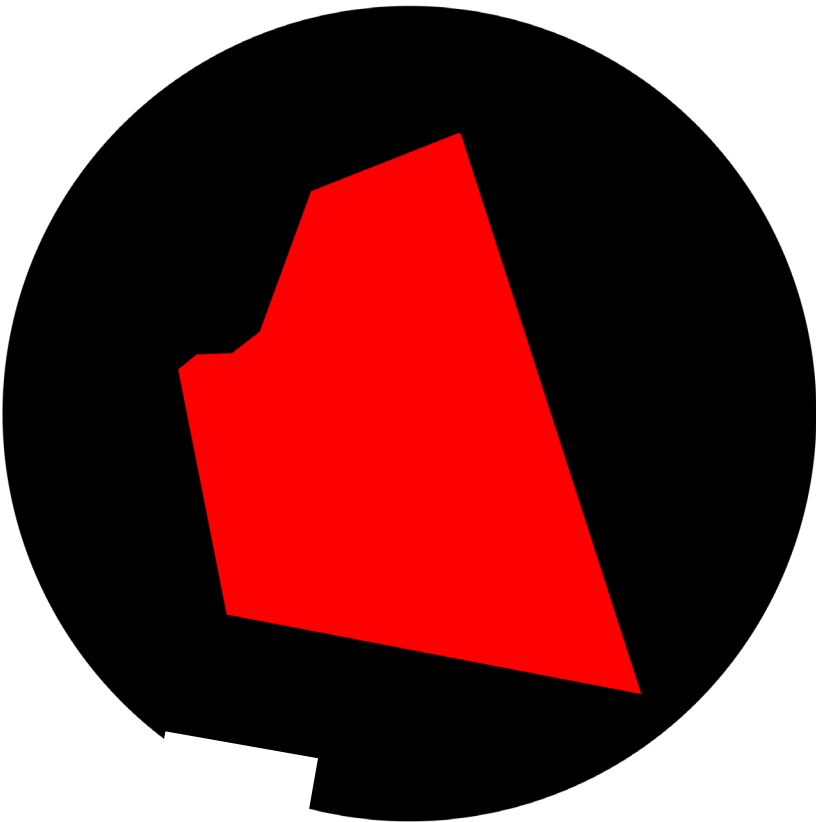
IN THE MIDDLE OF FOOD VALLEY AREA



ALL KINDS OF SOIL IN NETHERLANDS ARE SURROUNDED



ENTRANCE OF THE FOOD IN NETHERLANDS



FUTURE VISION



Traditional dutch farm



Verkade fabriek Zaandam



New dairy factory



New complex factory Ede

Waag Amsterdam



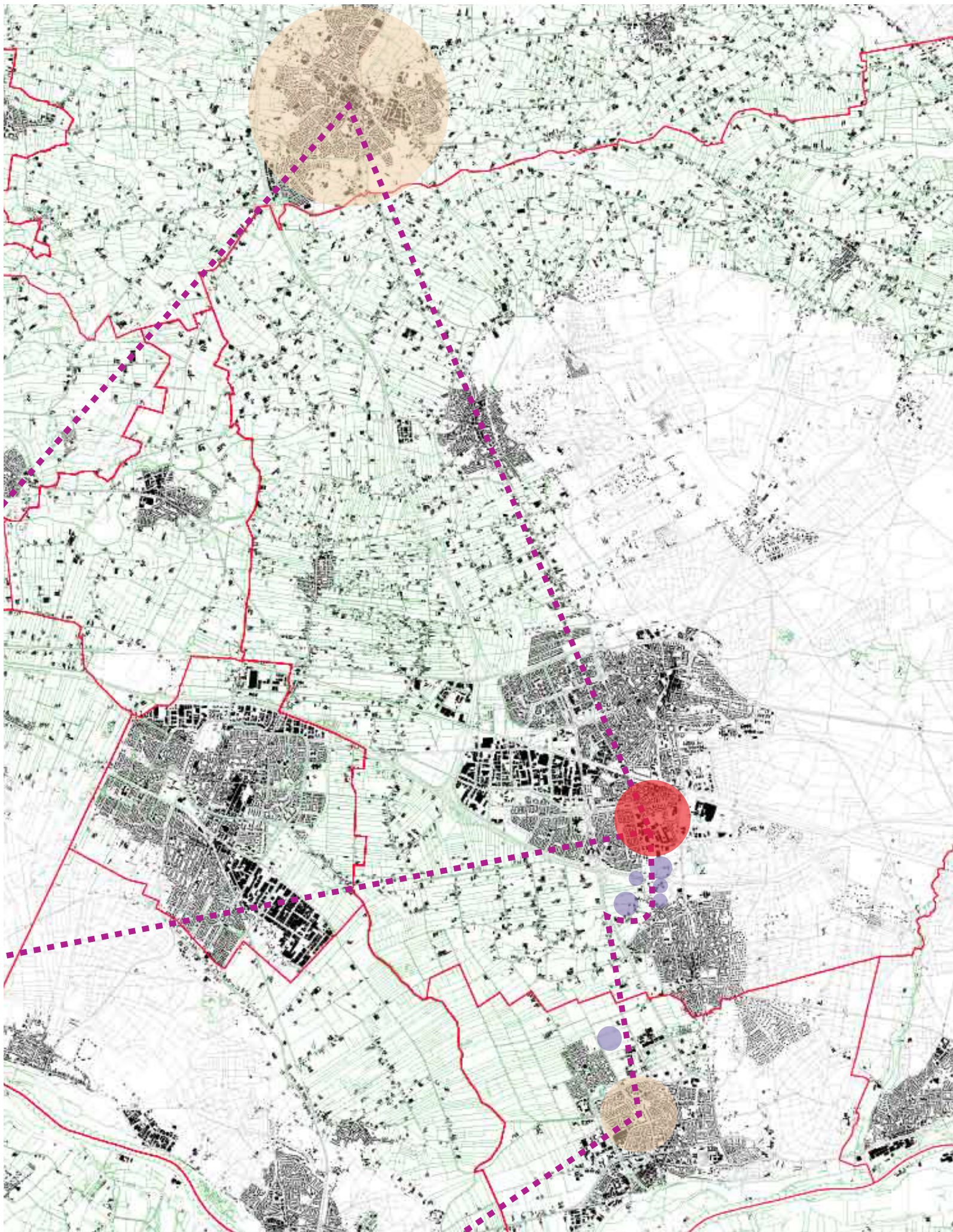
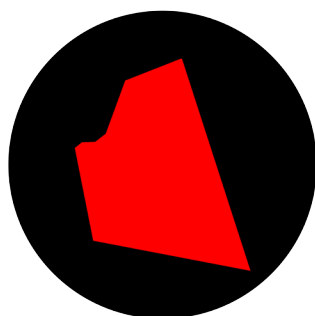
Douwe Egberts Utrecht

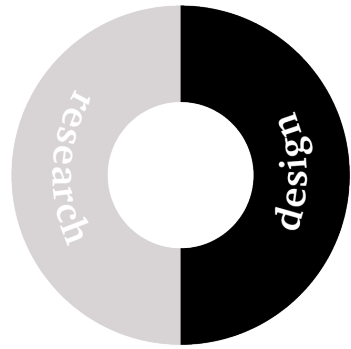


Areofarms indoor farming



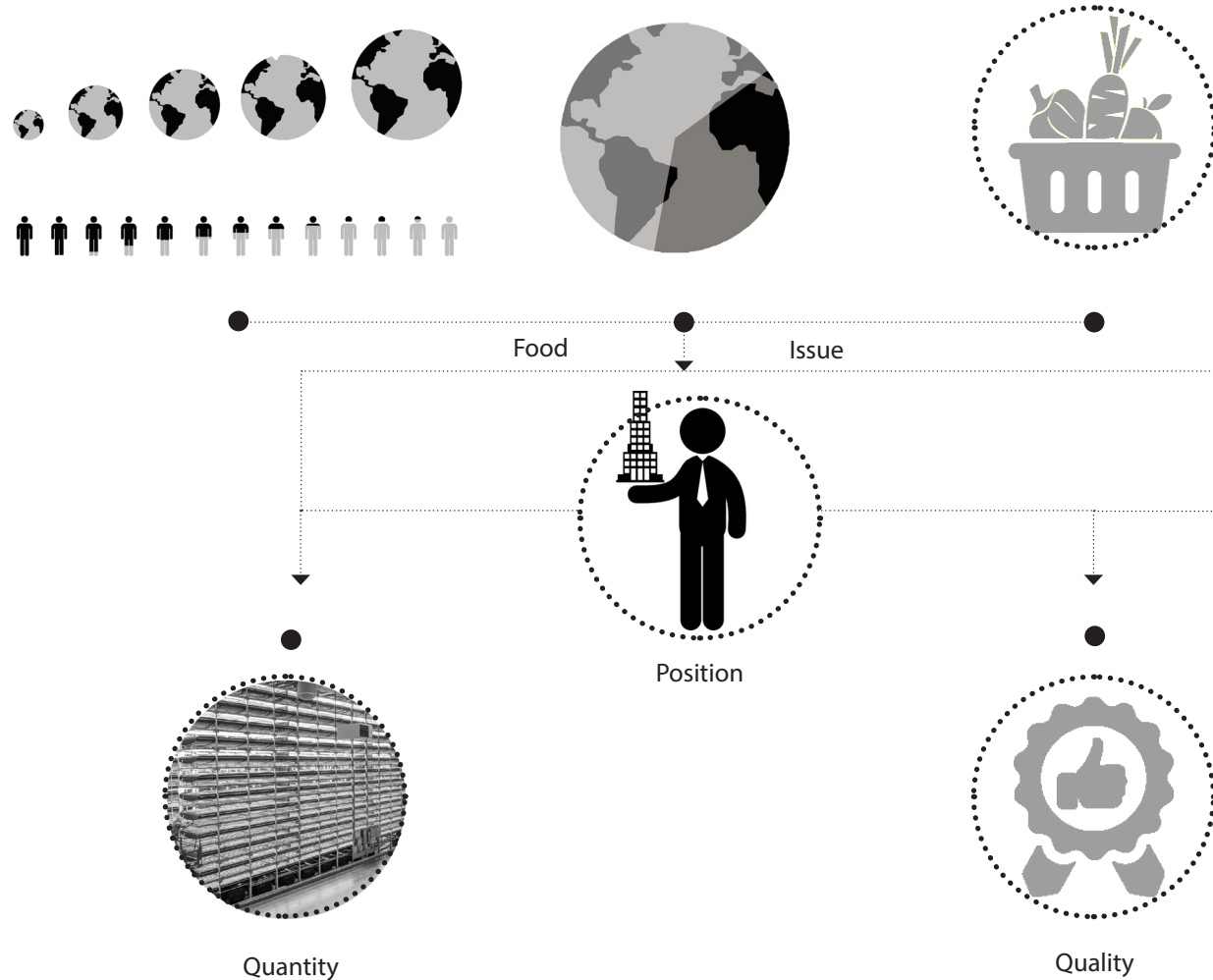
O2_PROJECT SPECIFICS





HYPOTHESIS

DESIGNING A PLACE THAT ENFORCES **LOOP FOOD SYSTEM** IN **ONE SPACE** IN ORDER TO INDICATE THE NEW **FOOD PRODUCTION** AND **REDUCE FOOD WASTE**, SIMULTANEOUSLY STIMULATES **SOCIAL INTERACTION, AWARENESS AND EDUCATION** WITHIN OUR SOCIETY.



TYPE OF INDOOR FARMING

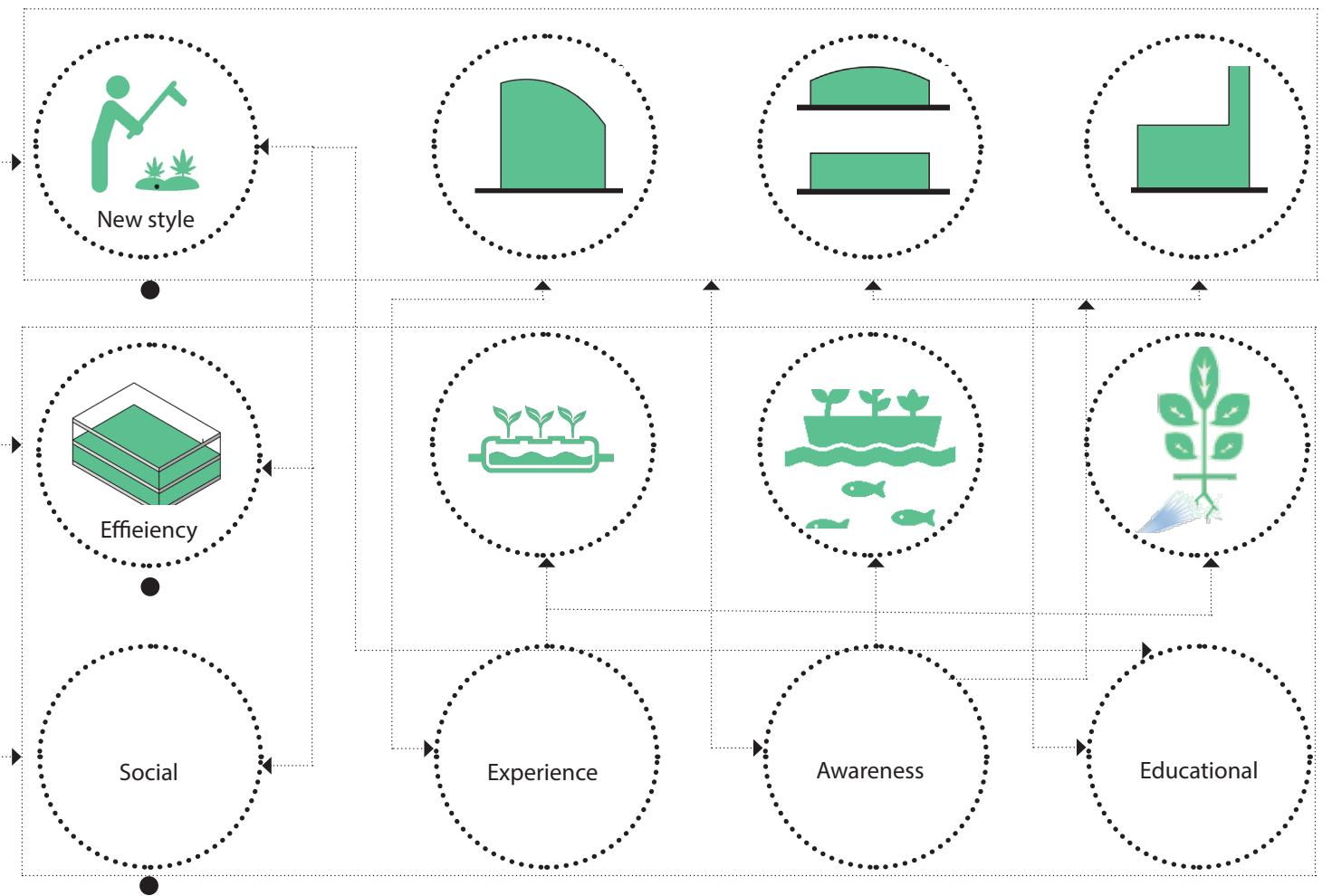
HYDROPONICS IS THE SOILLESS CULTIVATION OF PLANTS WHERE THE NUTRIENTS THE PLANT NEEDS ARE DISSOLVED IN WATER. IN THIS WAY 90% OF THE WATER IS SAVED COMPARED TO TRADITIONAL AGRICULTURE, WHERE ALL THIS WATER WOULD GO IN THE SOIL.

AQUAPONICS COMBINES THE SYSTEM OF HYDROPONICS WITH AQUACULTURE (FARMING SH). IT AIMS FOR A CIRCULAR SYSTEM WHERE THE OUTPUT OF ONE CULTIVATION IS THE INPUT OF THE OTHER. IN THIS WAY THERE IS NO NEED FOR EXPENSIVE FERTILIZER.

AEROPONICS IS ALSO A SYSTEM BASED ON SOILLESS CULTIVATION. WITH HYDROPONICS AND AQUAPONICS THE ROOTS OF THE PLANTS ARE PERIODICALLY SUBMERGED IN WATER, WITH AEROPONICS THE WATER, INCLUDING THE NUTRIENTS ARE SPRAYED ON THE ROOTS ON THE CROP. AEROPONICS CAN SAVE UP TO 98% OF WATER AND 60% FERTILIZERS.

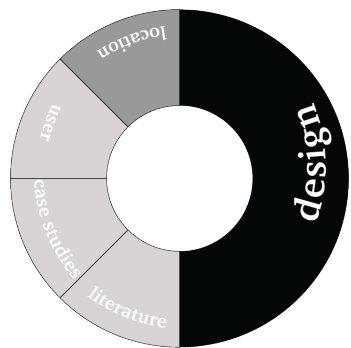
A LOOP FOOD SYSTEM

NOWADAYS, THE FOOD SYSTEM IS LINEAR TYPE. CLOSED LOOP HAS BEEN WORKING WITH THE FOOD INDUSTRY FOR OVER 14 YEARS, THROUGH THE PROVISION OF PACKAGING, WASTE MANAGEMENT AND RETURNING ORGANIC WASTE TO THE SOIL. TO CHANGE IT TO BE A LOOP TYPE CAN BRING MANY ADVANTAGES.



SOCIAL INTERACTION, AWARENESS AND EDUCATION

THERE ARE MANY EXAMPLES OF URBAN FARMING AND INDOOR FARMING COMBINE WITH OTHER FUNCTION, HOWEVER, THERE ARE NOT MUCH EXAMPLE WHICH IS INTEGRATE WITH SHOWING PEOPLE WHY WE ARE DOING THIS NEW FARMING TECHNOLOGY. EXCEPT TO PROVIDE FOOD IN THE CITY, TO SHOW PEOPLE ABOUT THIS FOOD ISSUE, BE AWARE OF THE HEALTHY EATING STYLE; TO EDUCATE PEOPLE REDUCING THE WASTES CAN BECOME A NEW SOCIAL INTERACTION IN OUR FUTURE SOCIETY.



FOOD STATION

THE STATION OF EDE- WAGENINGEN IS KEY NOTE OF FOOD VALLEY AND ENTRANCE OF THE SITE. TO COMBINE WITH FOOD AS ICONIC FOR THE AREA.

FOOD EXPO

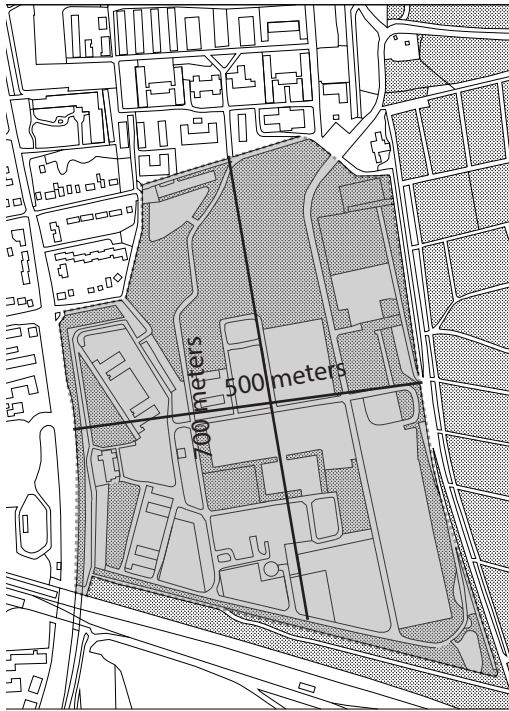
AS A PLACE TO SHOW AND EXPERIENCE THE FOOD.

FOOD WITH WORKING

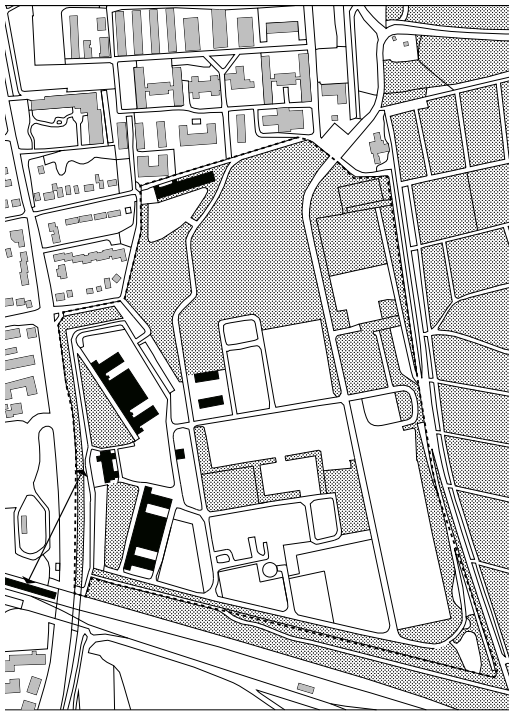
TO INTEGRATE WITH FOOD CREATE NEW SAY OF WORKING STYLE.

FOOD WITH LIVING

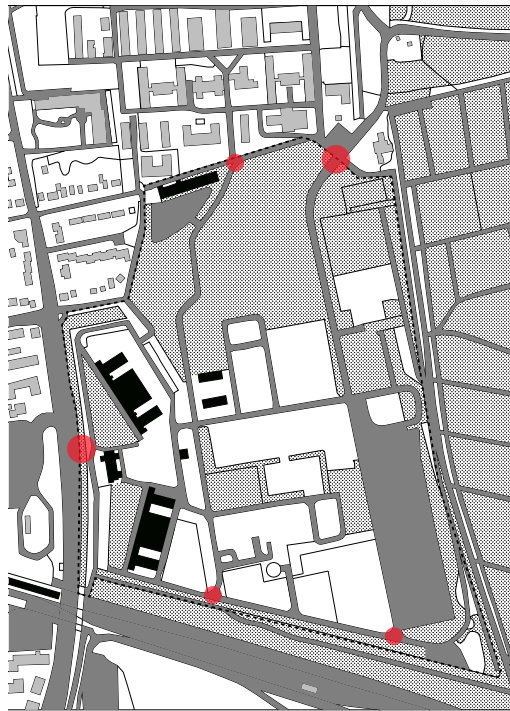
TO CREATE A NEW HOUSE TYPOLOGY WHICH FOOD HAS BIG IMPACT ON IT.



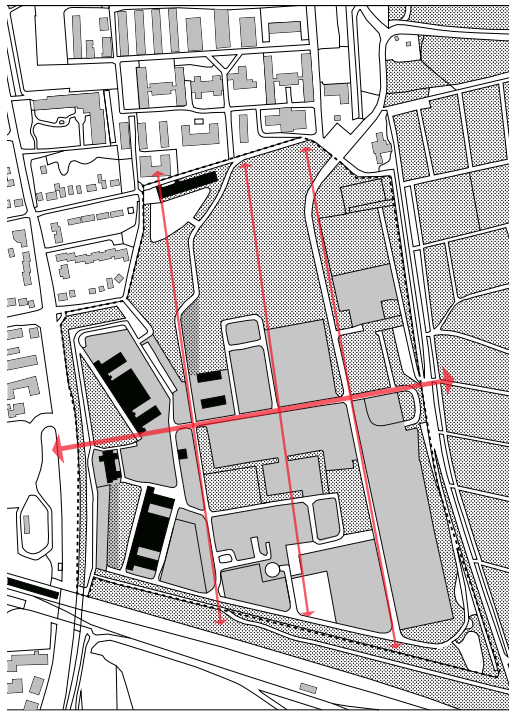
Plot



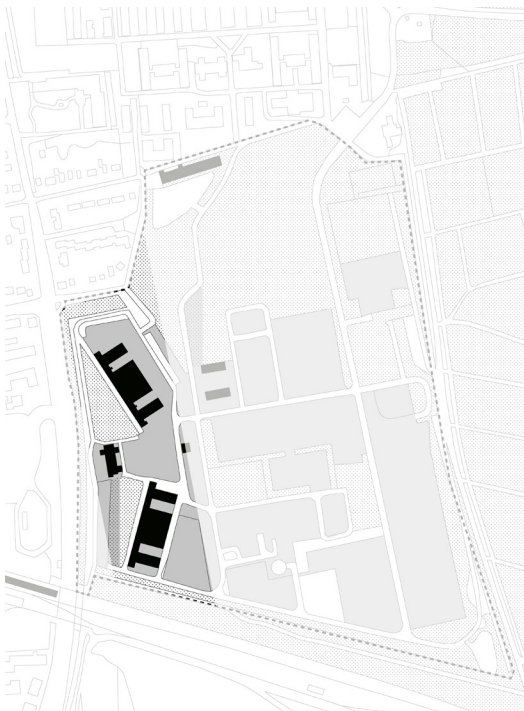
Building



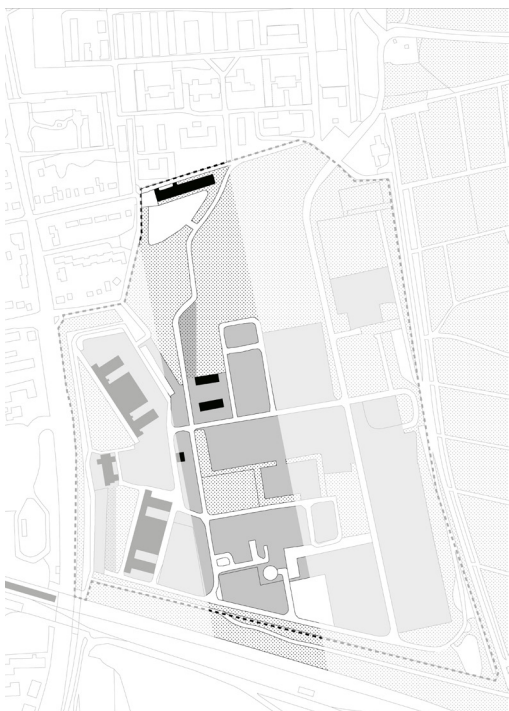
Accessibility



Axis



Food Station



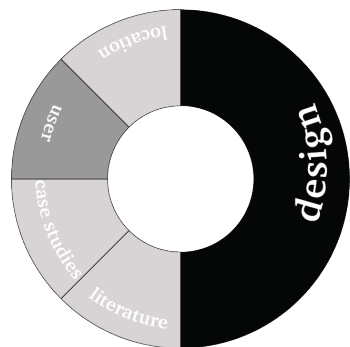
Food Expo



Food and working



Food with Living

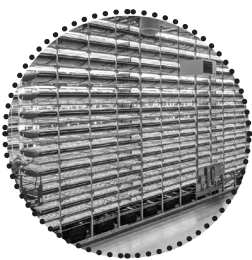
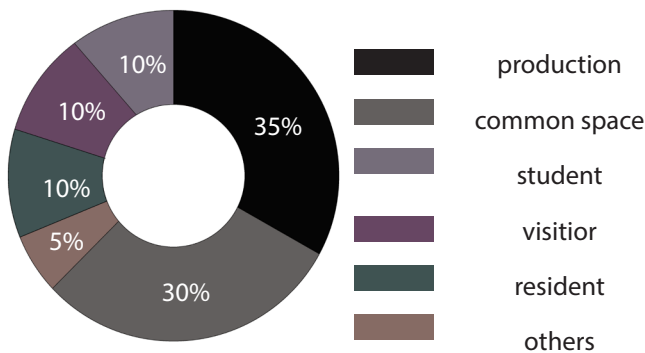


TARGET GROUP

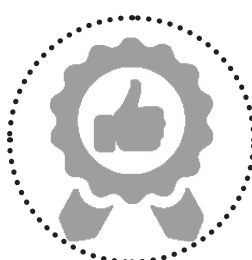
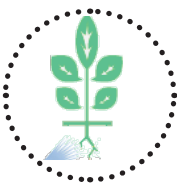
THE LOCATION HAS SEVERAL POTENTIAL QUALITIES. THE USERS IS BIG PART OF IT. THERE ARE THREE MAIN GROUPS WHICH ARE MY FOCUS POINT: VISITOR(ACCORDING TO FOOD VALLY DEVELOPMENT); STUDENT(WAGENING UNIVERSITY); RESIDENT.

PROGRAM

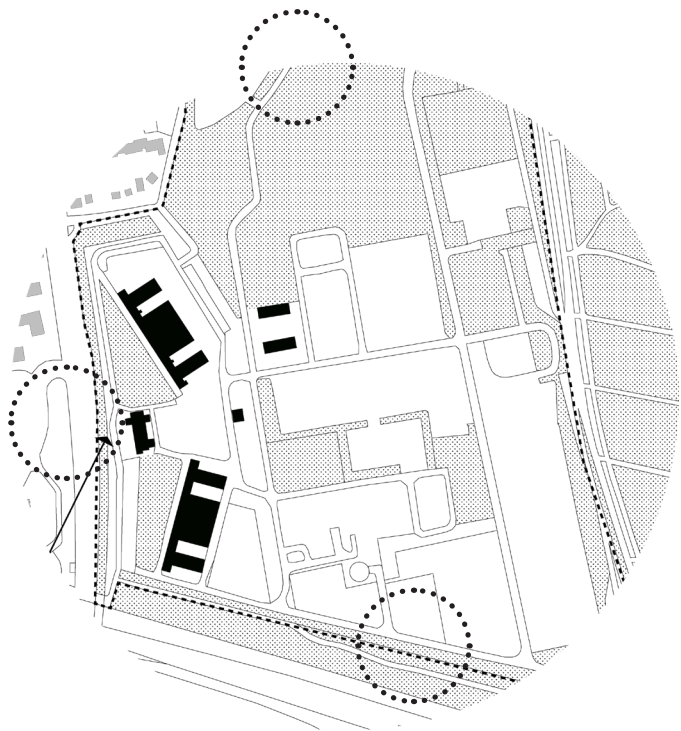
TO INTEGRATE THE QUANTIFY WITH QUALITY. THE PRODUCTION WILL MIX WITH ALL OTHER PROGRAMS. BASED ON THE THREE TARGET GROUPS.THE PROGRAMS INCLUDES TWO PARTS: FUCTIONAL FOR THE GROUPS AND COMMON SPACE FOR SOCIAL INTERACTION.



Quantity



Quality



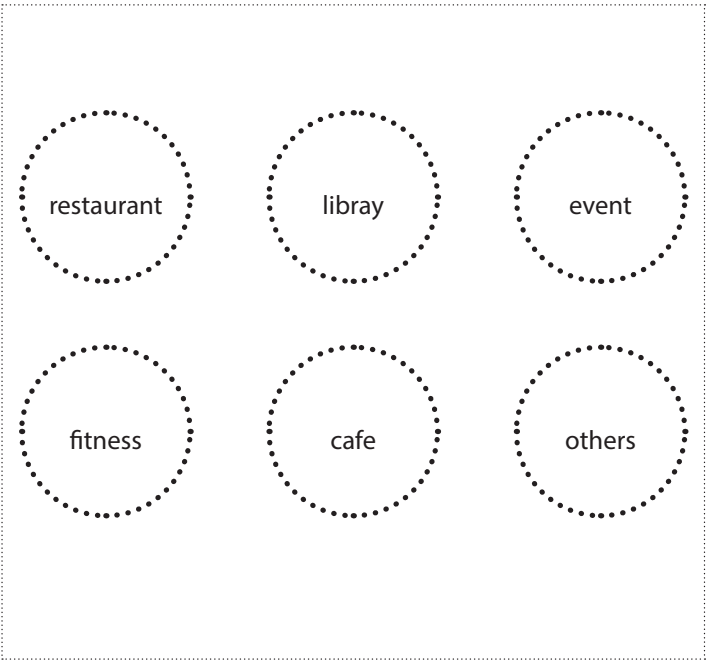
Resident



Student



Visitor



EXAMPLE PROJECT

THE URBAN FARMERS



REFERENCE

PRODUCTIVE SPACE: 1900M2
GREEN HOUSE : 1400M2
FISH TANKS : 500M2

EVEN SPACE : 300M2
(COOKING CLASSES, MARKET PLACE AND BAR)

PRODUCE PER YEAR:

GREENHOUSE: 4500000 GRAM VEGETABLES
FISH TANKS : 1900000 GRAM FISH

EXAMPLE PROJECT

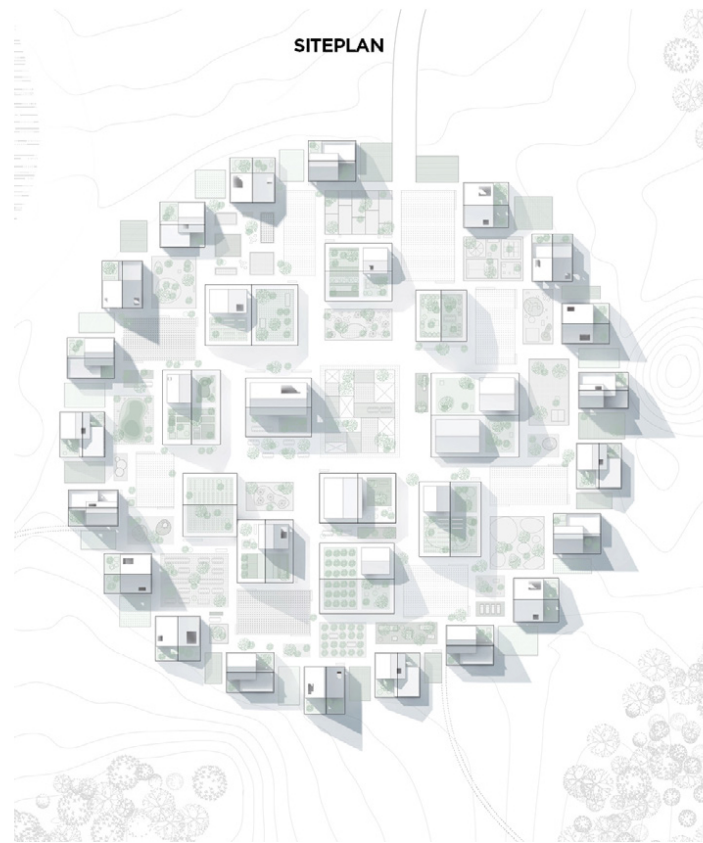
REGEN VILLAGE, ALMERE



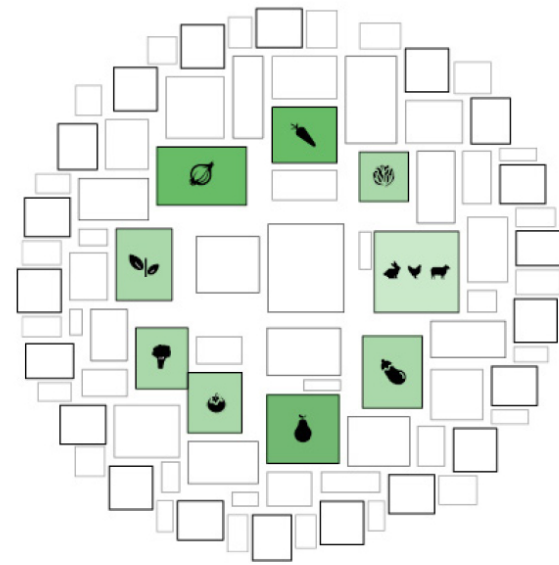
ADVANTAGES

APPLY TECHNOLOGIES INTO AN INTEGRATED COMMUNITY DESIGN.
PROVIDING WAST ENERGY WATER AND FOOD FRAMEWORK.
NOT ONLY TECHNOLOGIES, BUT ALSO THE SOCIAL VALUE.

RENEWABLE ENERGY
ORGANIC FOOD PRODUCTION
VERTICAL FARMING
AEROPONICS AND AQUAPONICS



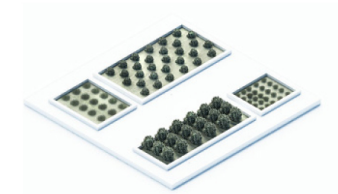
FOOD PRODUCTION



Greenhouse Aquaponics Heated greenhouse
Livestock

TYPOLGY

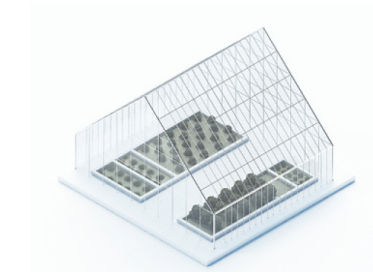
REGEN VILLAGE, ALMERE



1. Seasonal garden



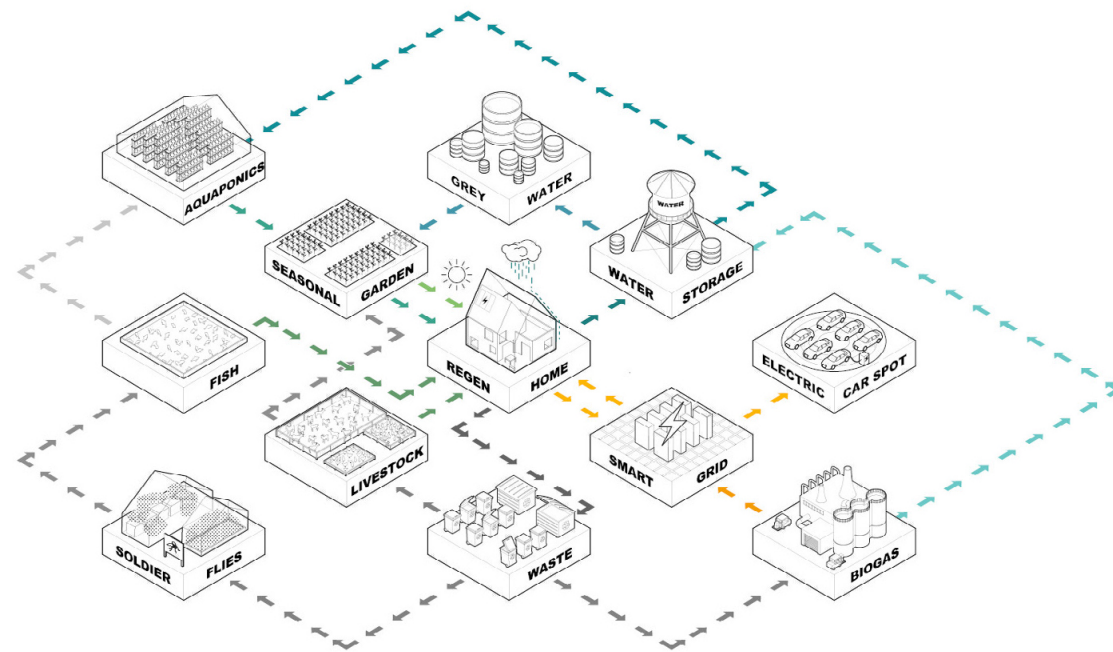
2. Heated greenhouse



3. Greenhouse



4. Aquaponic



water

waste

food

energy



TYPOLGY 1A
HOUSE 80 M2
GREENHOUSE 20 M2



TYPOLGY 2A
HOUSE 110M2
GREENHOUSE 20M2
TERRASSE 20M2



TYPOLGY 2C
HOUSE 130M2
GREENHOUSE 20M2
TERRASSE 20M2



TYPOLGY 3A
HOUSE 140M2
GREENHOUSE 5M2
TERRASSE 40M2



TYPOLGY 1B
HOUSE 80 M2
GREENHOUSE 20 M2



TYPOLGY 2B
HOUSE 120 M2
GREENHOUSE 25M2

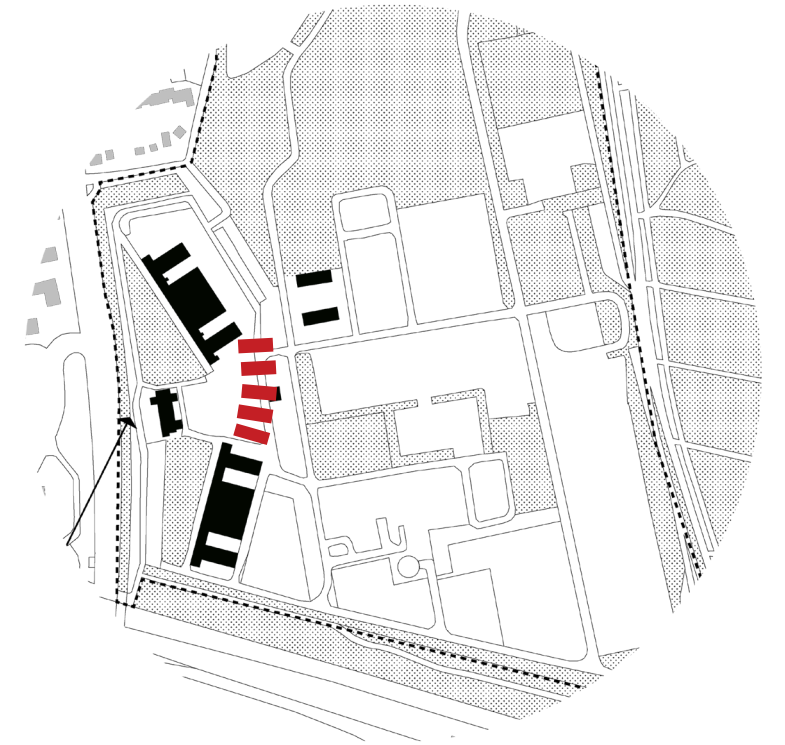
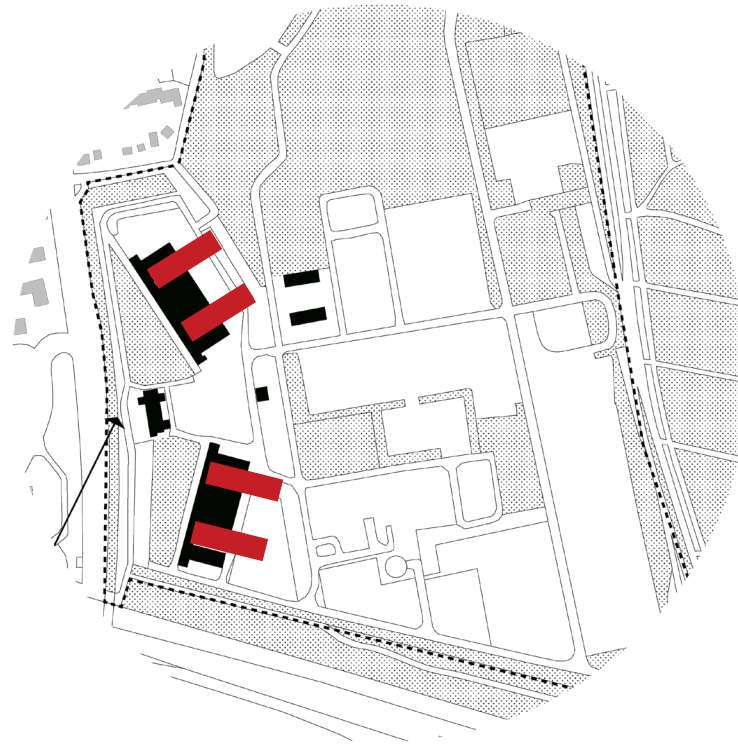


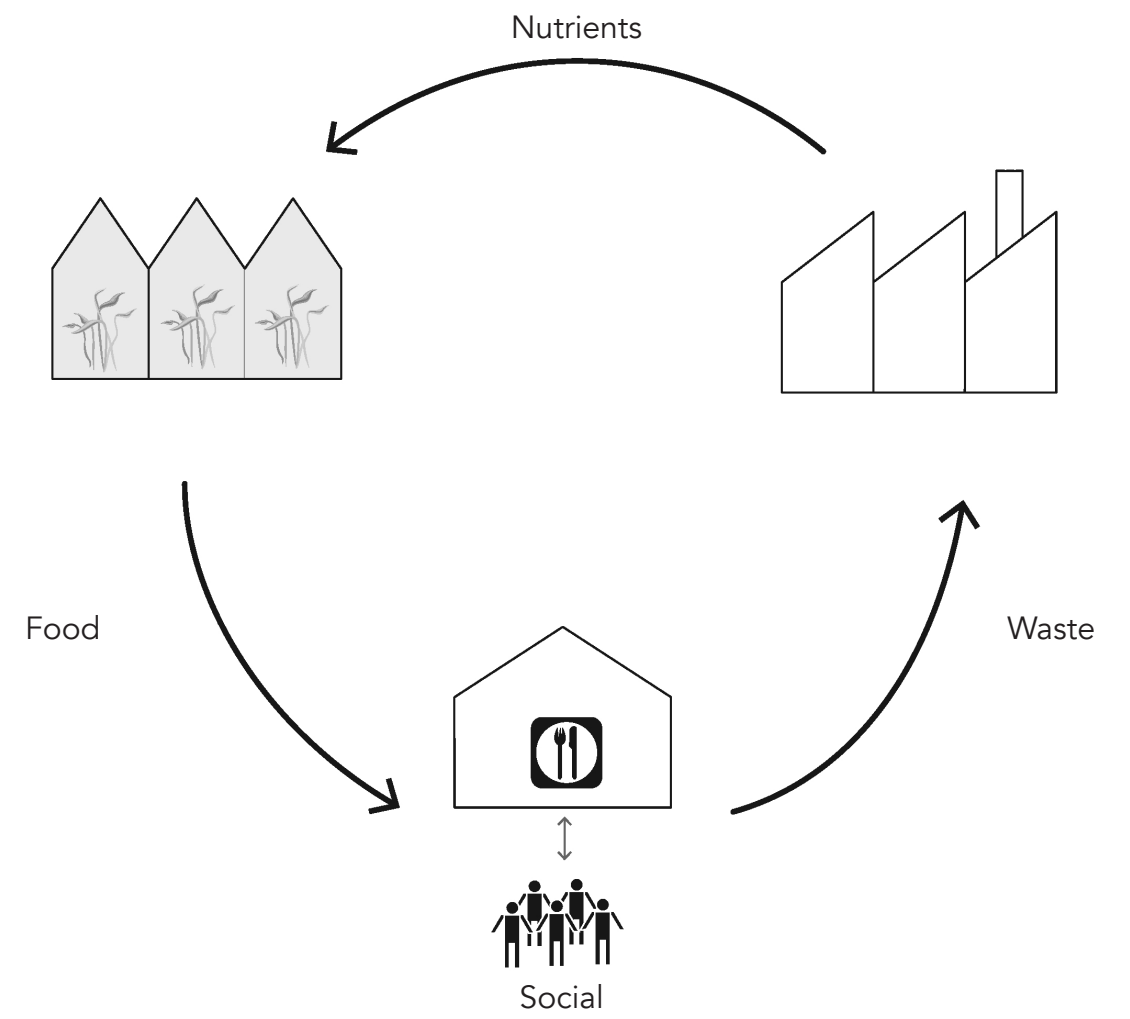
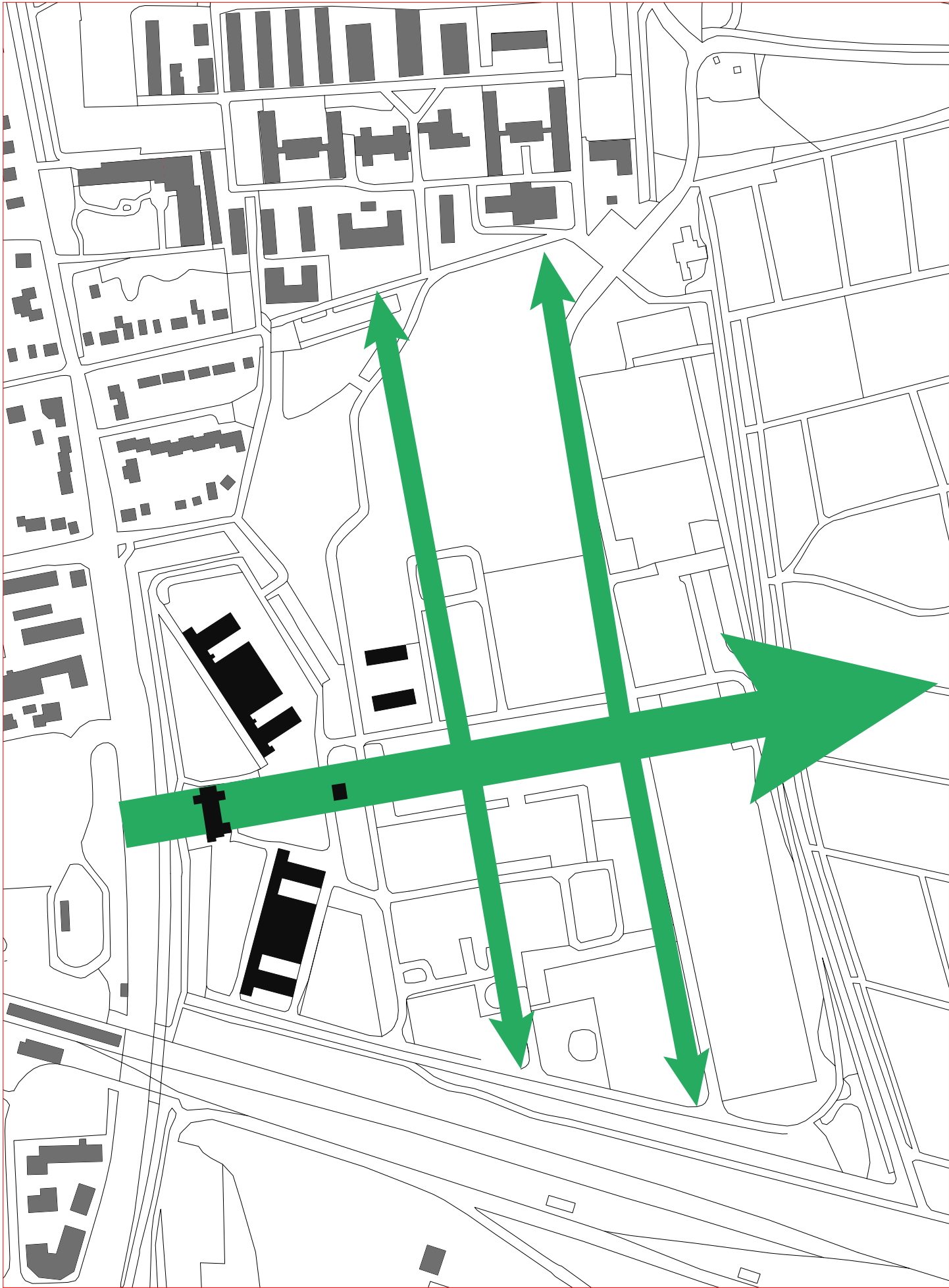
TYPOLGY 2D
HOUSE 140M2
GREENHOUSE 15M2
TERRASSE 15M2



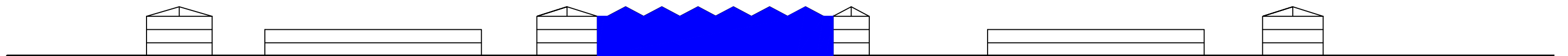
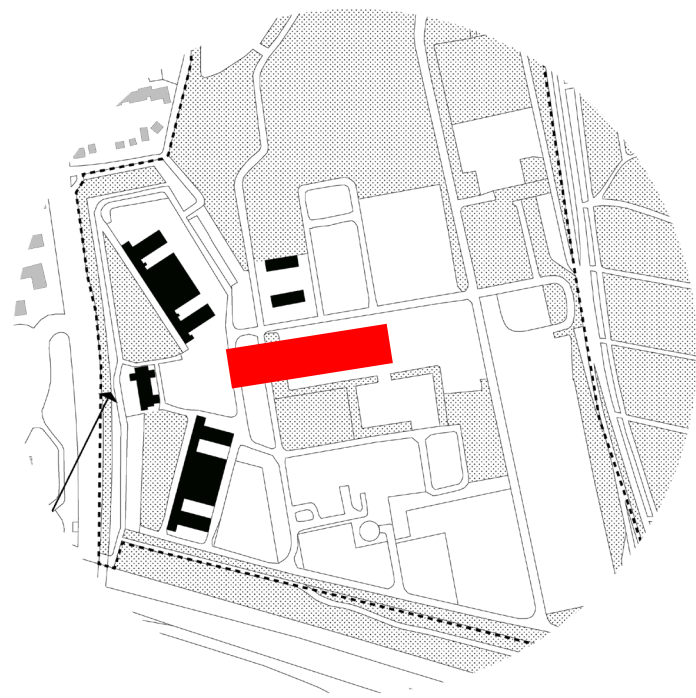
TYPOLGY 3B
HOUSE 140M2
GREENHOUSE 10M2
TERRASSE 50 M2

O3_DESIGN

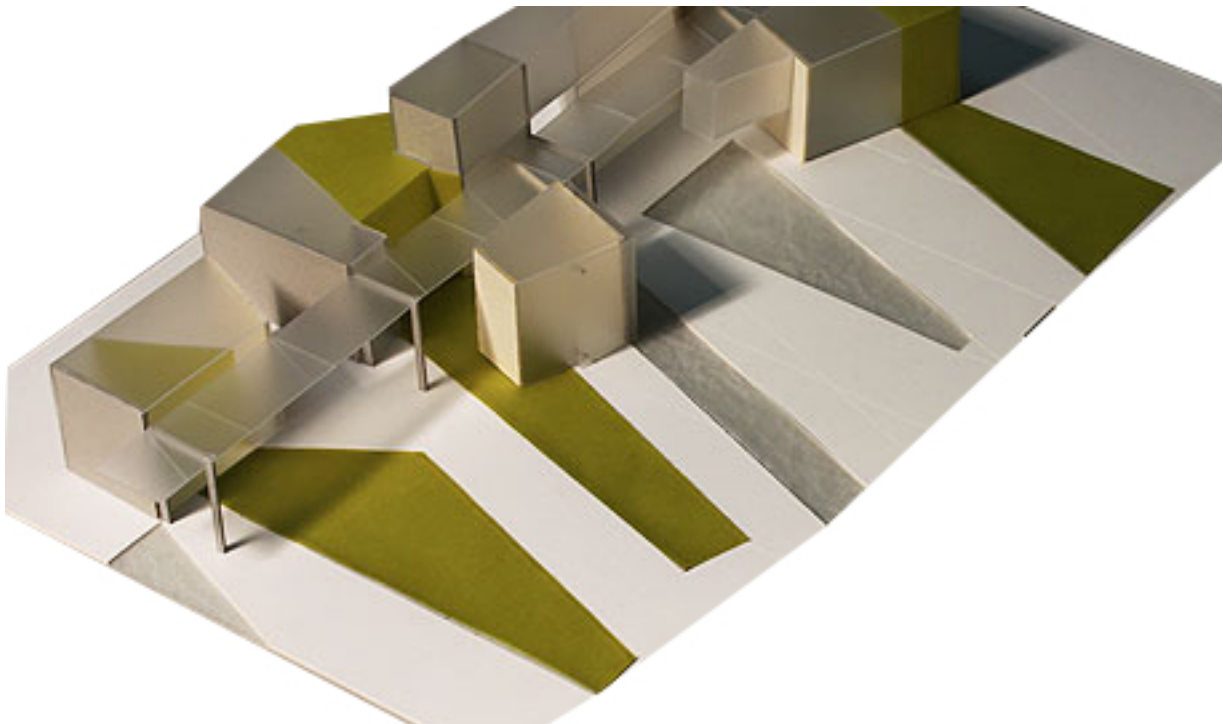
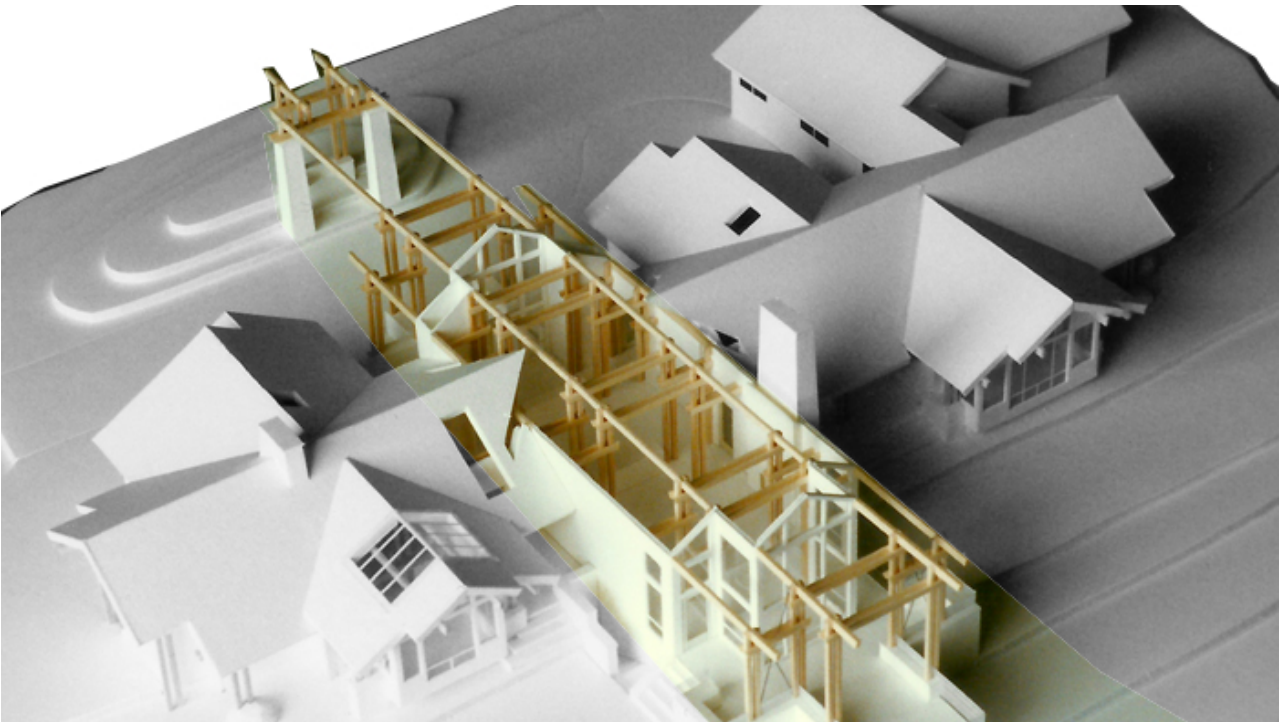
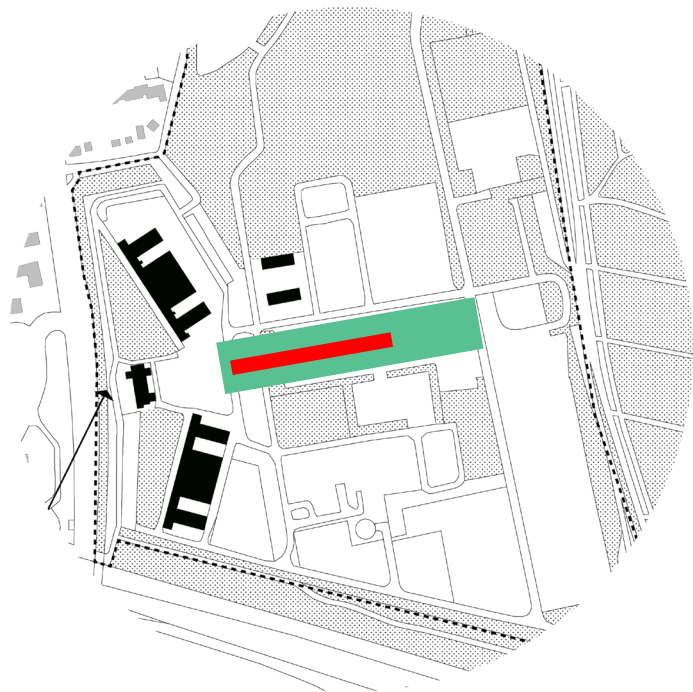


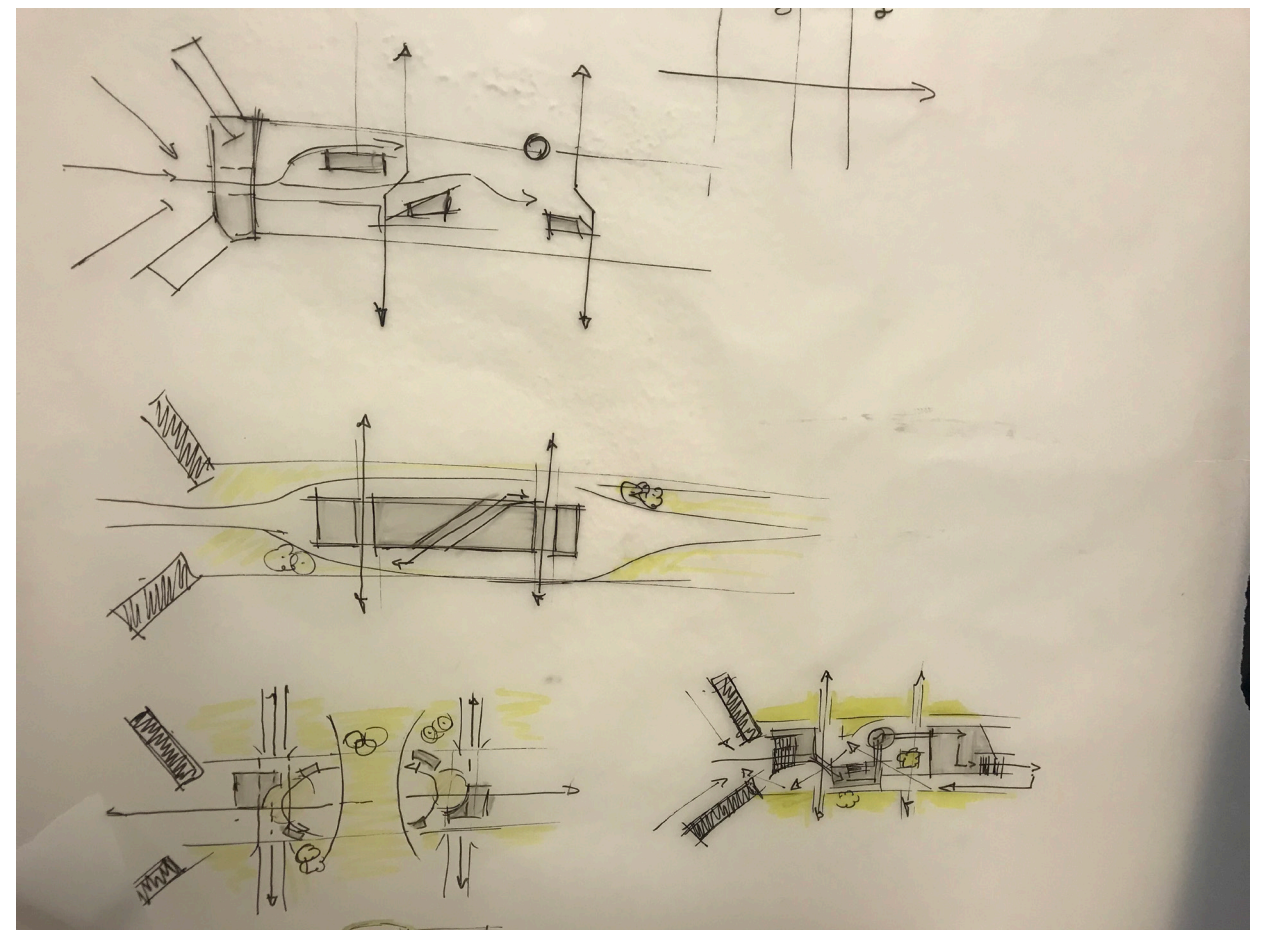
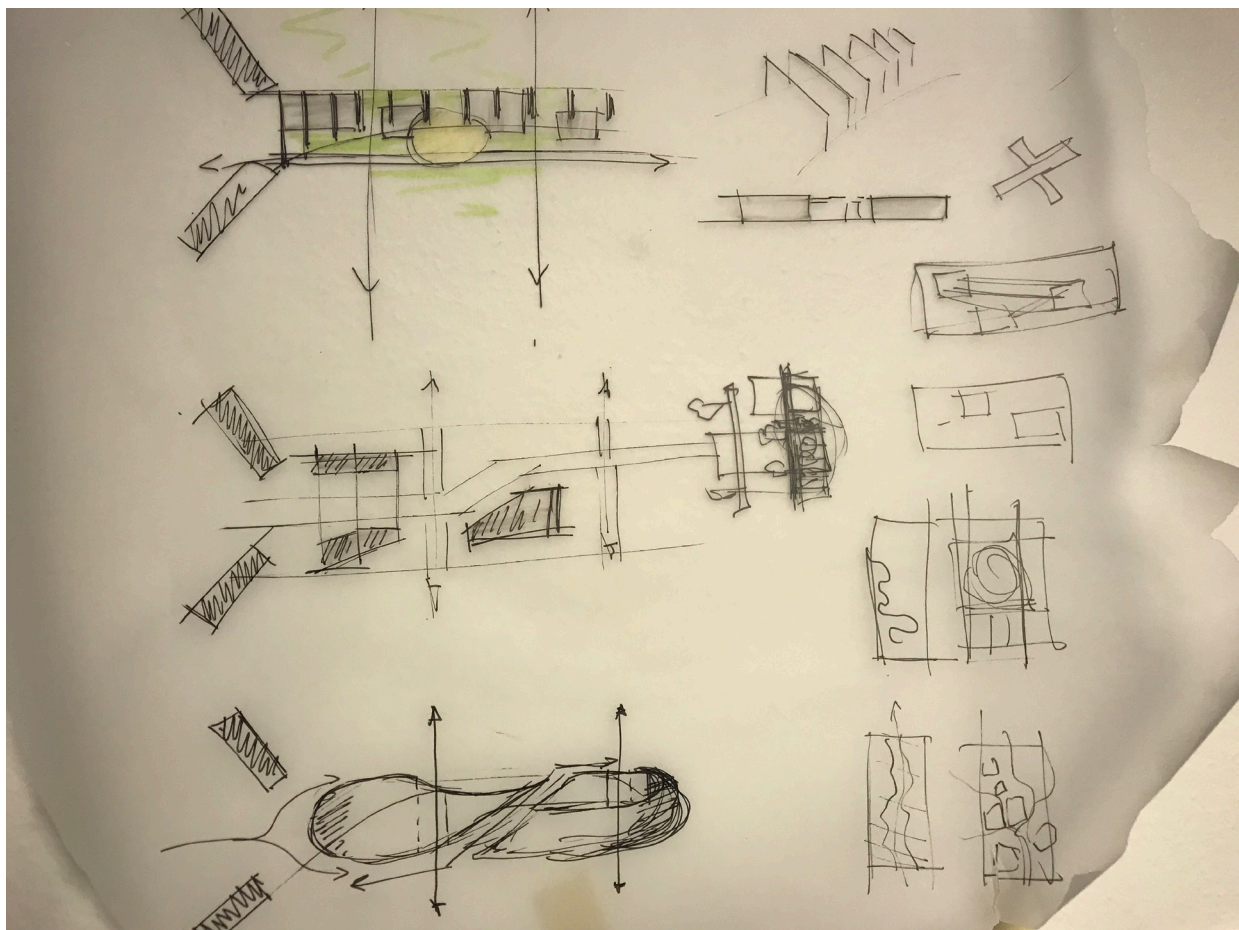
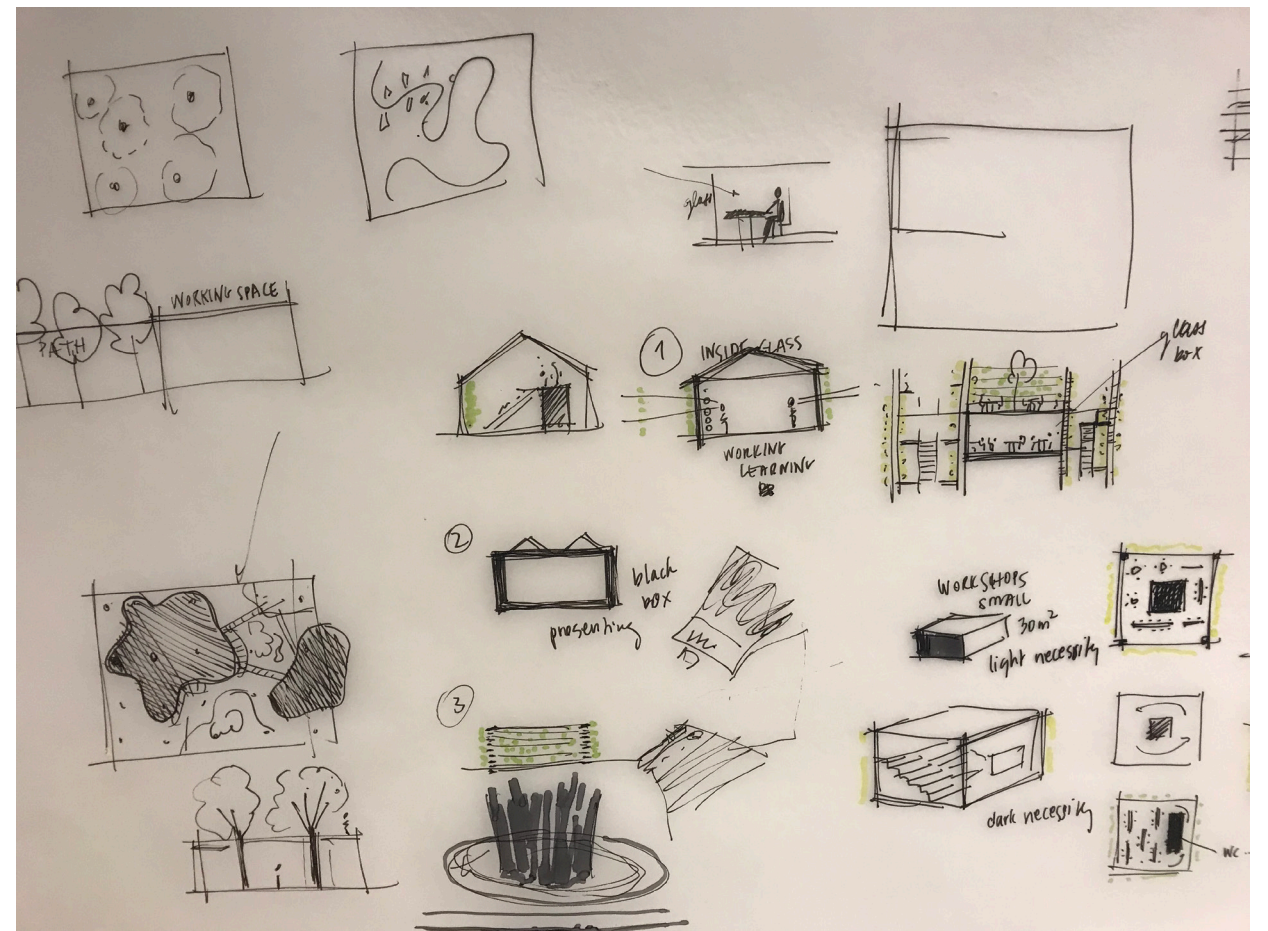
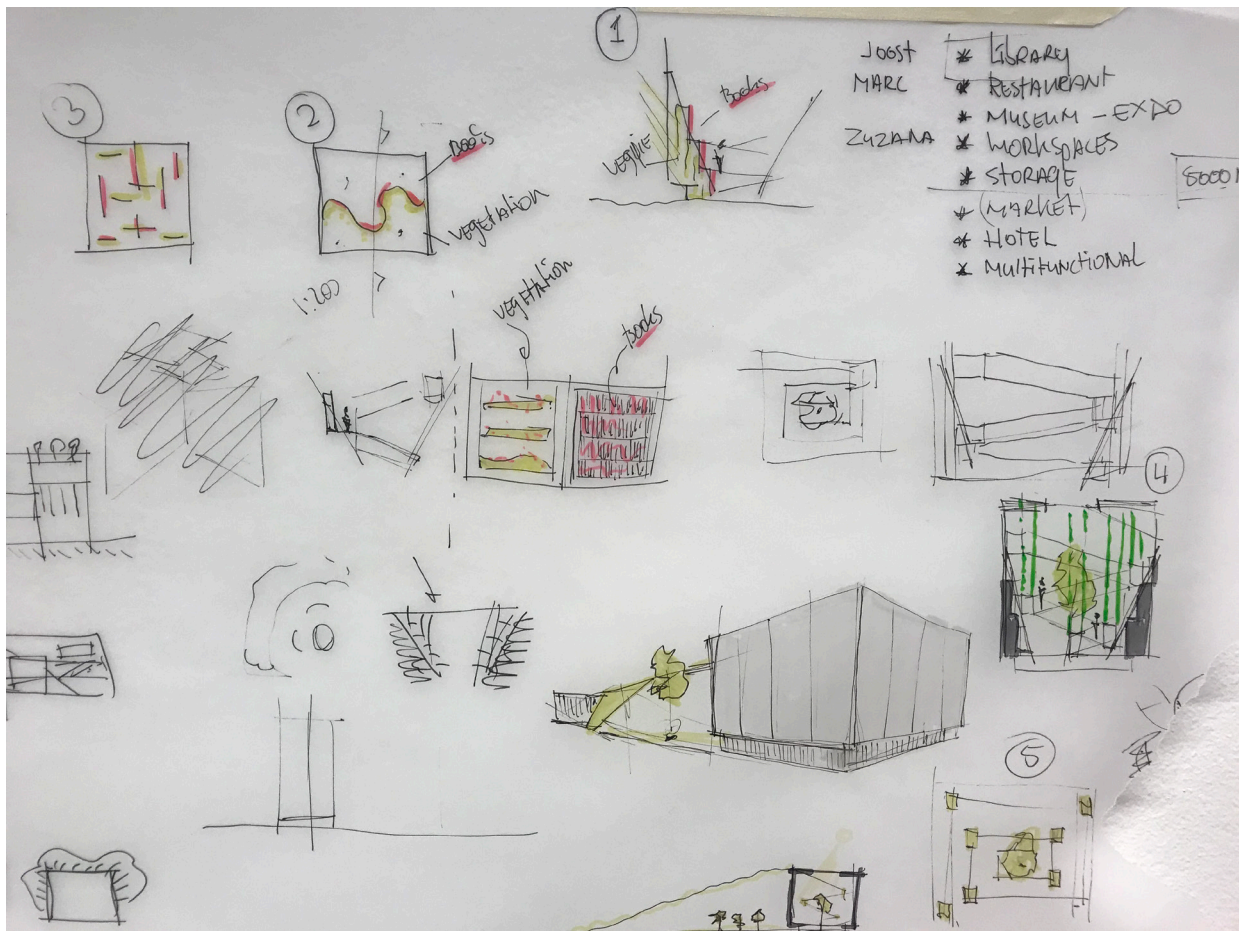


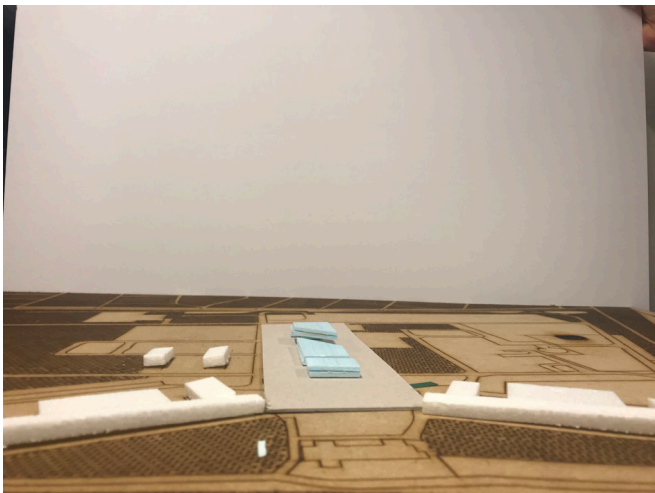
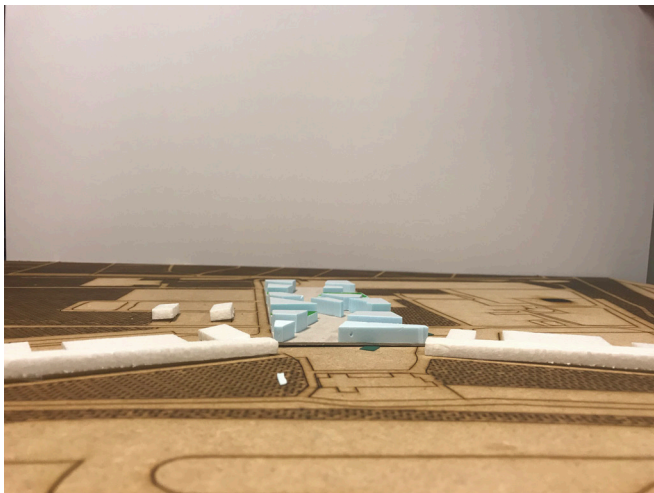
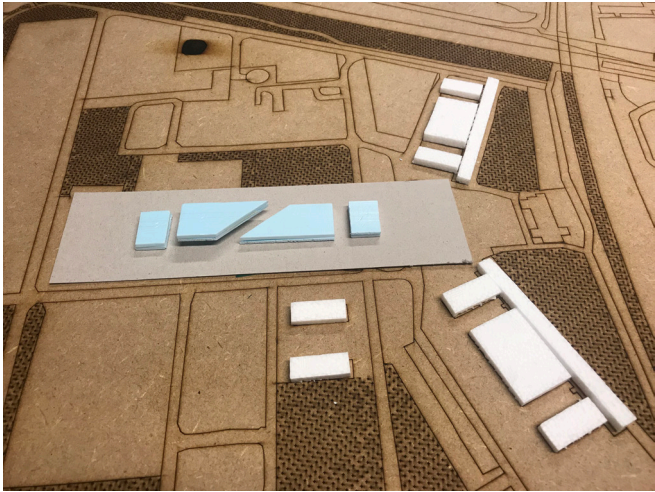
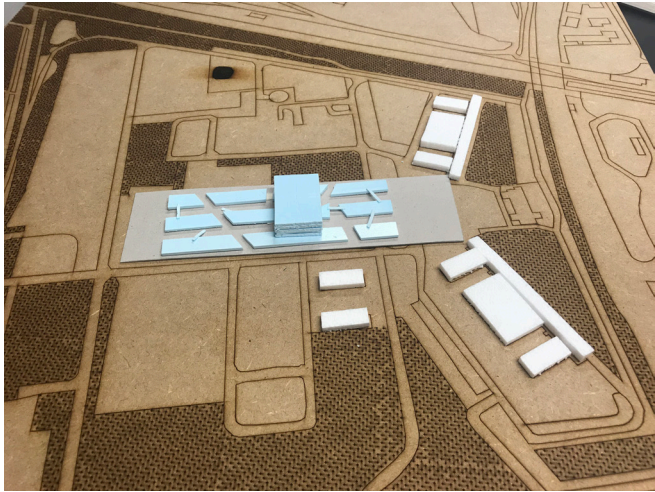
CONCEPT 1

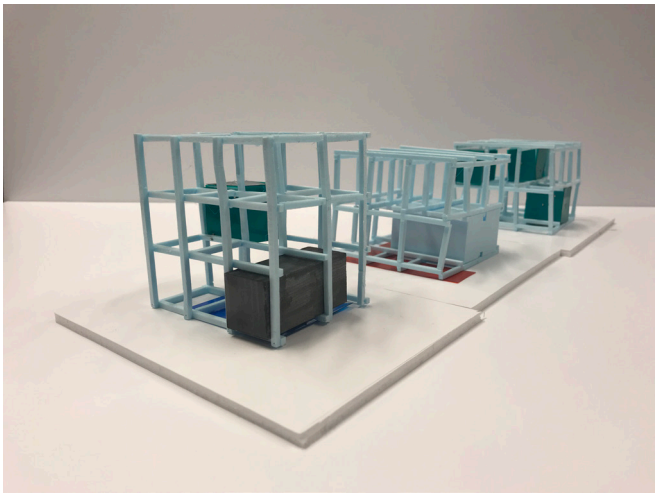
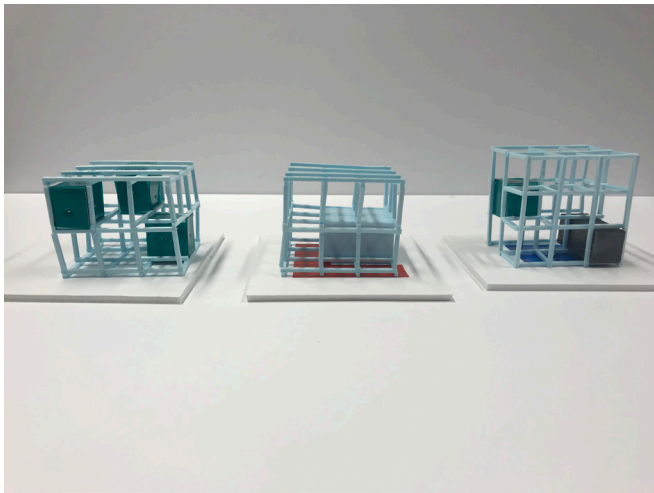
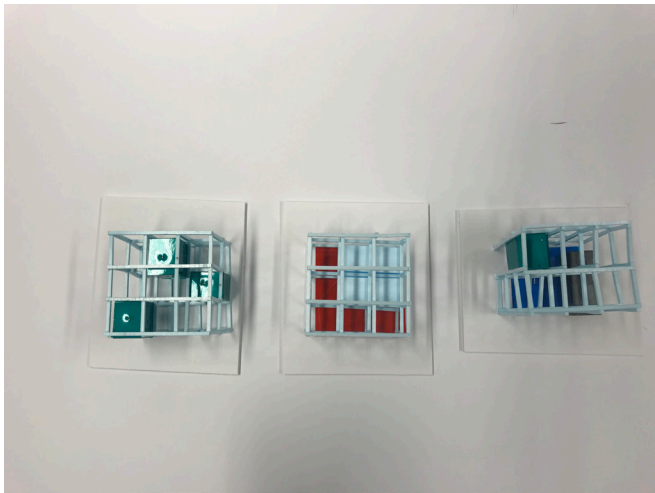
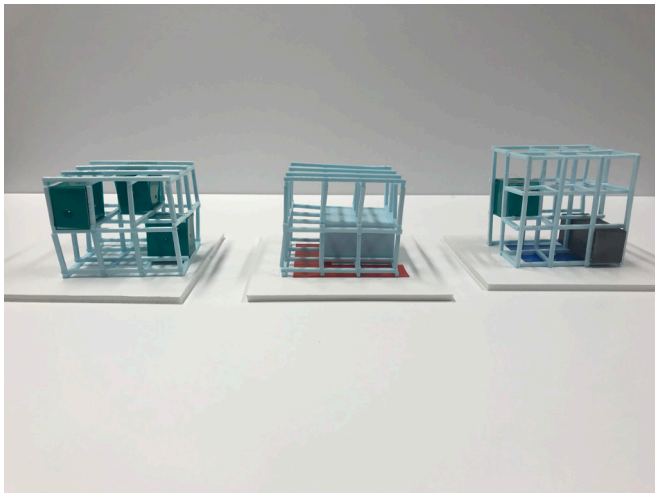
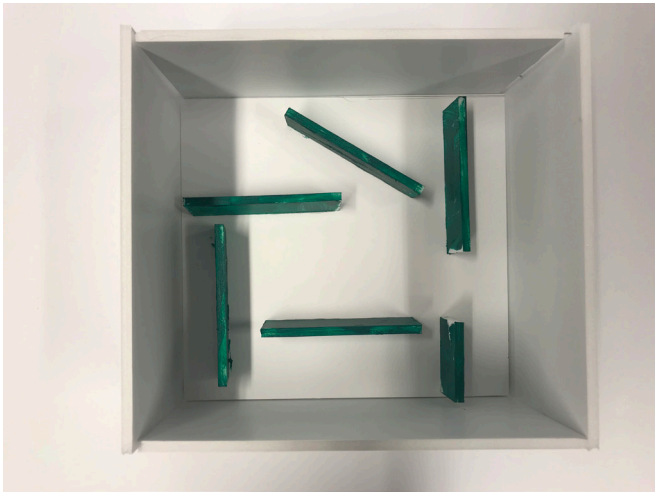
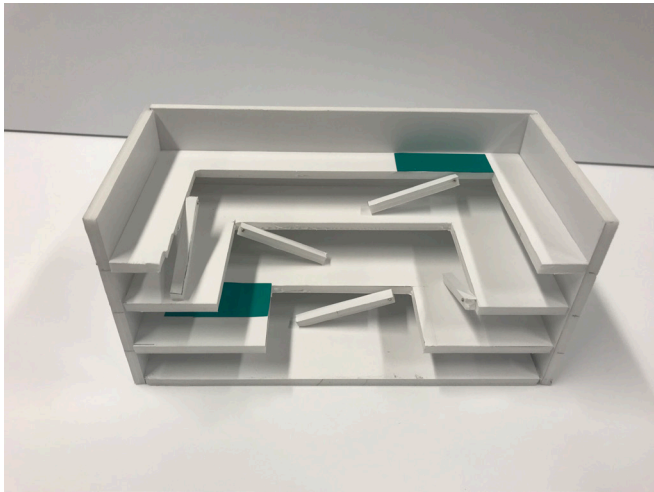
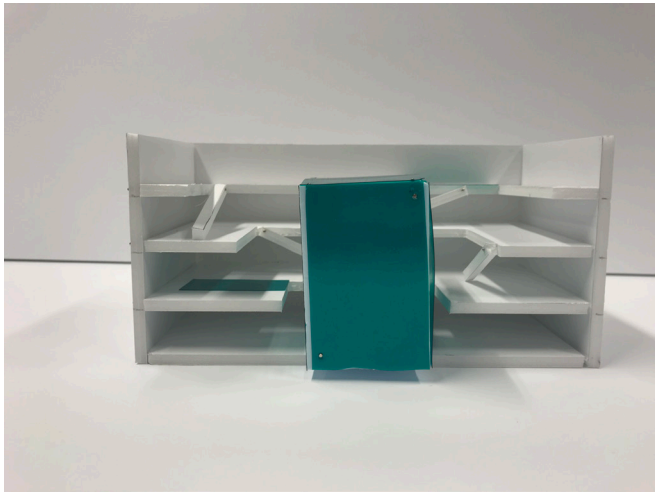
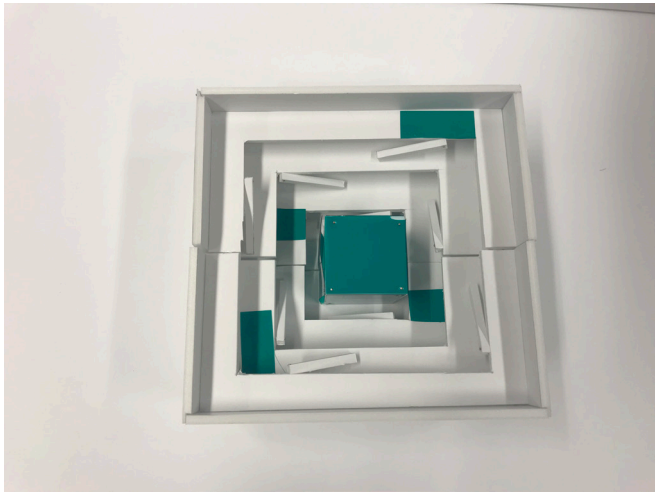
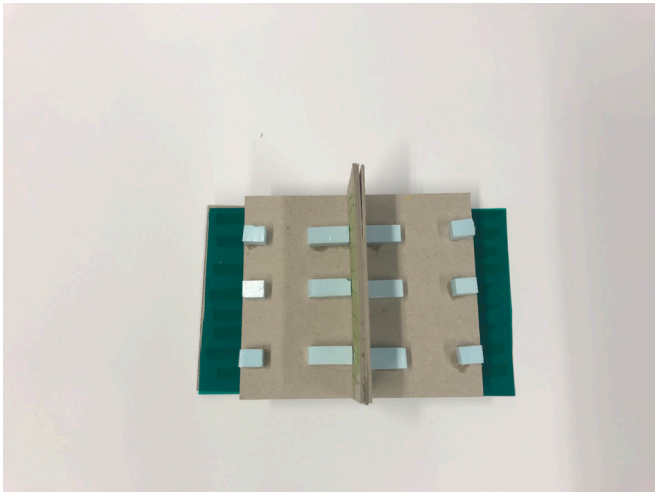
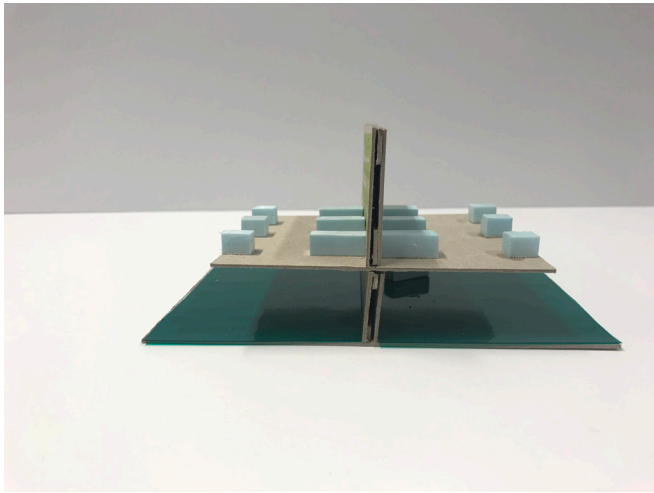
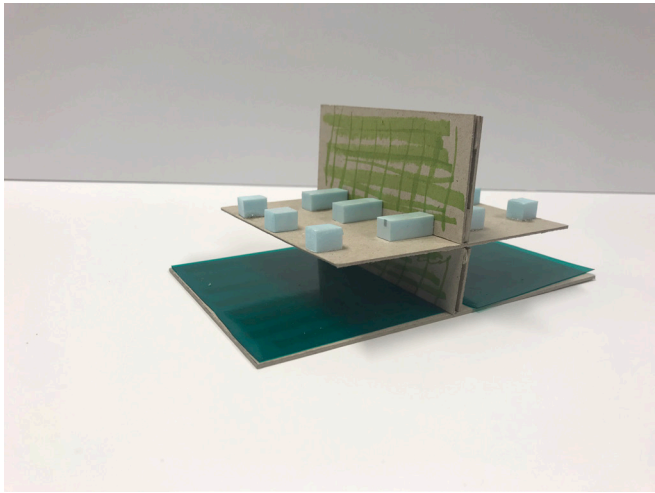
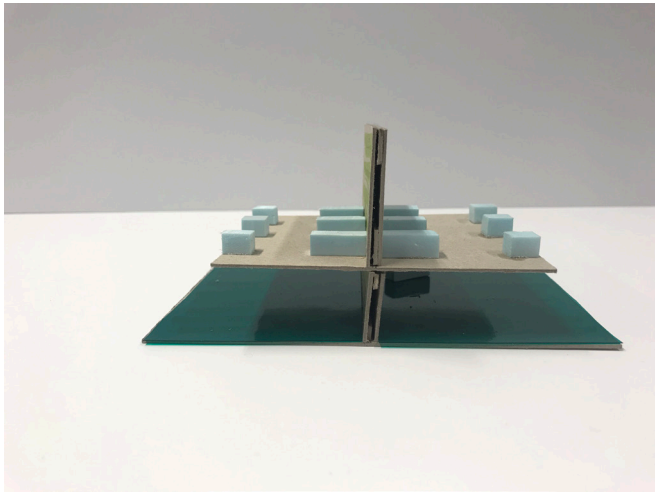


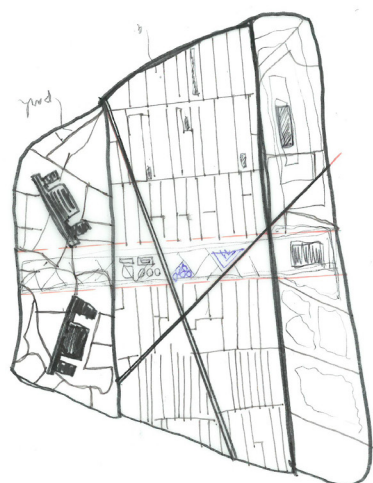
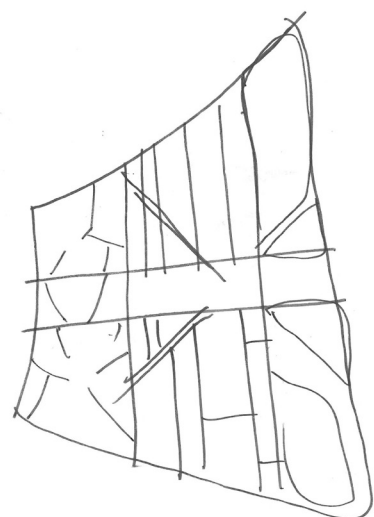
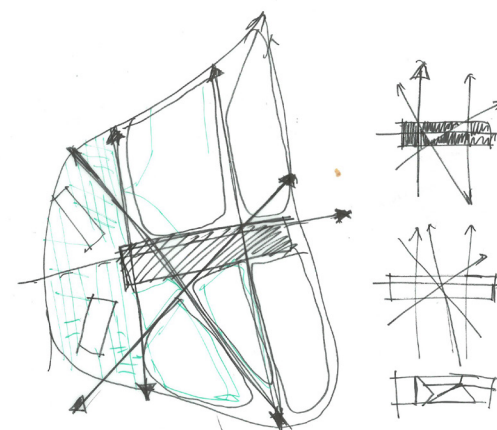
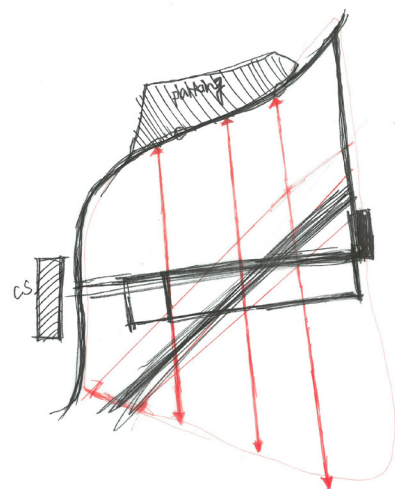
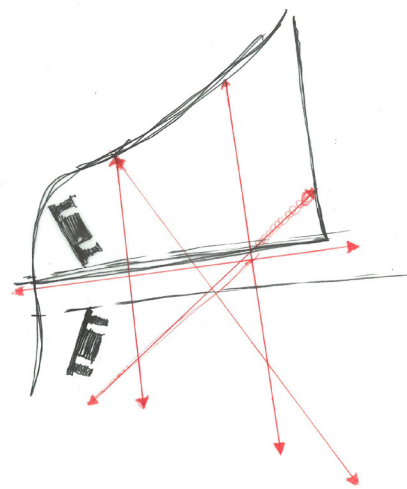
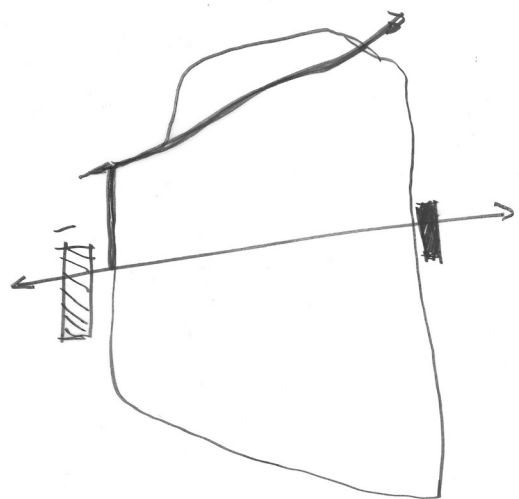
CONCEPT 2









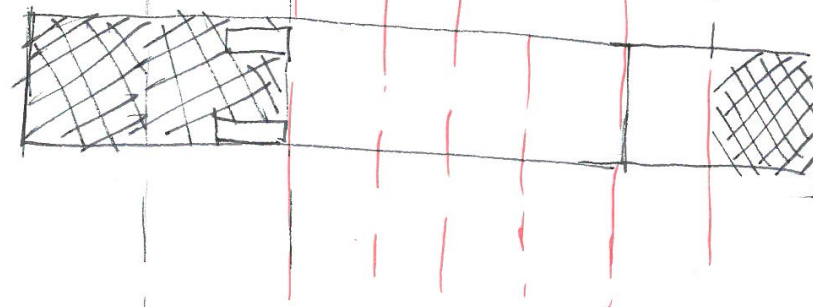


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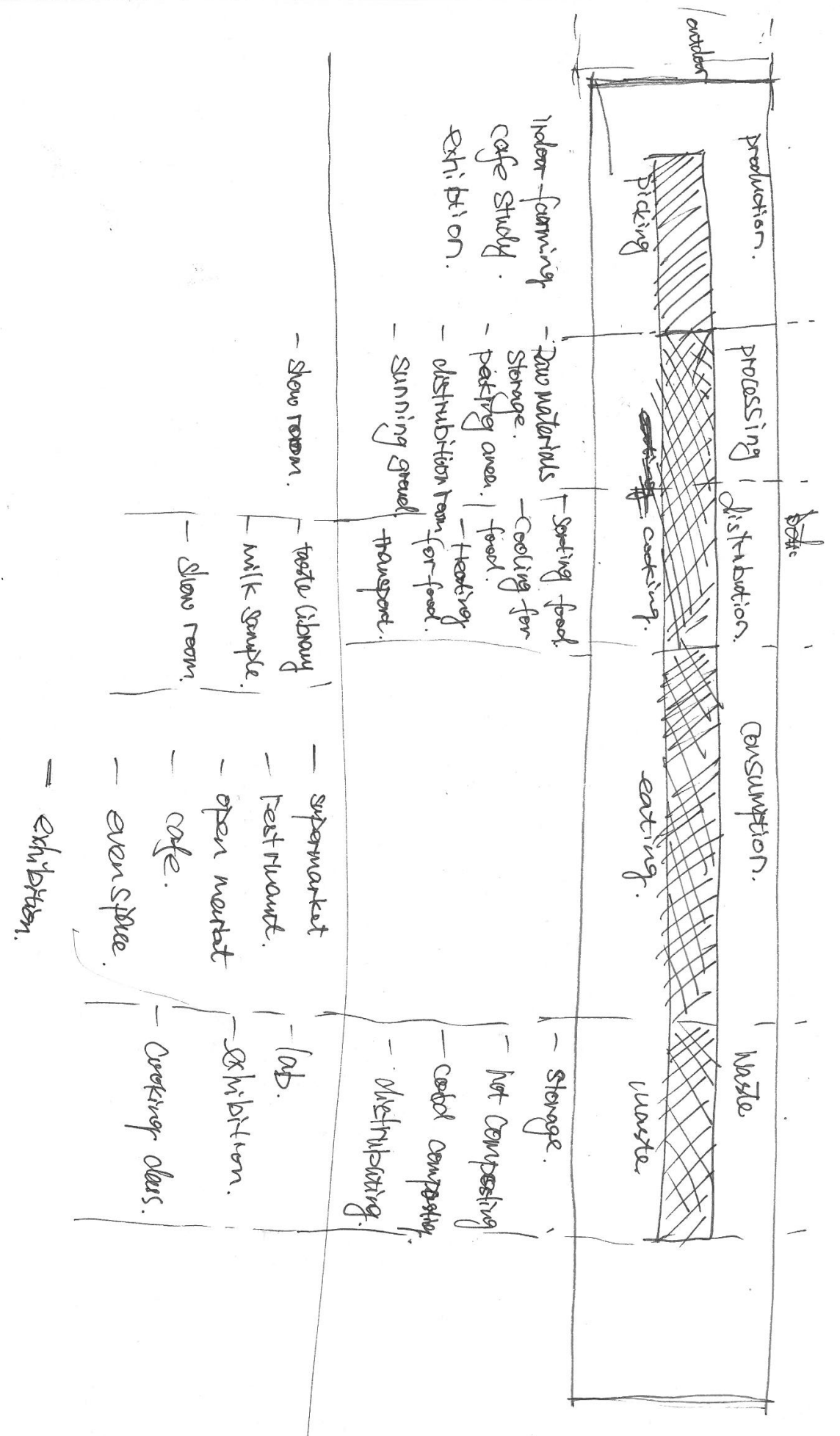
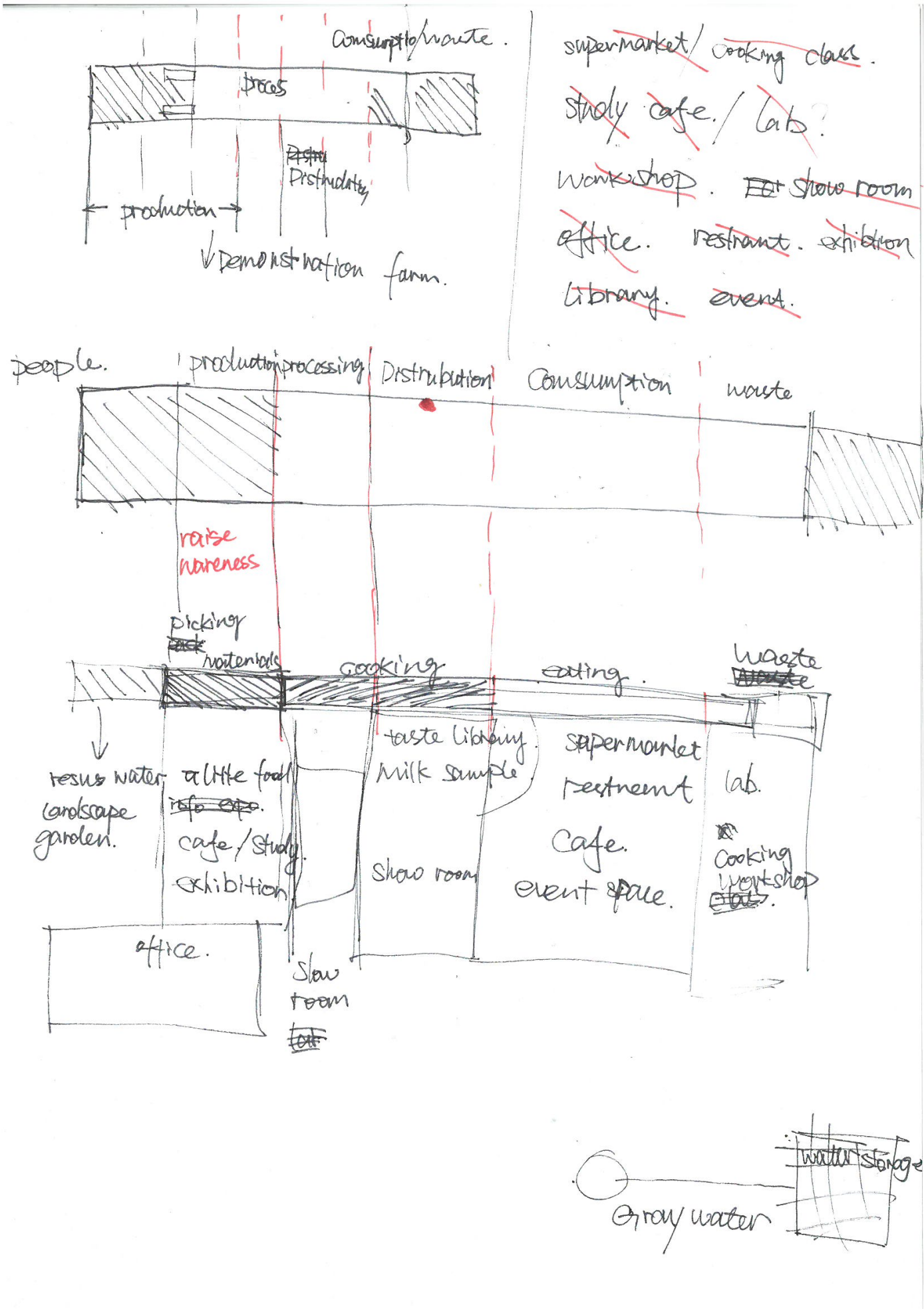


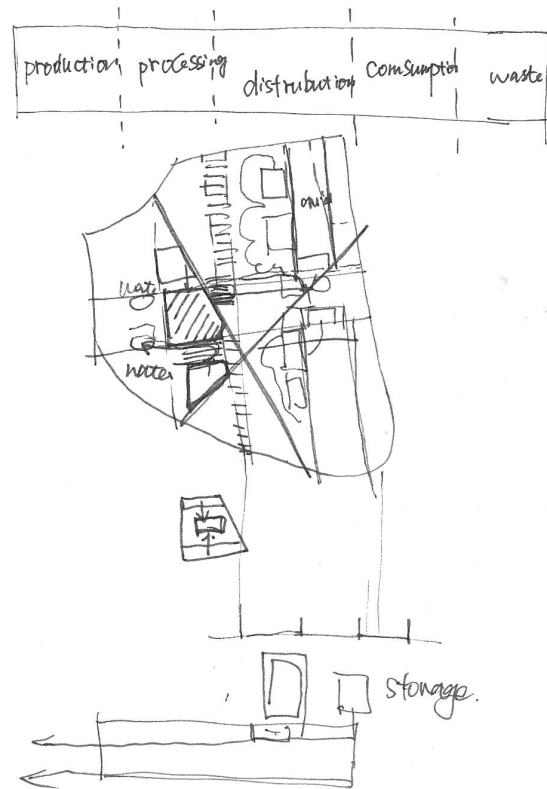
Program: (5 phase), reference: (WBF Lab / Flab Architects)

- production:
 - indoor farming. (3 type):
 - outdoor farming (city garden)
- ↓
- processing:
 - Grain - Sunning ground. / Food processing lab.
 - Packing area.
 - Raw material storage.
 - office.
 - Distribution room.
 - changing room.
- (routing: Staff: direct to the food materials.
traffic: surround and easy to food storage.
visitor: go through all processing room.)
- distribution:
 - storing food.
 - (cooling, heating for goods)
 - transport.
- consumption:
 - restaurant.
 - open market.
- waste:
 - collection / ~~storage~~ storage. → hot composting
cold composting
 - making compost.
 - different type of soil → plants

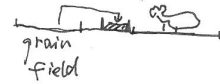


- two main components:
 - the lower floor: - a host retail floor
 - the upper floor: - water recycling filter
 - sharing farming and etc.
 - logistic.
-
- production: ① indoor farming; ② outdoor farming; ③ Demonstration farming.
 - processing: ① Raw material storage; ② Distribution room; ③ packing area; ④ Sunning ground.
 - Distribution: ① Sorting food; ② cooling for food; ③ heating for food; ④ transport.
 - consumption: ① restaurant; ② open market.
 - waste: ① collection/storage; ② hot composting; ③ cold composting; ④ distributing.

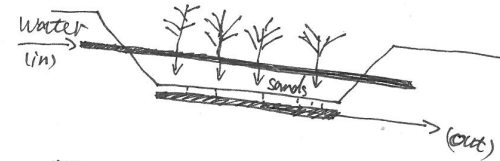




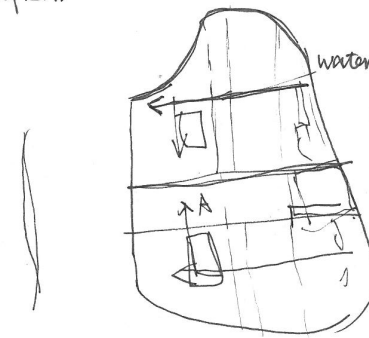
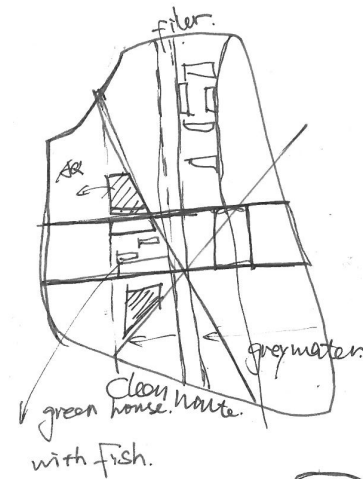
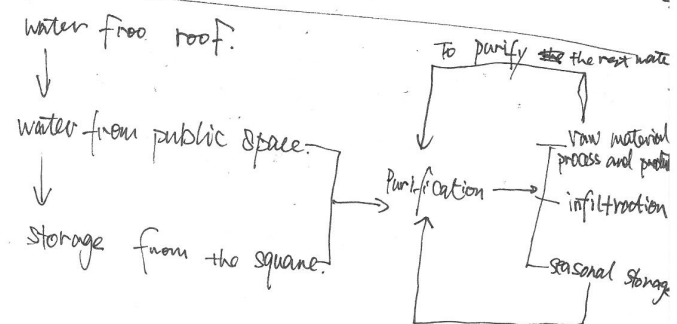
food: innovative agriculture. and. horticulture



A helophyte filter.



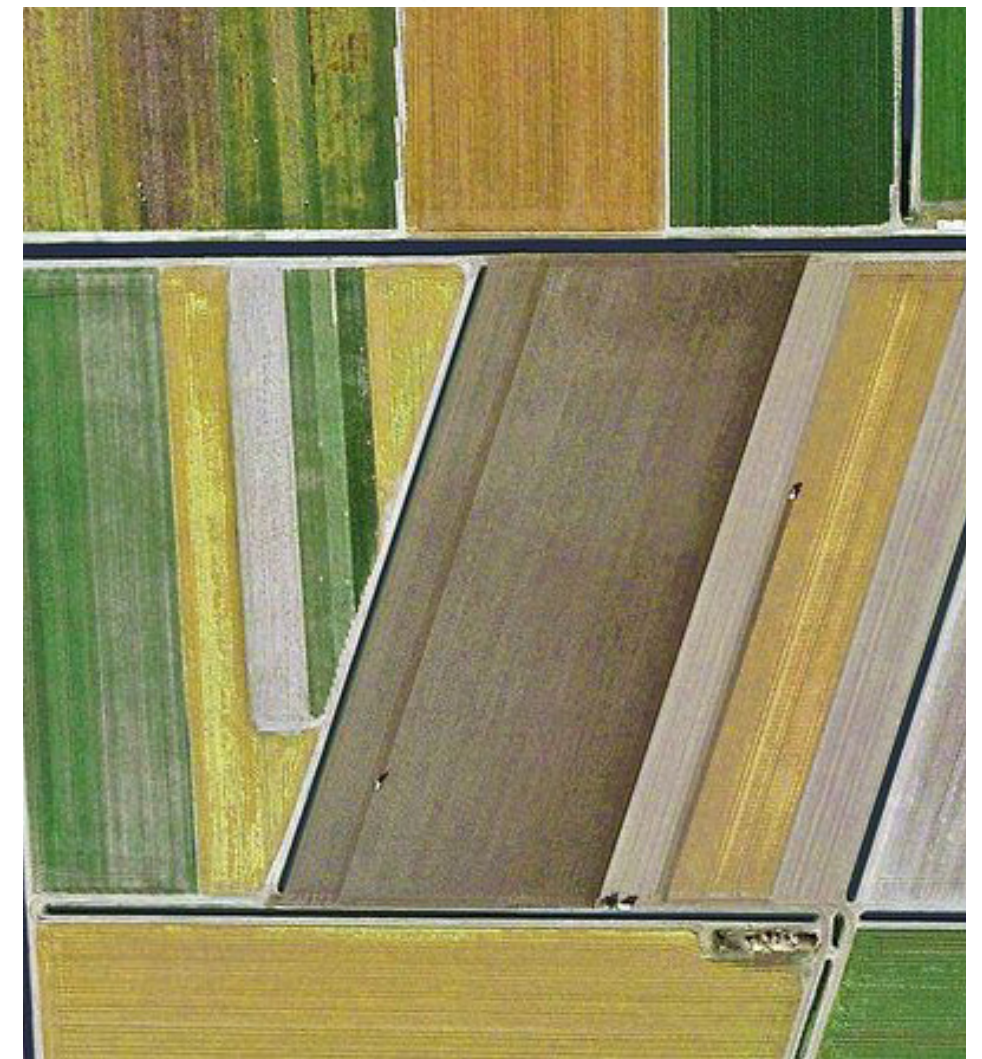
Fijn Filtering.



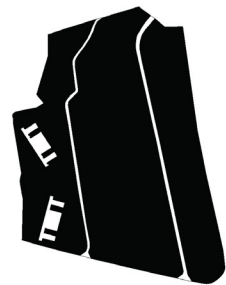
- water from public space.
- total plot:
- water loop.
 - Agriculture loop.
- water
- Apconines.
building flashing water.
water scape.
- ~~water~~.
- purify water

building loop:

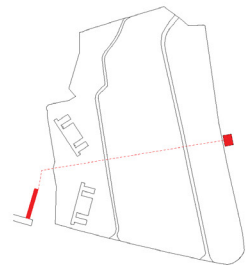
- building loop:
- water from paving and roof
 - ↓ water public spaces
 - ↓ storage
- (cleaning water terminal)
-
- ```
graph TD; A[water from paving and roof] --> B[water public spaces]; B --> C[storage]; C --> D[];
```







EXISTING LAND



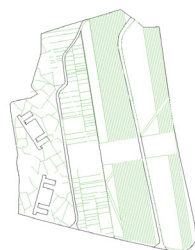
NEW TRAFFIC



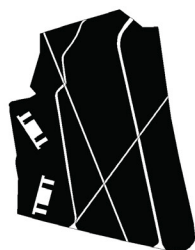
DIVIDED LAND



AGRICULTURE LAND



AGRICULTURE PATTERN



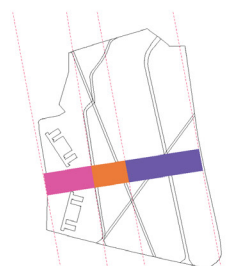
ACCESSIBILITY



BUILDING POSITION



BUILDING DIVISION



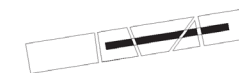
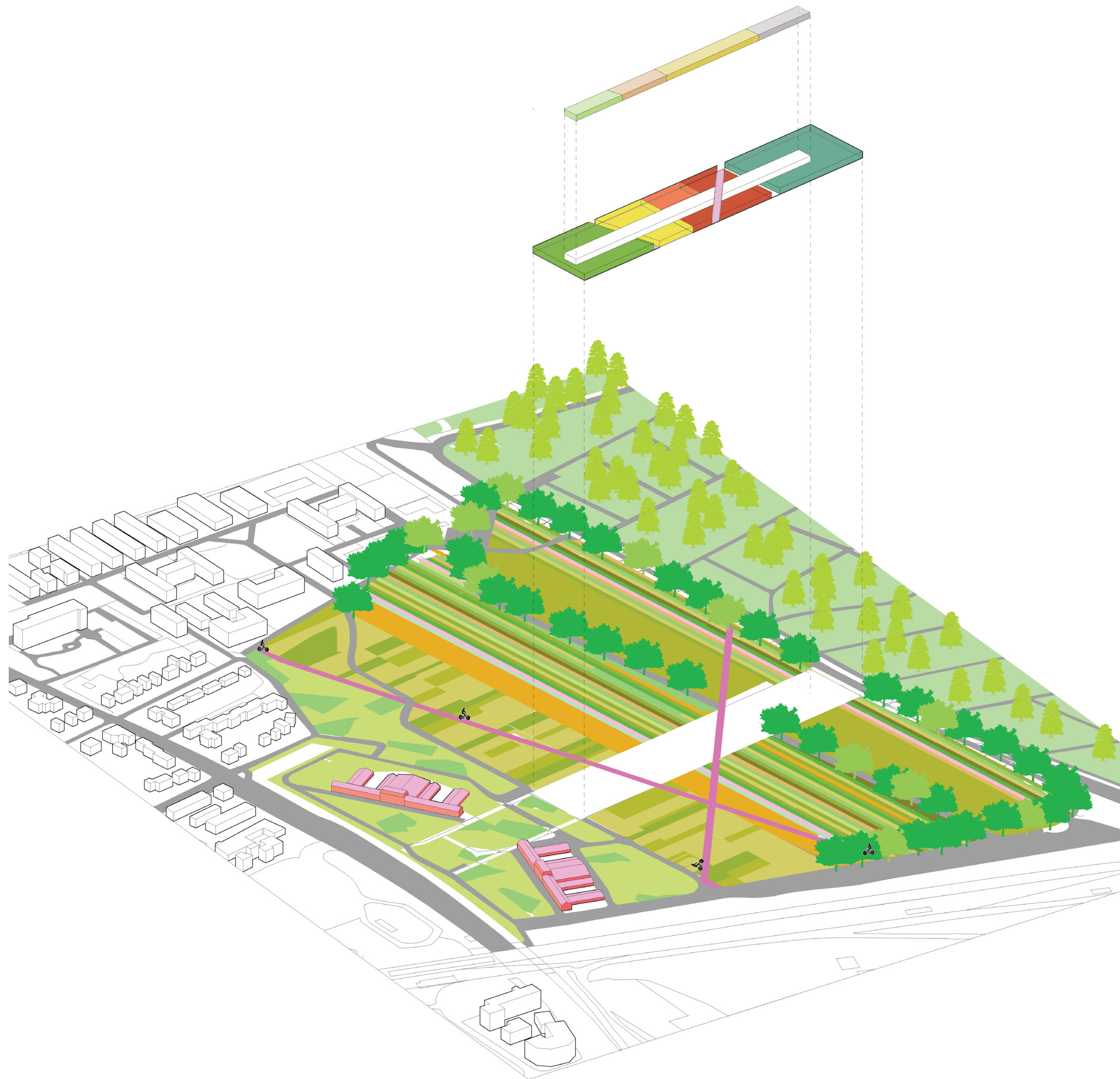
BUILDING FUNCTION



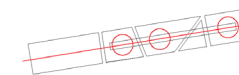
BUILDING ACCESSIBILITY







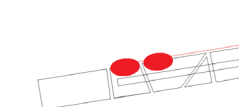
COOKING FUNCTION



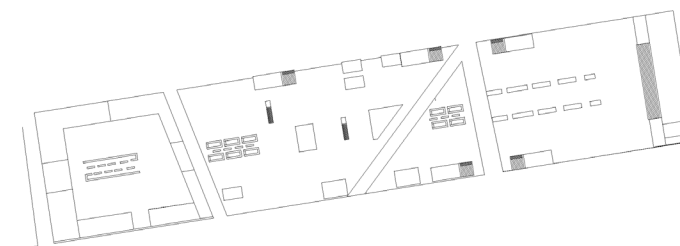
AREAS



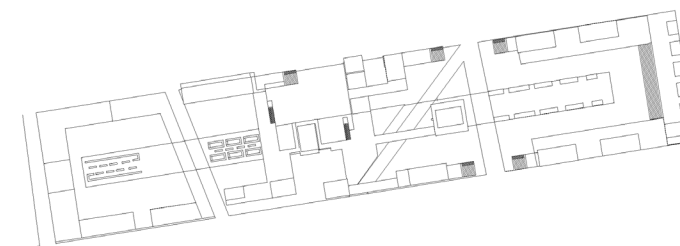
ACCESSIBILITY



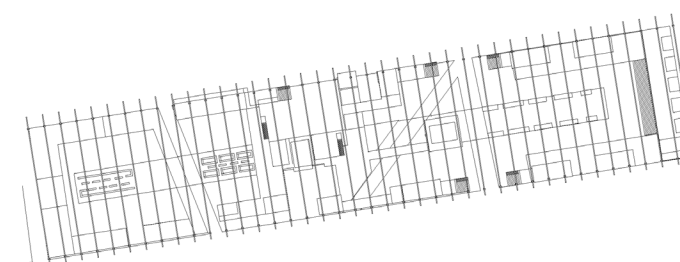
LOGISTICS



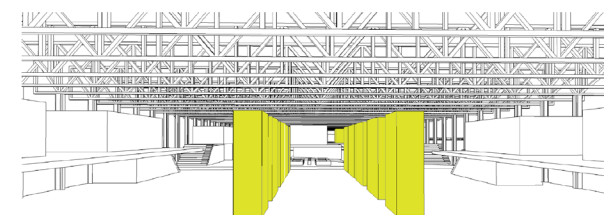
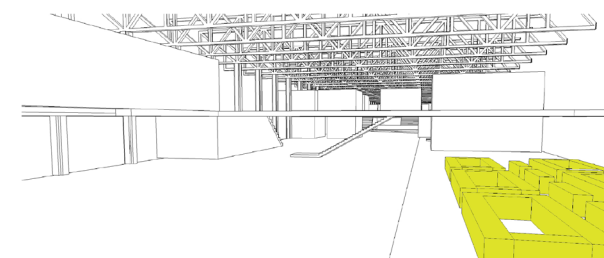
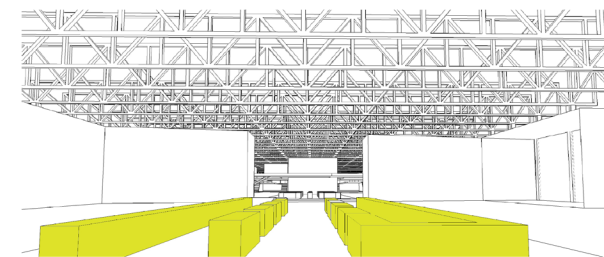
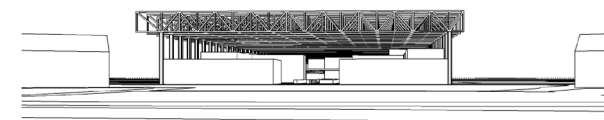
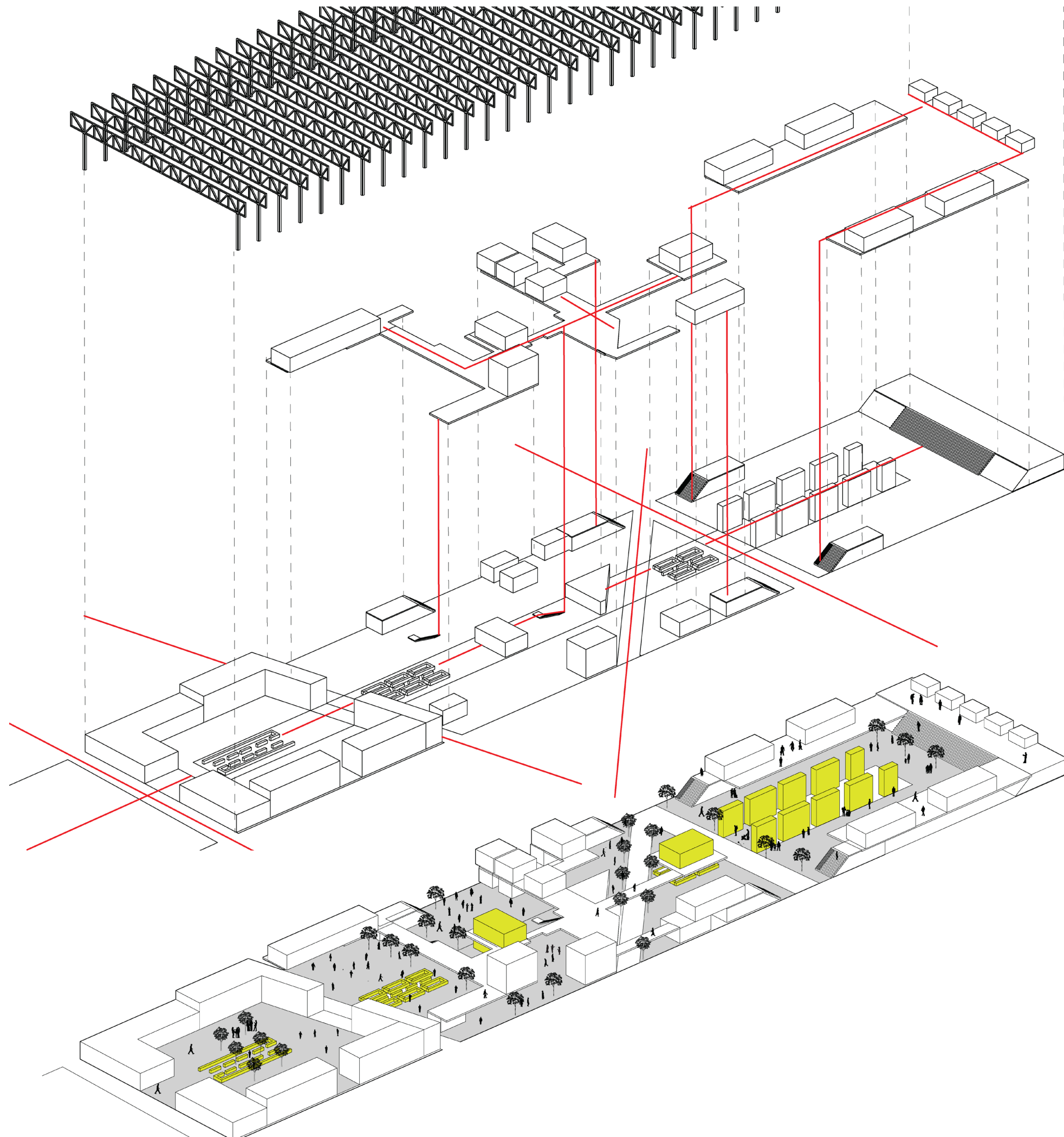
GROUND FLOOR

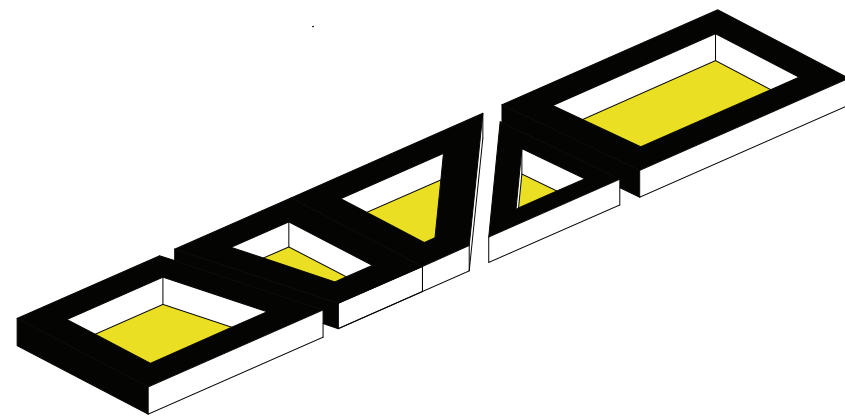


FIRST FLOOR

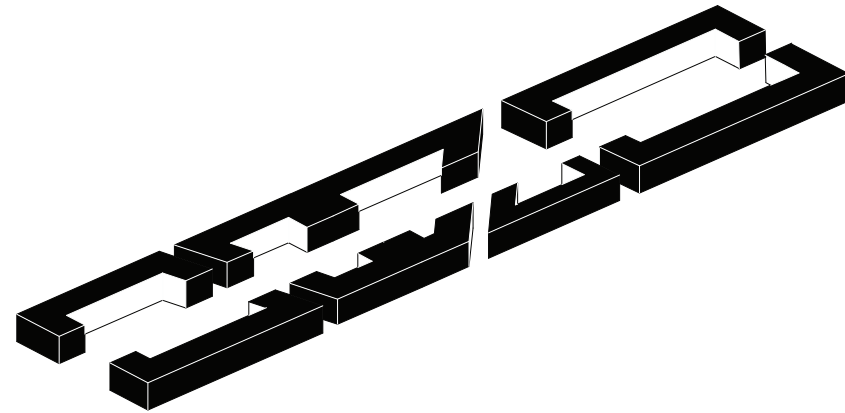


ROOF FLOOR

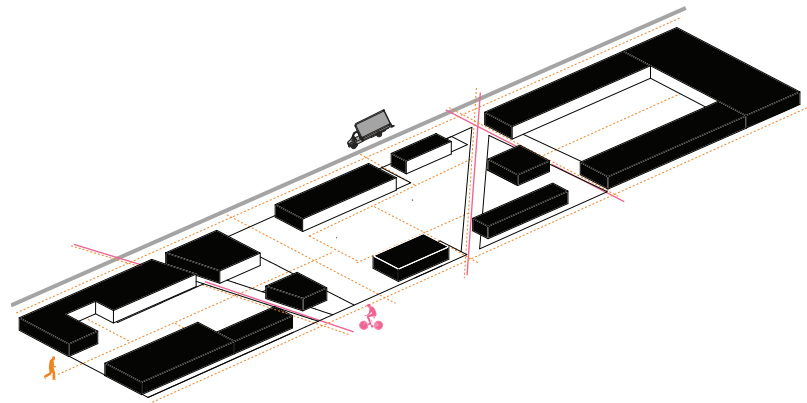




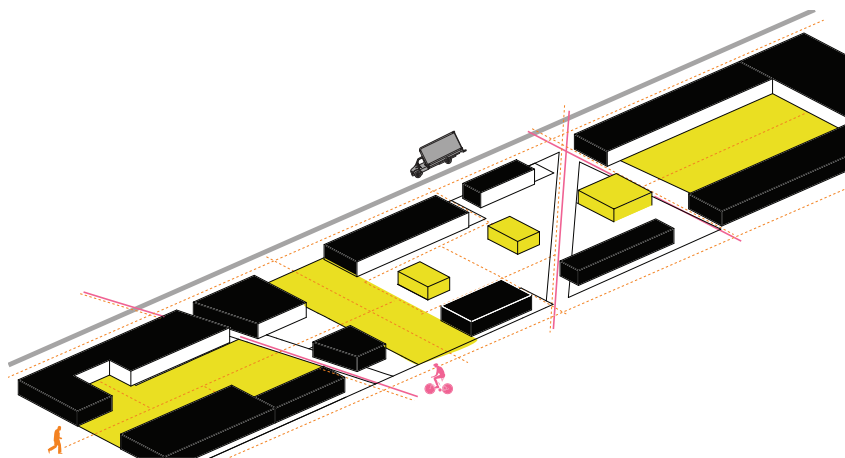
INNER COURTYARD MASS



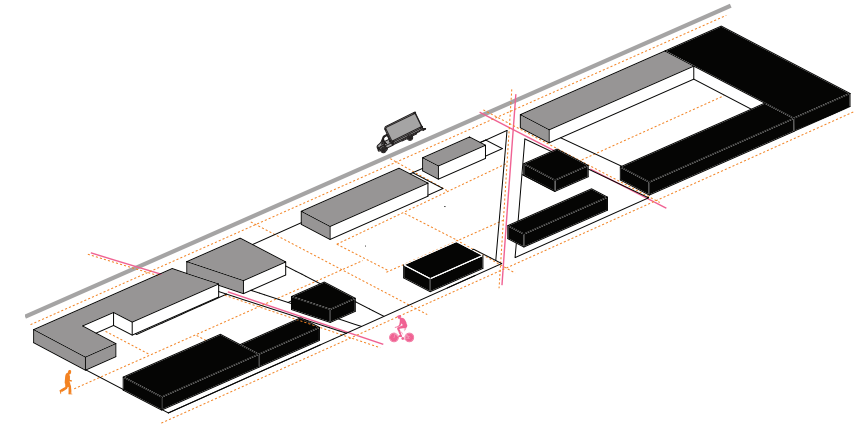
INNER COURTYARD CONNECTION



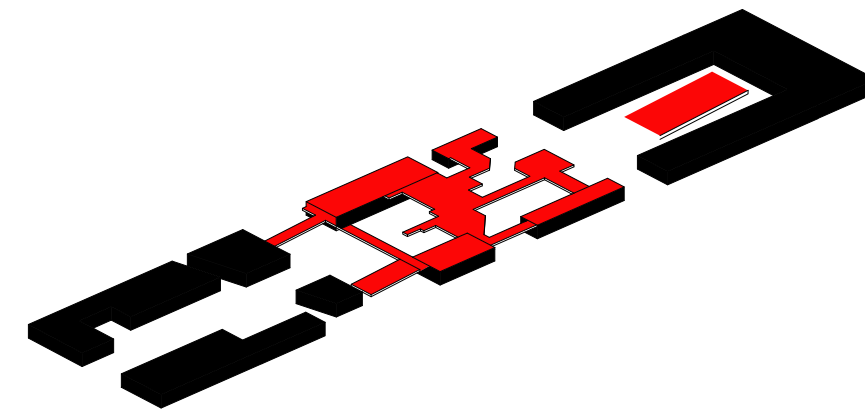
GROUND MASS WITH ROUTINES



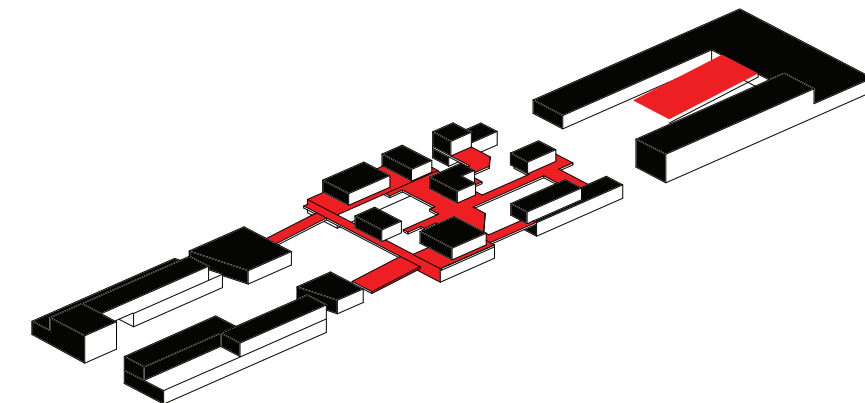
DIFFERENT TYPE OF PUBLIC SPACE



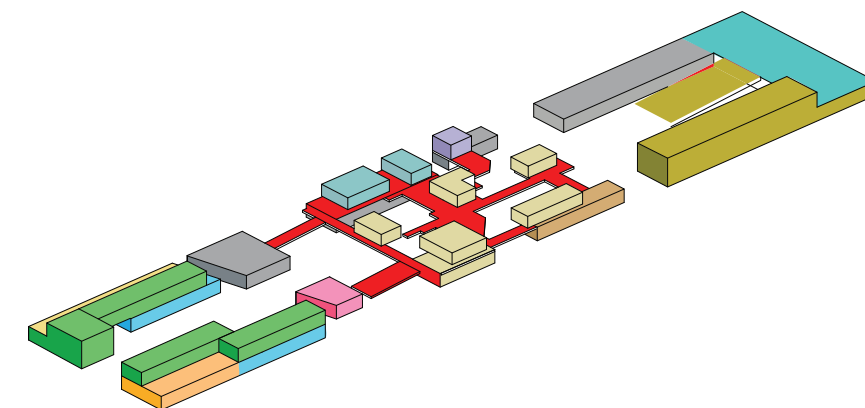
LOGISTICS



2ND FLOOR CONNECTION



2ND FLOOR MASS



FUNCTION



