CLUSTER FLUX

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WHY THIS PROJECT

FOOD WASTE AND THE FOOD CYCLE

WHAT WE KNOW:

FOOD WASTE:

IN CATALONIA, 267,000 TONNES OF FOOD ARE THROWN AWAY EACH YEAR

THE AVERAGE CATALAN THROWS AWAY 35 KILOS OF FOOD PER YEAR

FOOD CYCLE:

EVERYDAY PRODUCE IS TRUCKED INTO THE CITY AND WASTE IS TRUCKED OUT OF THE CITY

OUR GOAL:

WORK WITH LOCAL RESTAURANTS IN REGARDS TO FOOD WASTE AND FOOD PRODUCTION

PLASTIC WASTE

WHAT WE KNOW:

PLASTIC WASTE:

IN SPAIN, 18 KG RECYCLED BUT 23 KG SENT TO LANDFILL PER PERSON

SPAIN IS ONE OF THE COUNTRIES IN EUROPE THAT SENDS THE MOST PLASTIC TO THE LANDFILL

OF ALL THE PLASTIC WASTE IN THE WORLD ONLY 14% IS COLLECTED FOR RECYCLING

OUR GOAL:

UPCYCLE LOCAL PLASTIC WASTE

OUR SITE

WHAT WE KNOW:

THE PINK AND ORAGE REGIONS MOST POPULATED AREAS DURING THE DAY

AROUND 14 RESTAURANTS TOTAL IN THE AREA

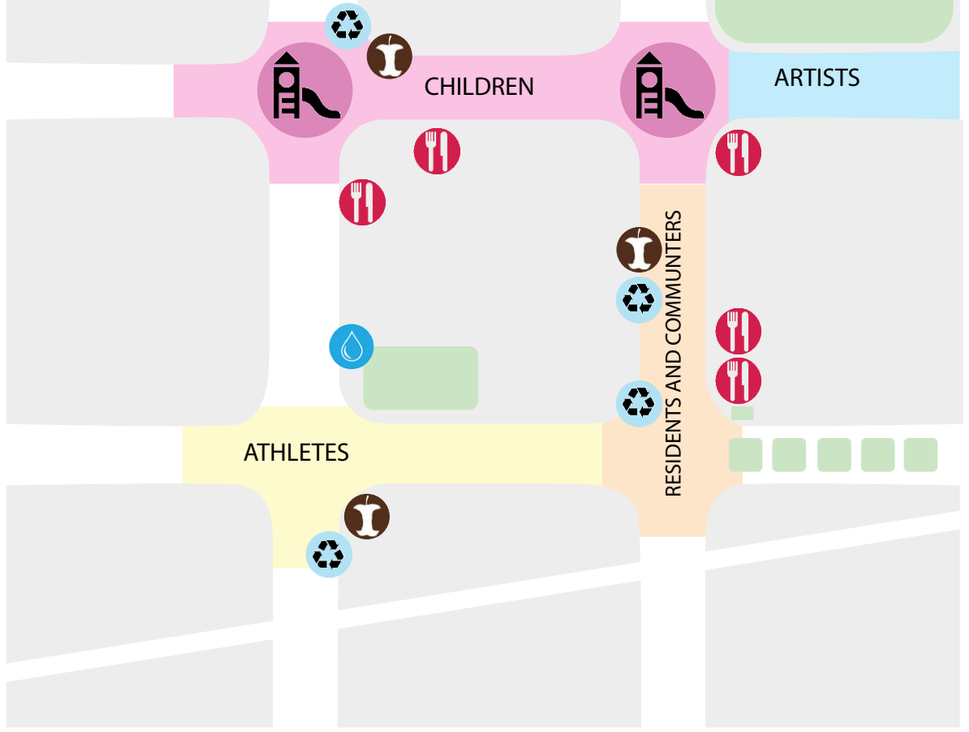
NO PRODUCTIVE PLANTED SPACE

OUR GOAL:

CREATE PRODUCTIVE PLANTED SPACE

REUSE RESTAURANT FOOD SCRAPS

ACTIVATE SOCIAL SPACES

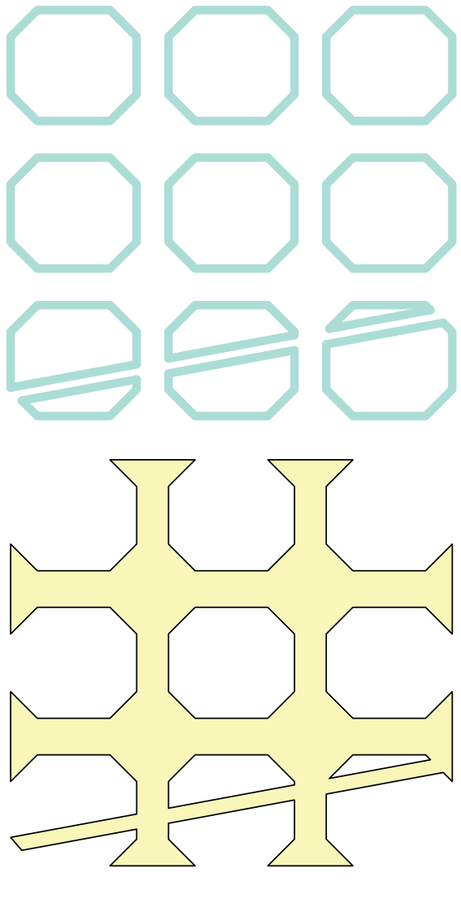


LOCALIZED PROCESS

COMMUNAL EFFORT AND BENEFIT

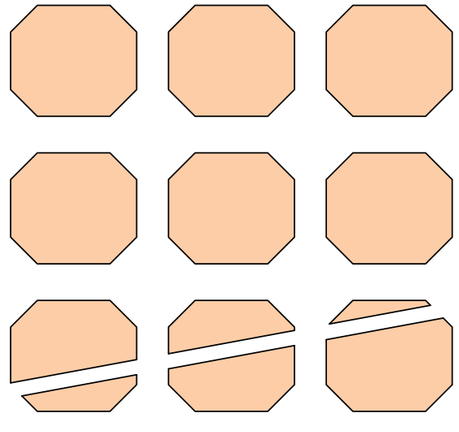
EXTRACTION

THRESHOLD OF BUSINESS FRONTS



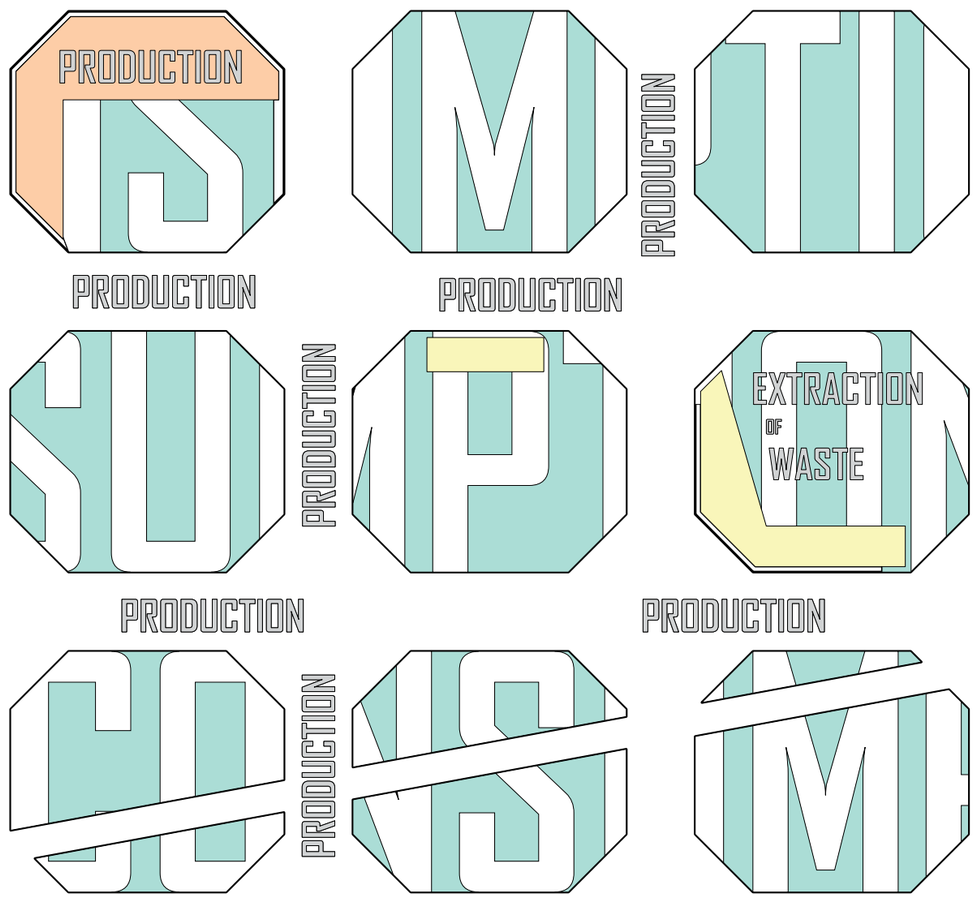
PRODUCTION

PUBLIC RIGHT OF WAY



CONSUMPTION

BLOCKS BOTH PUBLIC AND PRIVATE



USER FOCUS

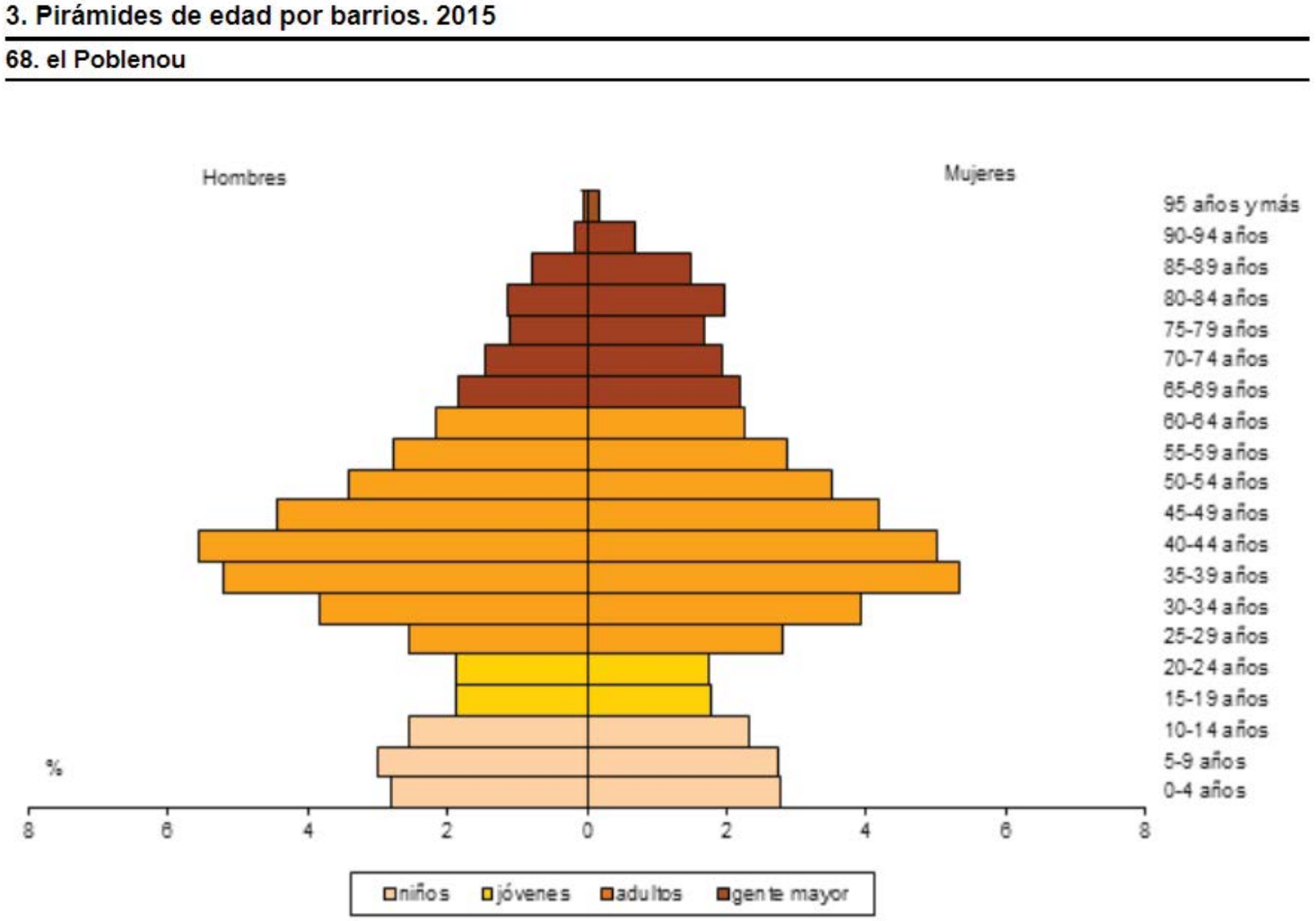
WHAT WE KNOW:

LARGEST AGE GROUP IN POBLENOU: 25-64

CURRENT URBAN GARDENS ARE CATERED TOWARDS CHILDREN AND 65+

OUR GOAL:

TARGET CITIZENS NOT ADDREST BY CURRENT URBAN GARDENS IN BCN BY TAILORING TO THEIR BUSY LIFESTYLE



AGES 0-24

AGES 25-60

AGES 60+

PLANT FOCUS

VEGETABLES CHOSEN BASED ON:

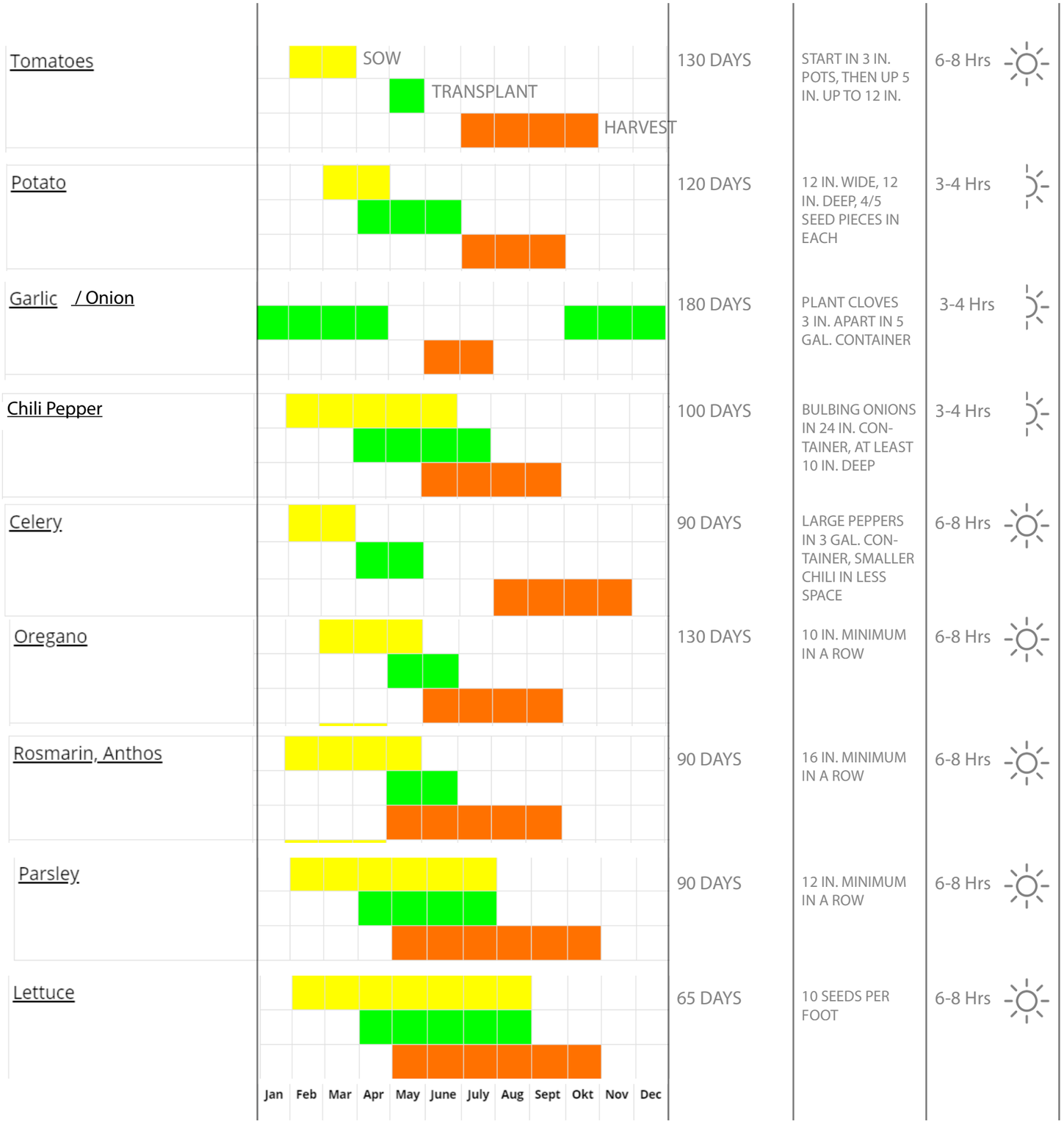
HEALTHY GROWTH IN CLIMATE OF BARCELONA

LIKEABILITY/ USABILITY IN SPANISH CUISINE & SUPERBLOCK

CAN BE GROWN FROM SCRAPS OF ITSELF

RESTAURANTS IN SUPERBLOCK WILLING AND ABLE TO GIVE SCRAPS

RELATIVELY LOW MAINTENANCE/ TAKE UP MINIMAL SPACE



TIMELINE

DESIGN DRIVERS +PRECEDENTS

DESIGN DRIVERS

1 OPTIMIZE GROWING PROCESS

USING A SENSOR TO MONITOR PLANT'S CONDITION

2 REUSE PACKAGING WASTE

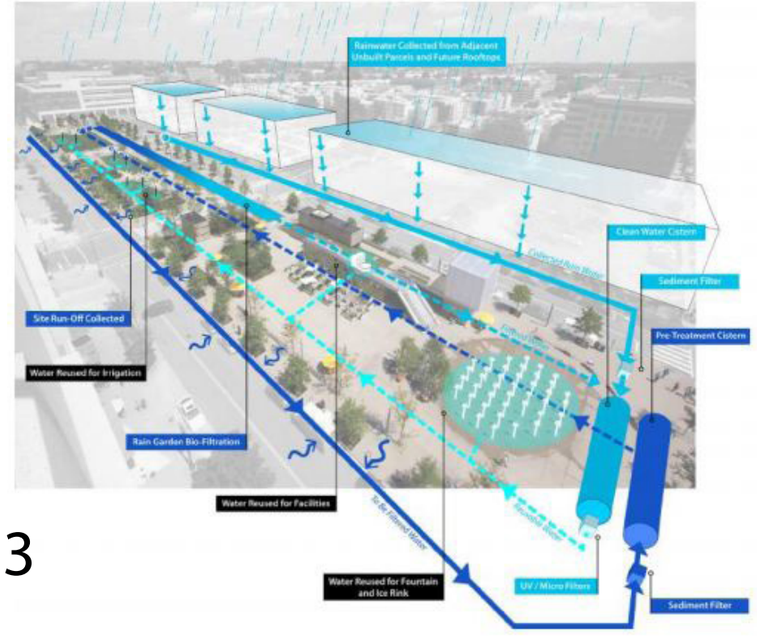
UPCYCLING A PLASTIC WASTE AS FABRICATION MATERIAL

3 DAILY LIFE INTEGRATION

ACTIVATE PUBLIC SPACE SO
AS TO MAKE FOOD PRODUCTION
COMPLIMENTARY TO DAILY ROUTINE

1

2



3

PRECEDENTS (OPTIMIZING GROWING)

MI FLOWER MONITOR:

DESCRIPTION

INSERT THAT MEASURES SUNLIGHT, WATER, TEMP, ETC.

COMMUNICATES WITH SMARTPHONE APPLICATION

COSTS $29.99

REQUIRES LOCAL BLUETOOTH CONNECTION

TAKE AWAYS

USE A SENSOR THAT CREATES TO A 4G SERVICE NETWORK

APPLICATION AS INTEGRAL AS SOCIAL MEDIA

PRECEDENTS (REUSE OF FOOD WASTE)

POTHRA
PLANTER MADE OF REUSED COFFEE GROUNDS COMBINED WITH A BIO SOURCED RESIN

DECAFÉ AMARIS
COMBINATION OF COFFEE AND NATURAL BINDER SHAPED BY USE OF PRESSURE AND HEAT TO FORM THE REQUIRED PRODUCT

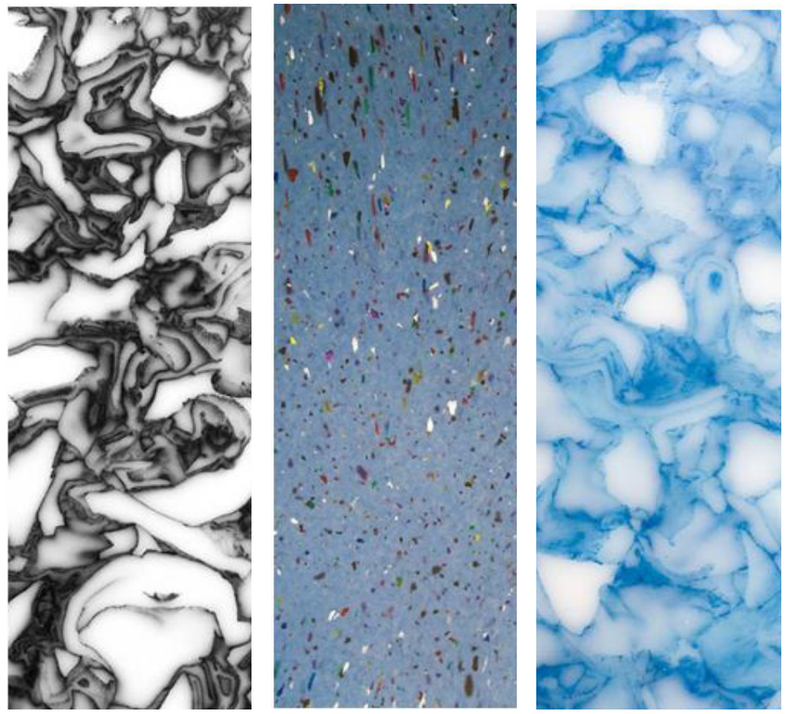
PRECEDENTS (REUSE OF PLASTIC WASTE)

BYBLOCK

STEAM + COMPRESSION FORMS BUILDING BLOCKS OUT OF ALL TYPES OF PLASTIC

SMILE PLASTICS

HAND CRAFTED BLOCKS USED IN APPLICATIONS FROM STORE TO PRODUCT DESIGN



PRECEDENTS (DAILY LIFE/SOCIAL INTEGRATION)

CANAL PARK:

DESCRIPTION

STROMWATER CAPTURED AND TREATED ON SITE

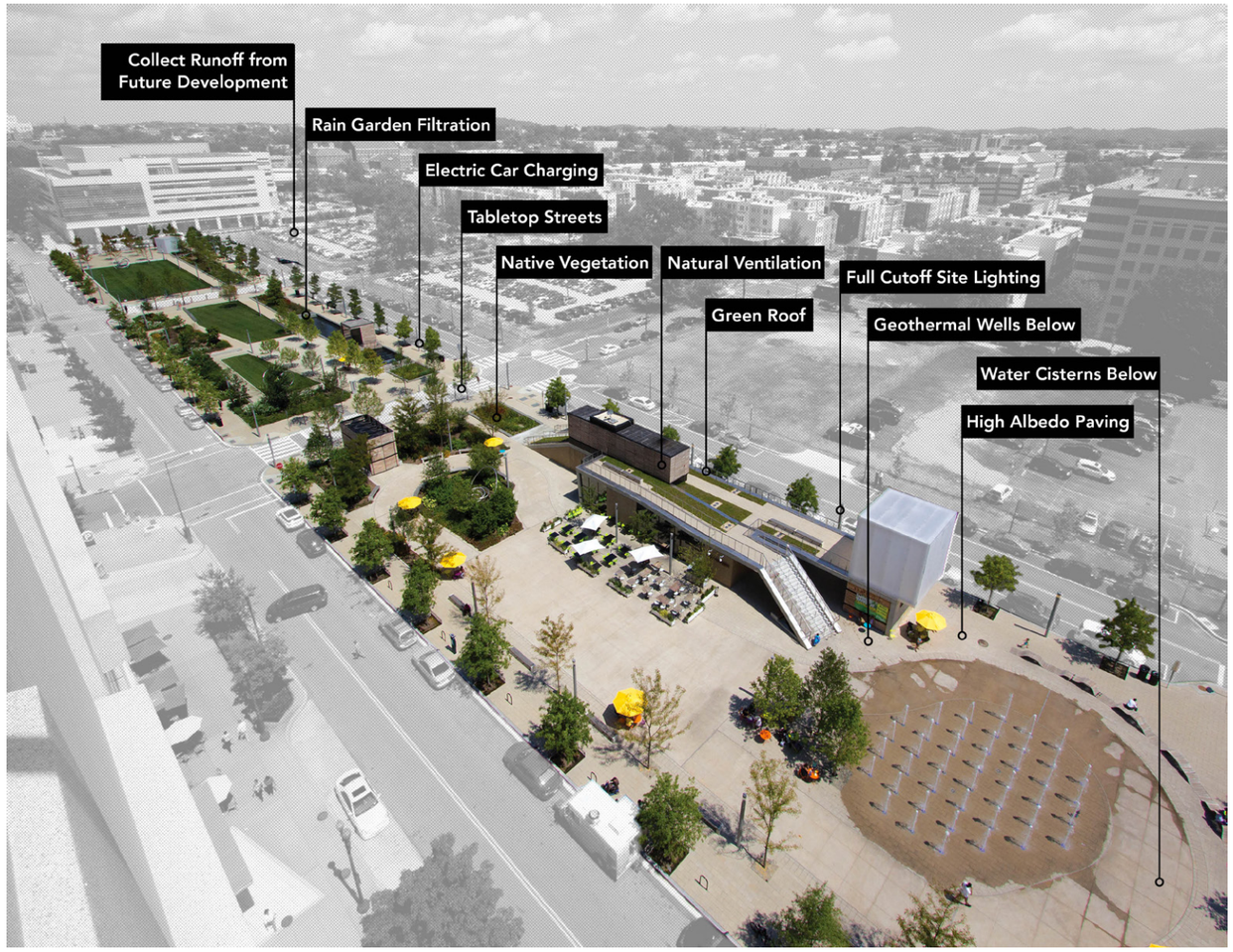
WATER REUSED FOR IRRIGATION, BUILDING USE, AND INTERACTIVE FOUNTAINS

FLEXIBLE PROGRAMMING
- CONCERTS
- WINTER SKATING
- FARMERS MARKETS
- FESTIVALS

TAKE AWAYS

MODULAR SYSTEM

FLEXIBLE PROGRAMMING
- ART GALLERY
- PLAYGROUND
- RESTAURANT SEATING
- FARMERS MARKETS



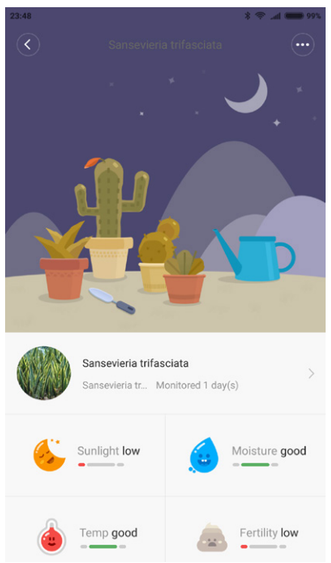
COMPONENTS: PHYSICAL + DIGITAL

OVERVIEW OF COMPONENTS

DIGITAL

APP

PERSONAL GROWING SYSTEM



HOME GROWING TIPS

PHYSICAL

PHYSICAL COMPONENTS

SENSOR SYSTEM

COMPOSTER

CIRCULATION HEX

VESSEL COMPOSITION

VEGETABLES

PEPPER, TOMATO, POTATO, ONION, GARLIC, HERBS, LETTUCE

COMPONENTS: PHYSICAL

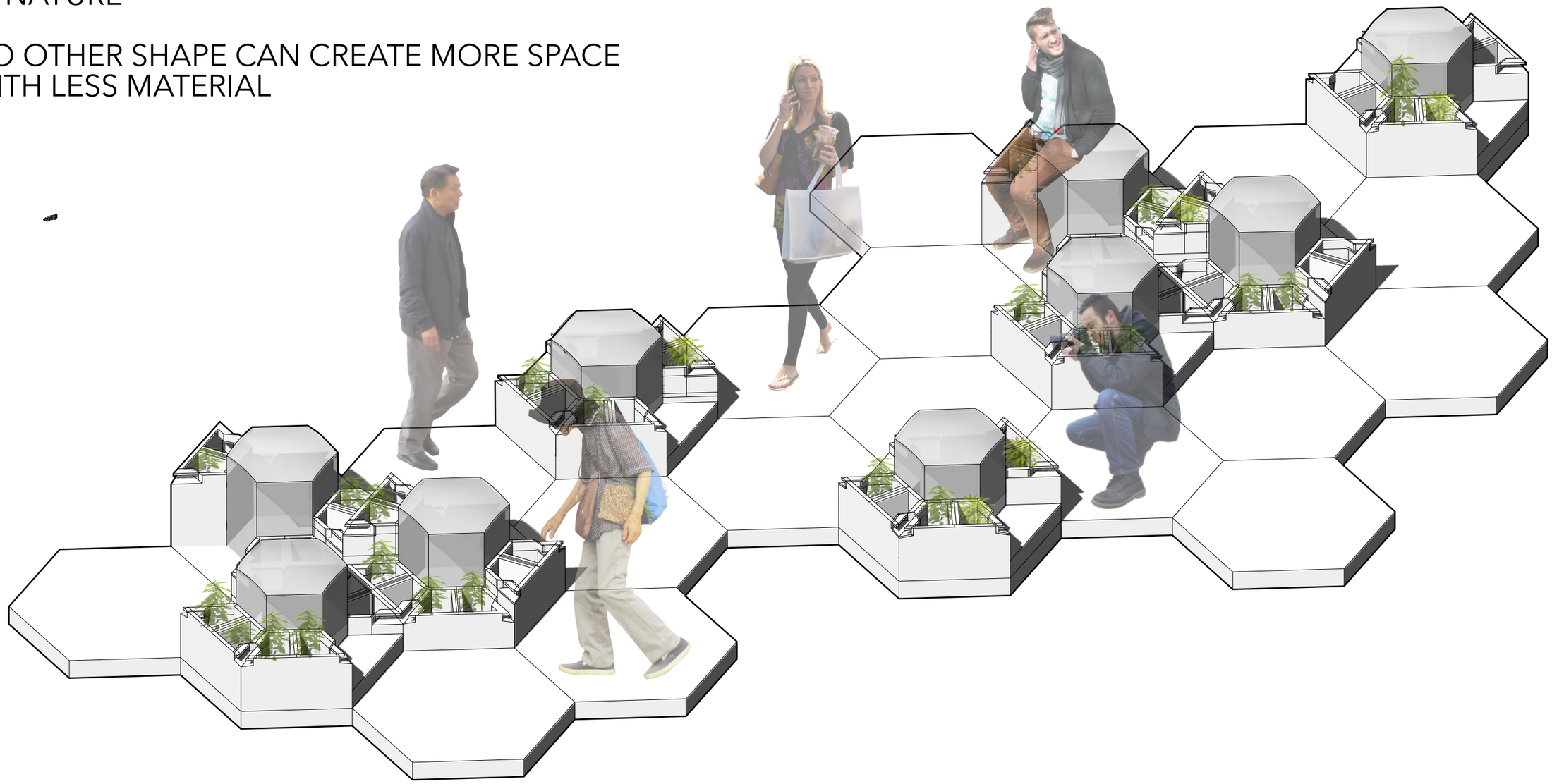
HEXAGON GRID

GAUDI INFLUENCE

6 FACES GIVE MANY OPPORTUNITIES FOR CONNECTIONS

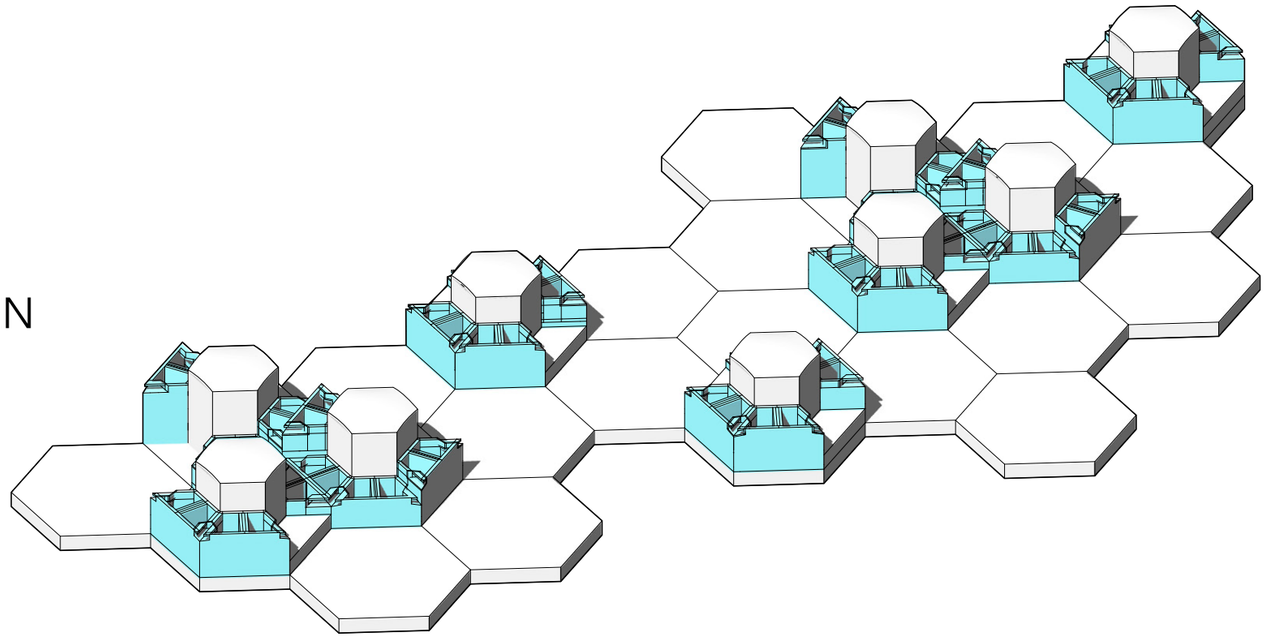
MOST EFFICIENT, LEAST WASTEFUL SHAPE FOUND IN NATURE

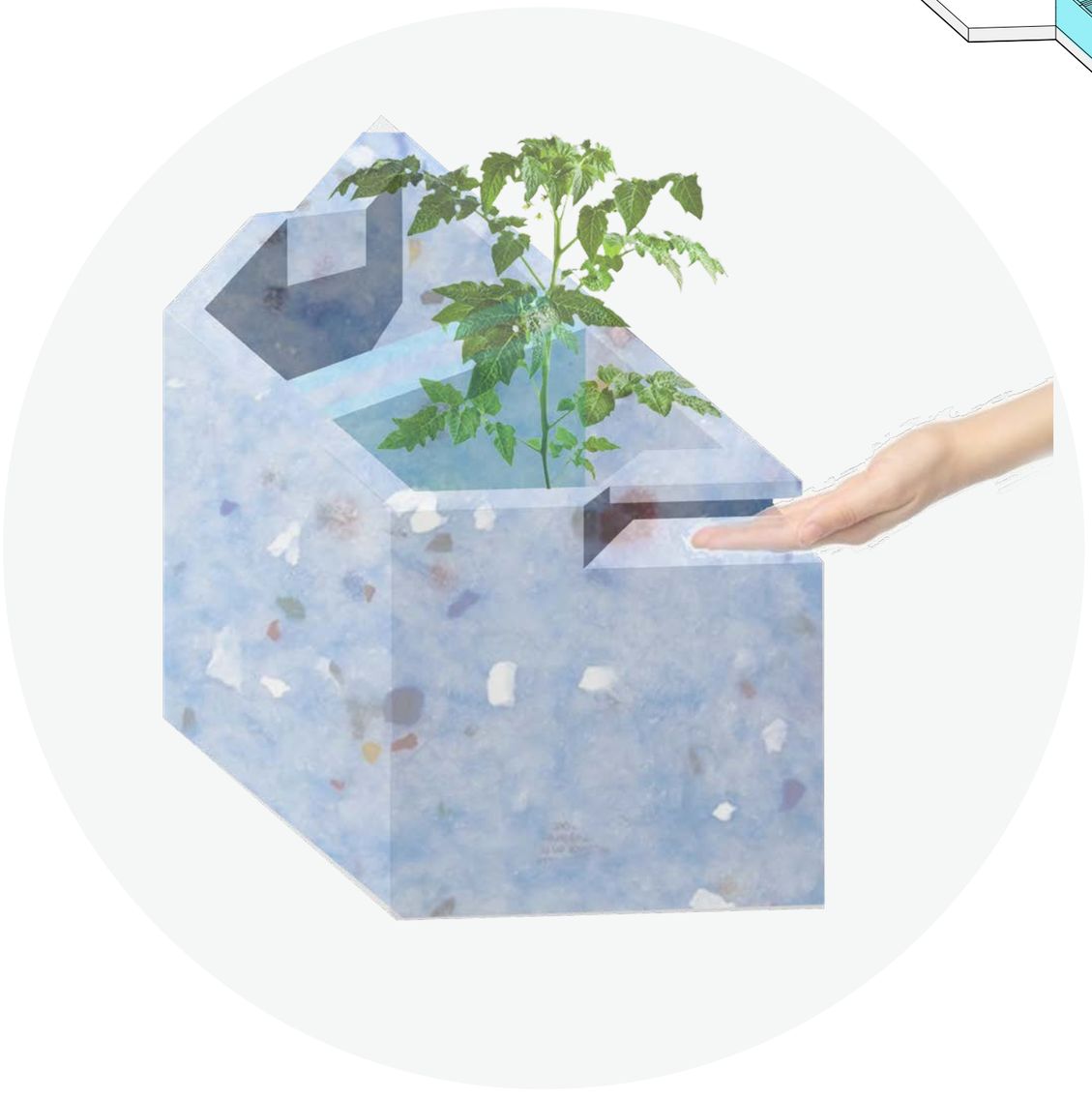
NO OTHER SHAPE CAN CREATE MORE SPACE WITH LESS MATERIAL



PLANTER

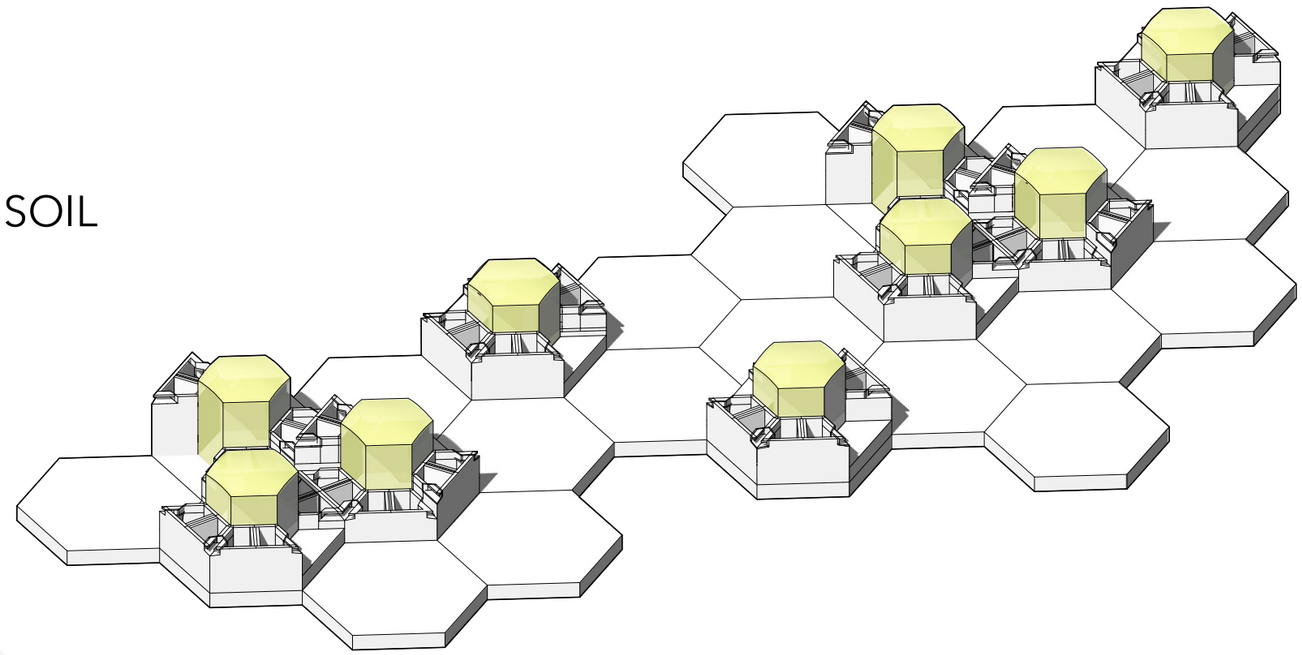
MATERIAL: RECYCLED BOTTEL CAPS
COMPONENTS: PLASTIC INSERTS TO ALLOW FOR AUTOMATIC WATERING WITH FLAP ON TOP TO OPEN AND CLOSE
1’, 1.5’, OR 2’ DEPTH
EASY ACCESS HANDLES

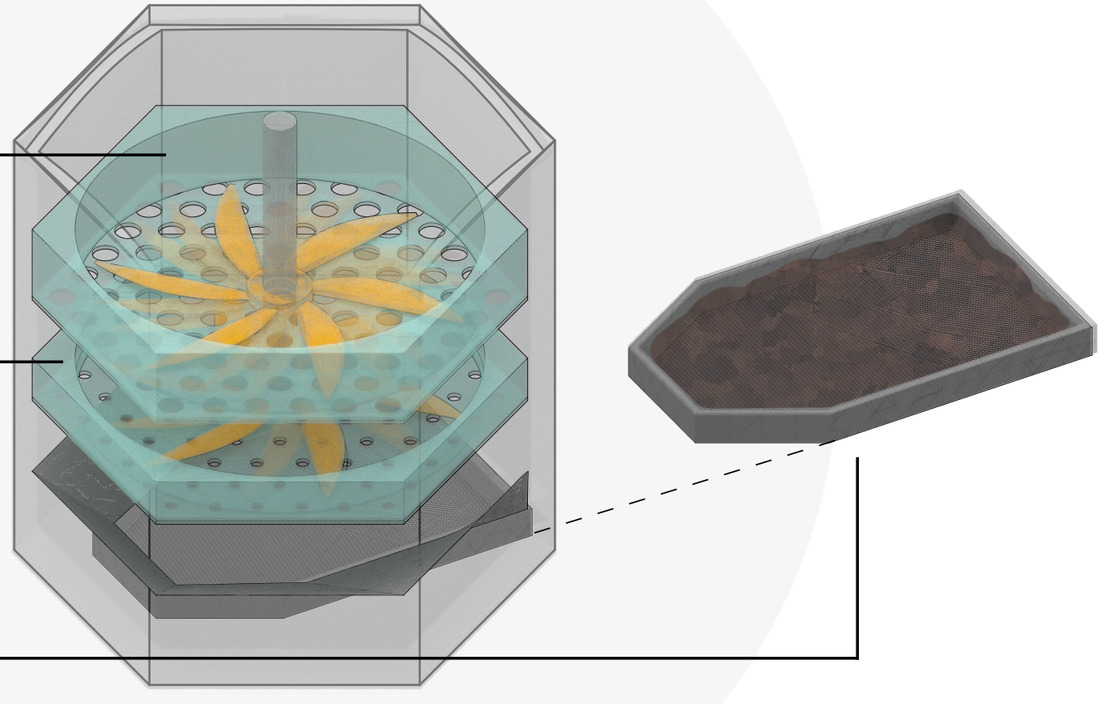




COMPOSTER

COMPONENTS: FILTERING COMPARTMENTS AND SOIL TRAY





FIRST COMPARTMENT

ACCEPTS LARGER FOOD SCRAPS

SECOND COMPARTMENT

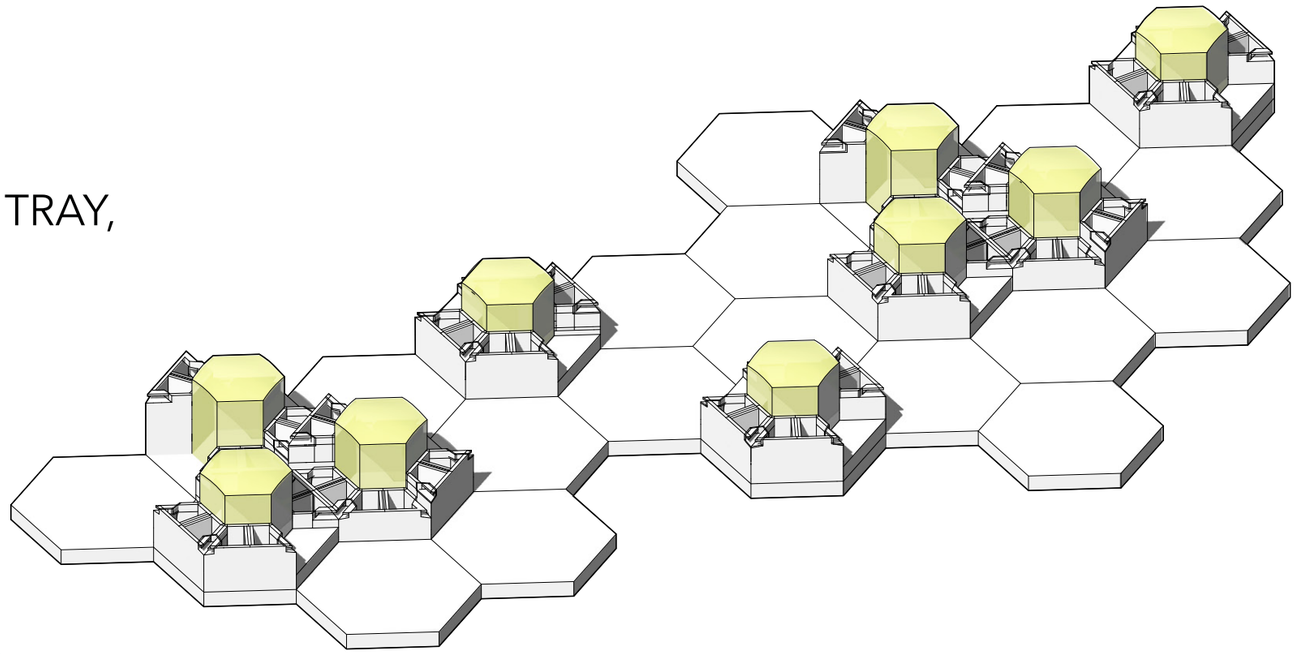
ACCEPTS SMALLER FOOD SCRAPS THAT ARE THEN BROKEN DOWN EVEN MORE

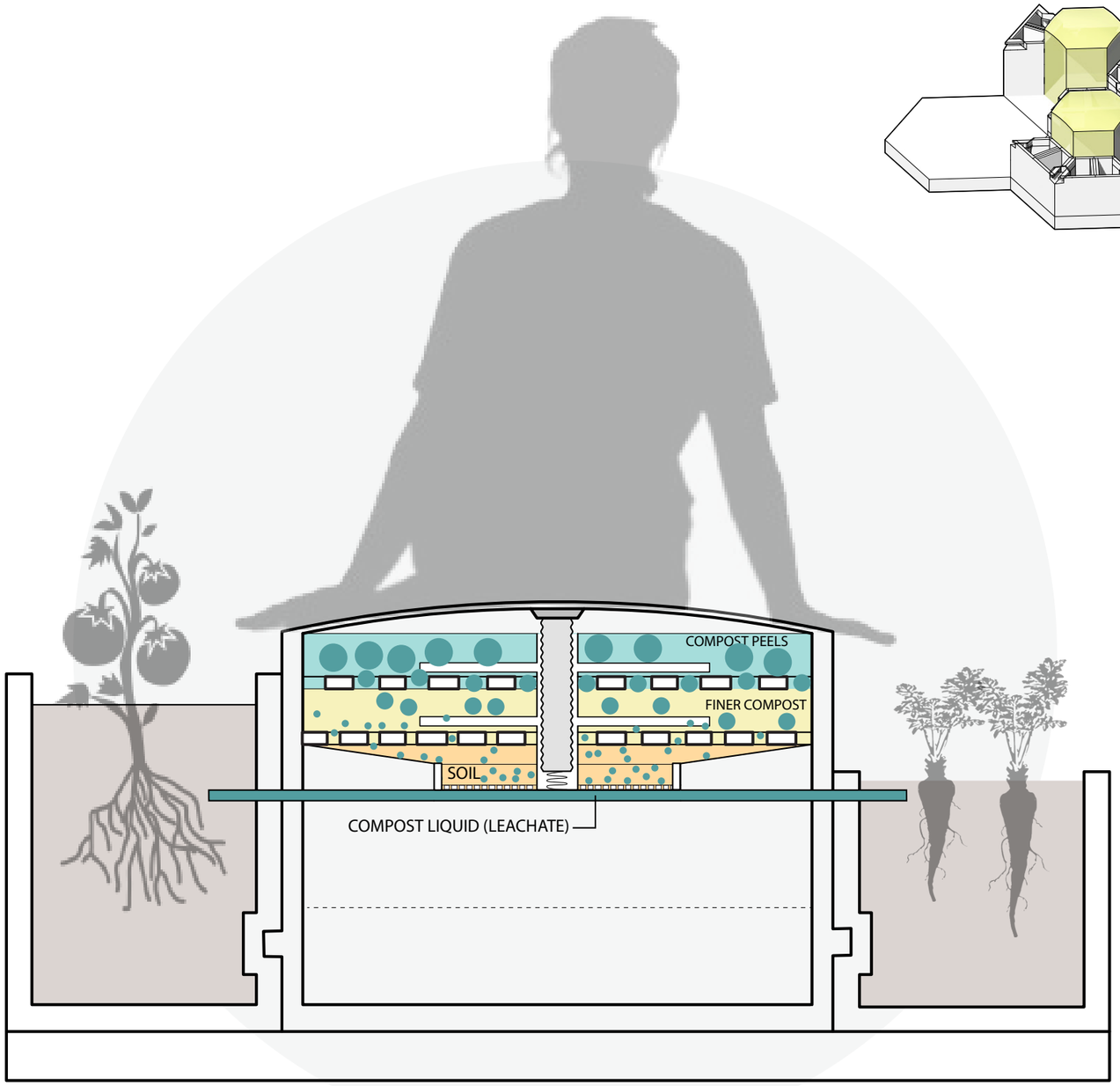
COLLECTION TRAY

COMPOST SOIL CAN BE EXTRACTED FOR USE

COMPOSTER

COMPONENTS: FILTERING COMPARTMENTS, SOIL TRAY, LEACHATE DISTRIBUTION

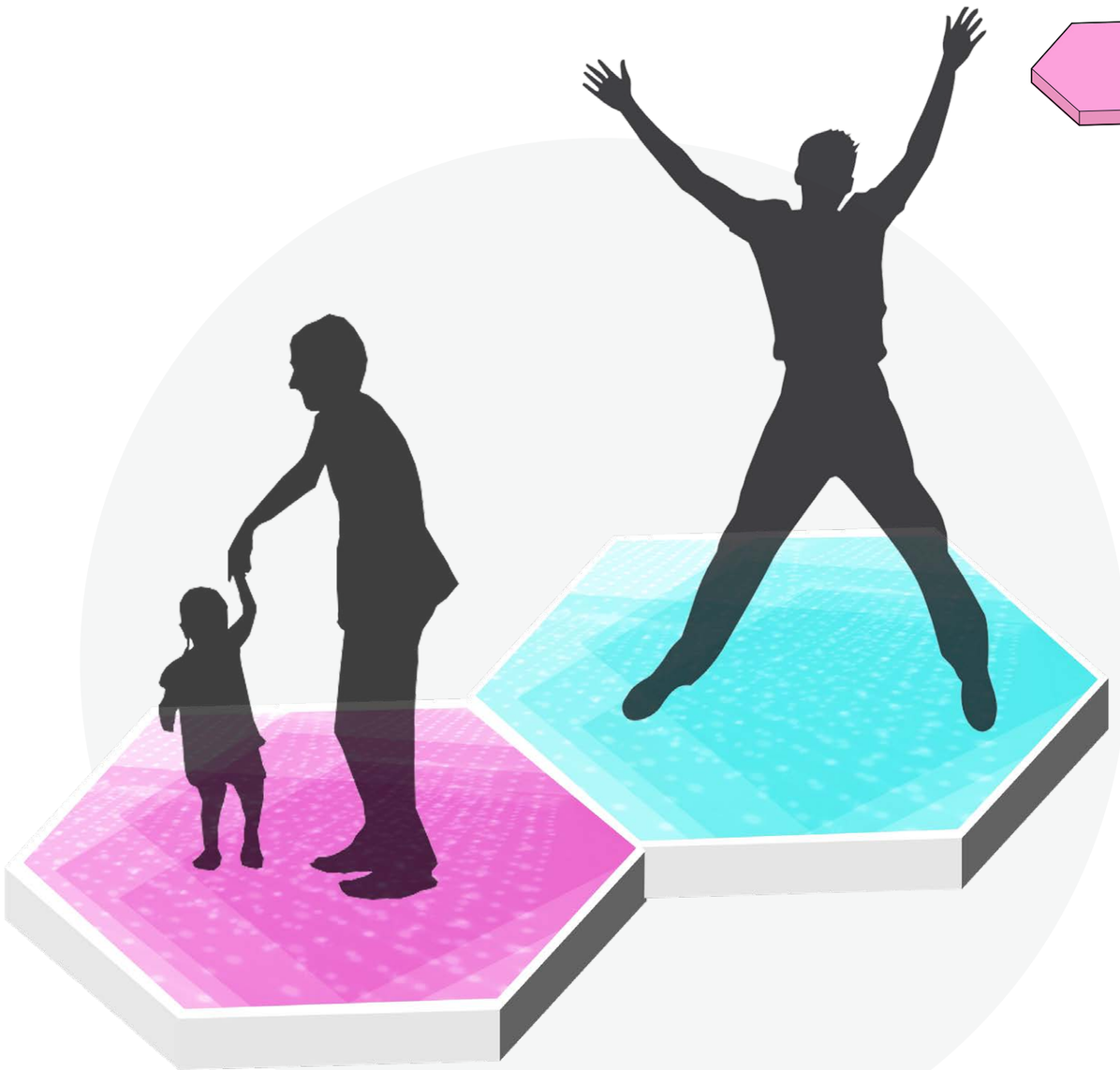


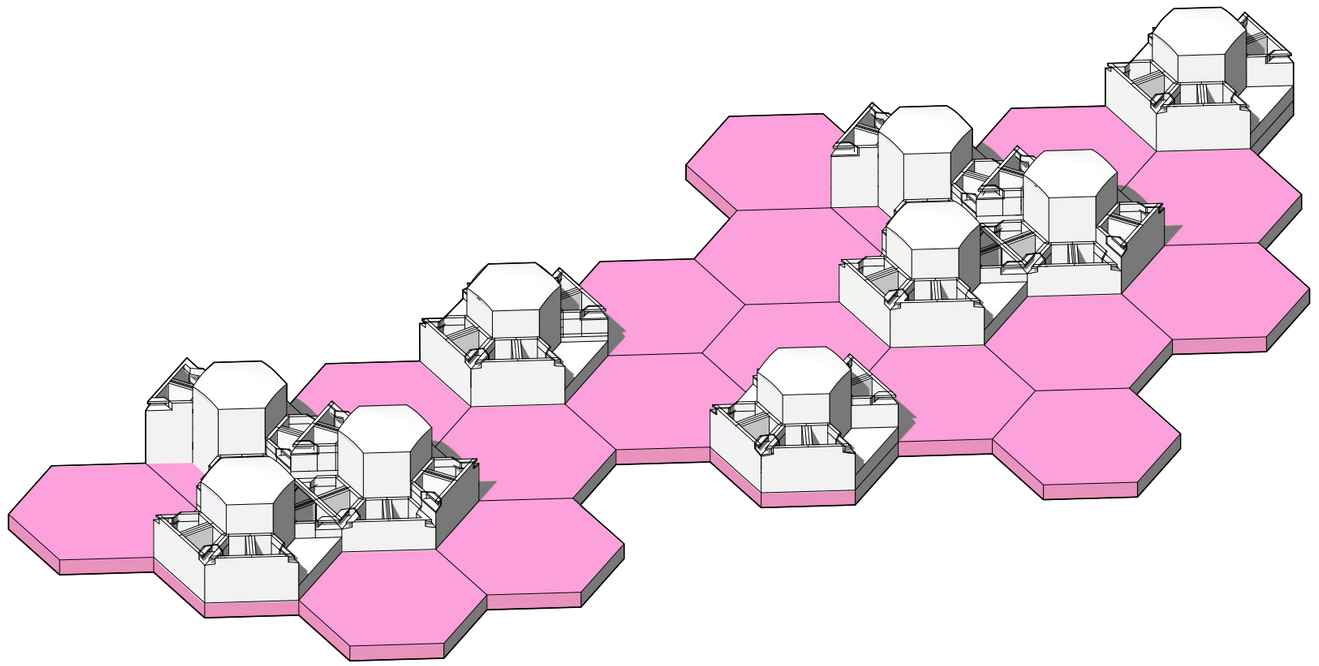


CIRCULATION HEX

MOTION POWERED LED HEX

PRESSURE SENSORED LEDS POWERED BY
SOLAR COLLECTORS ON THE EDGE






CLUSTERFLUX
CLUSTERFLUX
CLUSTERFLUX

COMPONENTS: PHYSICAL

MATERIAL TESTING

PROTOTYPING: GROWING FROM FOOD SCRAPS

TRIAL 1: BASIL, CARROT, LETTUCE, GINGER, GARLIC, CELERY, TOMATO

THE RECIPE

45 tbs coffee waste
15 tbs gelatin
7.5 tsp vinegar
7.5 tsp glycerine
250-275 ml water

THE STEPS

1. Obtain waste from local restaurants
2. Germinate by soaking in water for 1-2 days
3. Plant in soil and water.

RESULTS

TRIAL 1: BASIL, CARROT, LETTUCE, GINGER, GARLIC, CELERY, TOMATO

Soaked celery and lettuce for too long
Basil and tomato are growing
Carrot, garlic, and ginger are stable

MATERIAL FOCUS: PLANTER

TRIAL 1: COFFEE GROUND MIXTURE

THE RECIPE
45 tbs coffee waste
15 tbs gelatin
7.5 tsp vinegar
7.5 tsp glycerine
250-275 ml water

THE STEPS
1. Boil water
2. Add gelatin
3. Add and mix vinegar and glycerin
4. Add coffee waste
5. Mix
6. Pour into built formwork

(Recipe credits to Coffee Break by IAAC students)

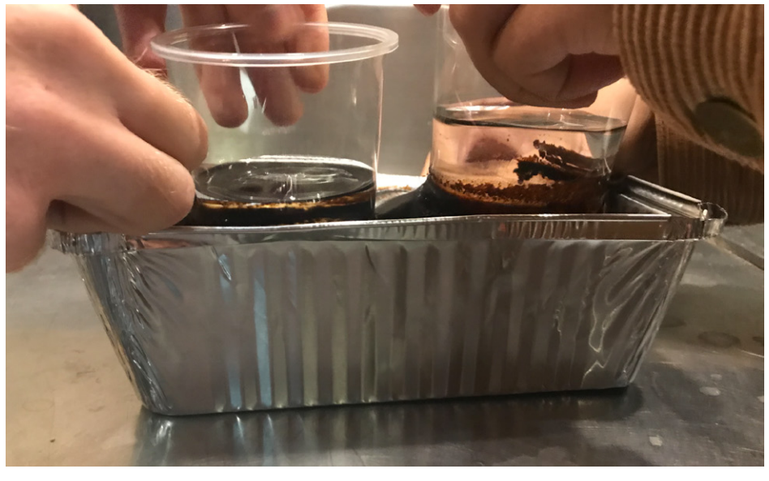





RESULTS

TRIAL 1: COFFEE GROUND MIXTURE

Poured too thick
Recipe probably is for thinner sheets
Didn’t harden/cure
(was put in the fridge)



RESULTS

TRIAL 2: COFFEE GROUND MIXTURE

Thinner sheets hardened on the outside, but inside was a brownie texture

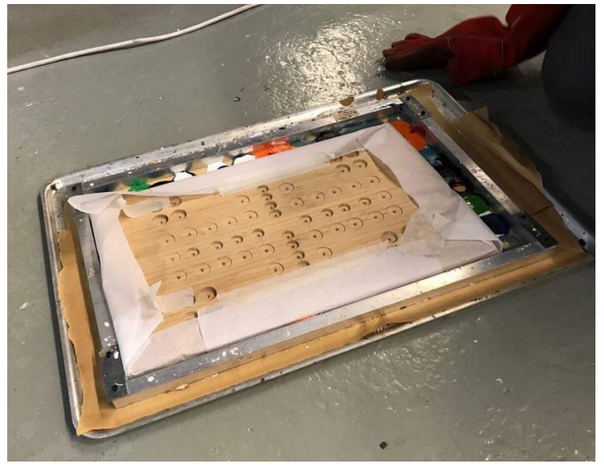
Material is known to break down when exposed to moisture or sunlight - not ideal for a planter outdoors

MATERIAL FOCUS: PLANTER

TRIAL 1: RECYCLED BOTTLE CAPS

THE RECIPE
Bottle caps collected from trashcans around BCN

THE STEPS
1. Pre-heat oven to 150 degrees celsius
2. Lay out bottle caps of same platic type on an aluminum sheet with border.
3. Place sheet in the oven
4. Wait until plastic melts (make sure there are no fumes - fumes mean the plastic is burning)
5. Take out melted plastic sheet and form as desired.



RESULTS

TRIAL 1: RECYCLED BOTTLE CAPS

Dries very quickly
Next trial: Cut sides and melt together with a heat gun and make a thicker sheet

MATERIAL FOCUS: PLANTER

TRIAL 2: RECYCLED BOTTLE CAPS

THE RECIPE
Bottle caps collected from trashcans around BCN

THE STEPS
1. Pre-heat oven to 150 degrees celsius
2. Lay out bottle caps of same platic type on an aluminum sheet with border.
3. Place sheet in the oven
4. Wait until plastic melts (make sure there are no fumes - fumes mean the plastic is burning)
5. Take out melted plastic sheet.
6. Cut into desired pieces.
7. Weld together using a heat gun.

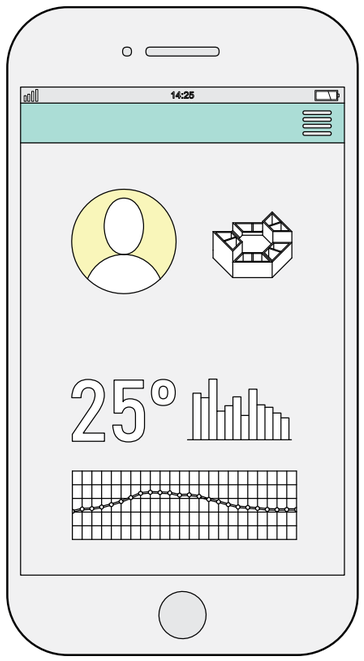
RESULTS

TRIAL 2: RECYCLED BOTTL

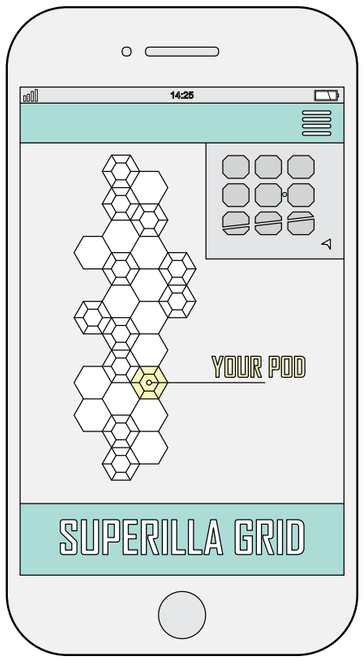
Dries very quickly
Doesn’t sand down well
Welds together easily

COMPONENTS: DIGITAL

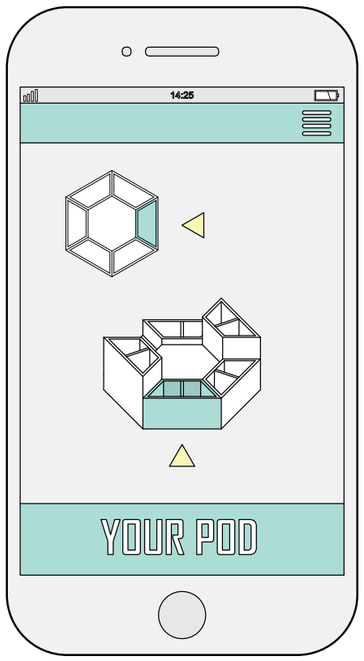
DIGITAL INTERFACE



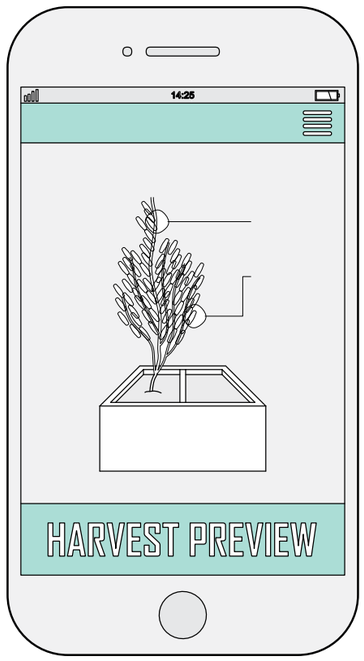
USER PROFILE WITH RATING AND OVERVIEW OF YOUR PLANTER AND ITS STATS



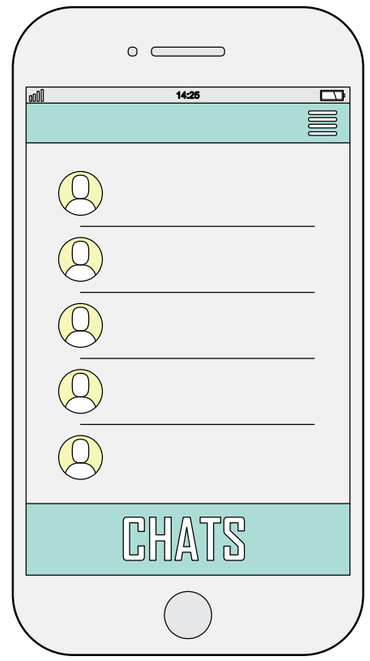
OVERVIEW OF GRID



OVERVIEW OF YOUR TEAM



AR PART - TO SEE RATINGS AND FULL GROWTH AR MESSAGING PLATFORM



MESSAGING PLATFORM

SIGNIFICANCE +IMPLEMENTATION

HOW MANY BOTTLE CAPS?

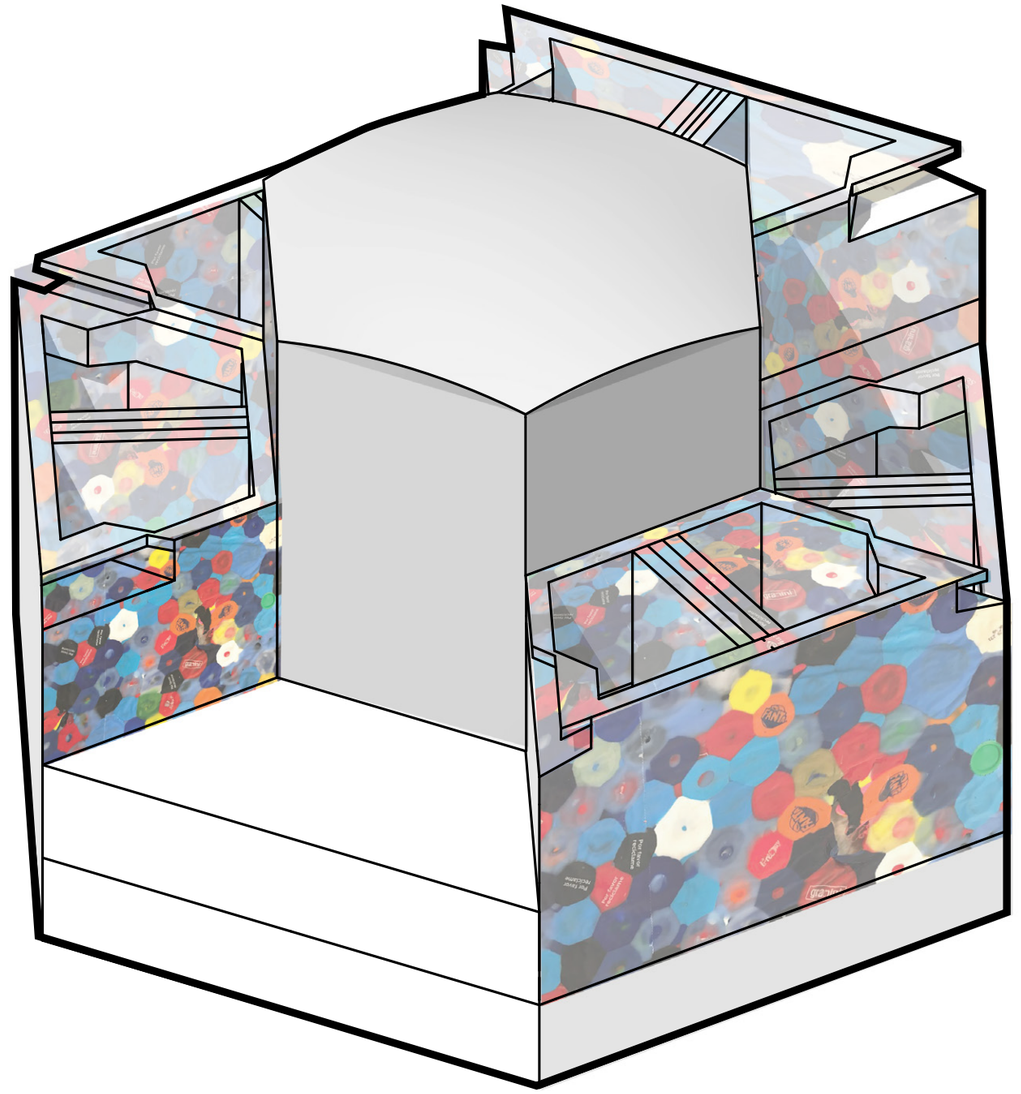
ONE BAKING SHEET: 300 BOTTLE CAPS
ONE PLANTER: 1050 - 1850 BOTTLE CAPS
ONE UNIT (5 PLANTERS): 5250 - 9250 BOTTLE CAPS

TAKE AWAYS:

Try to incorporate a different kind of plastic waste

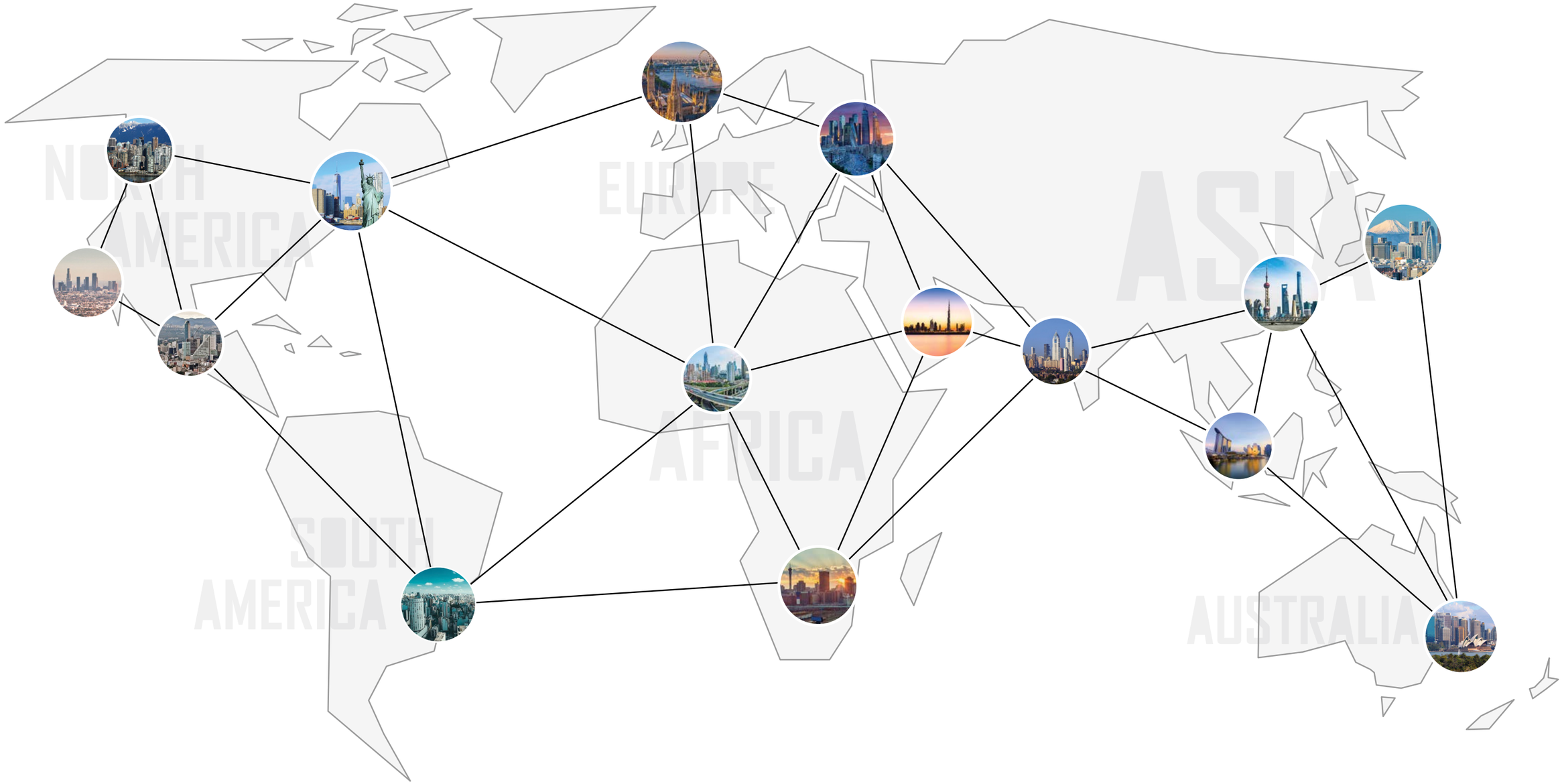
- to upcycle more types of plastic
- to mass produce more easily

Implement a bottle cap/plastic waste collecting service in the system's design



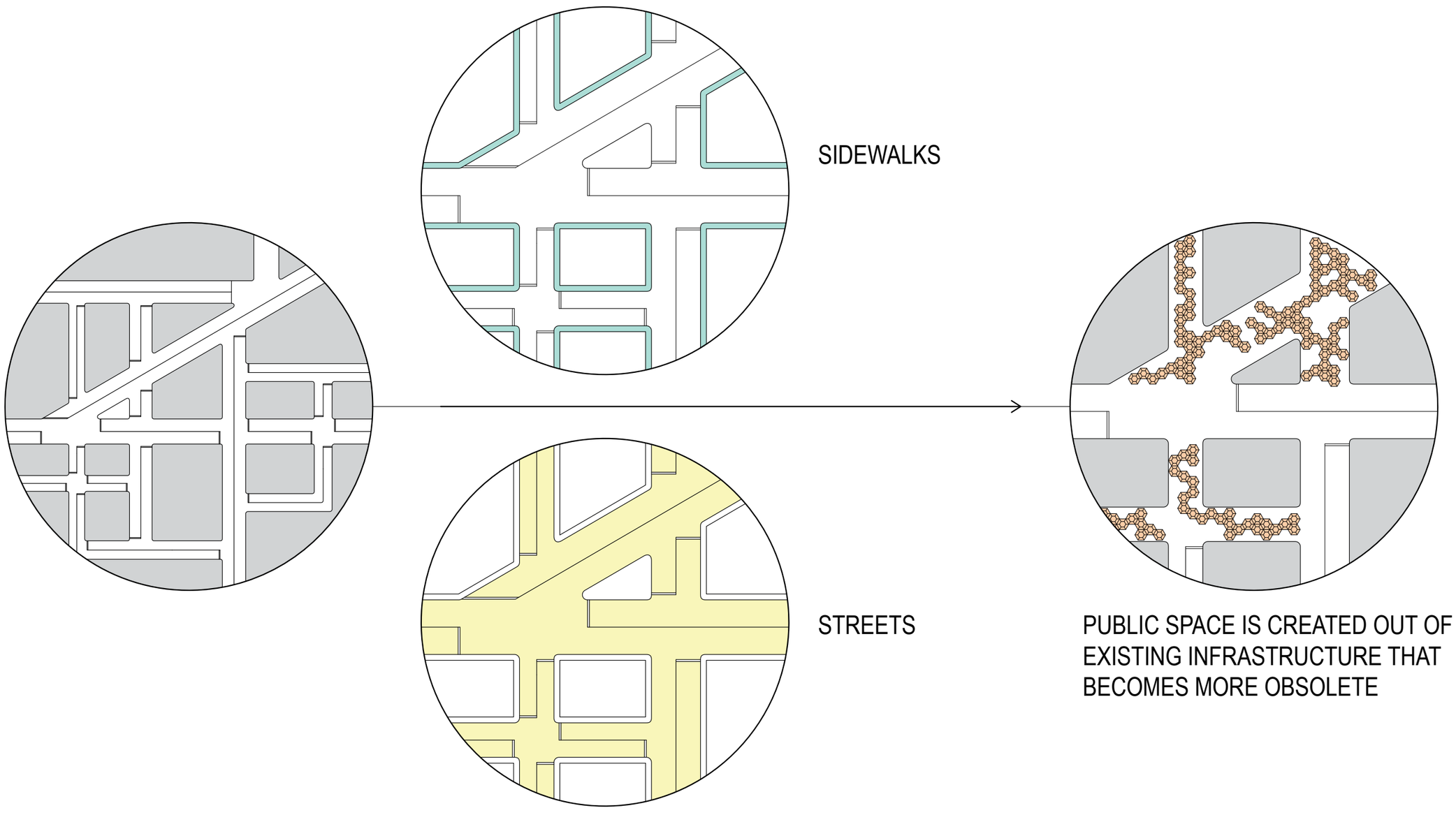
GLOBAL DATA FOR A LOCAL CONTEXT

//DATA AND INFORMATION IS SHARED AROUND THE WORLD AS NEW CITIES
ADAPT THE PROJECT TO THEIR NEEDS



CONTRAST BETWEEN OLD AND NEW

//OUR PROJECT AIMS TO UTILIZES COLLECTED DATA TO AUGMENT THE GROWING PROCESS OF FOOD AS WELL AS KEEP USERS INFORMED ABOUT THEIR SHARED PUBLIC SPACE

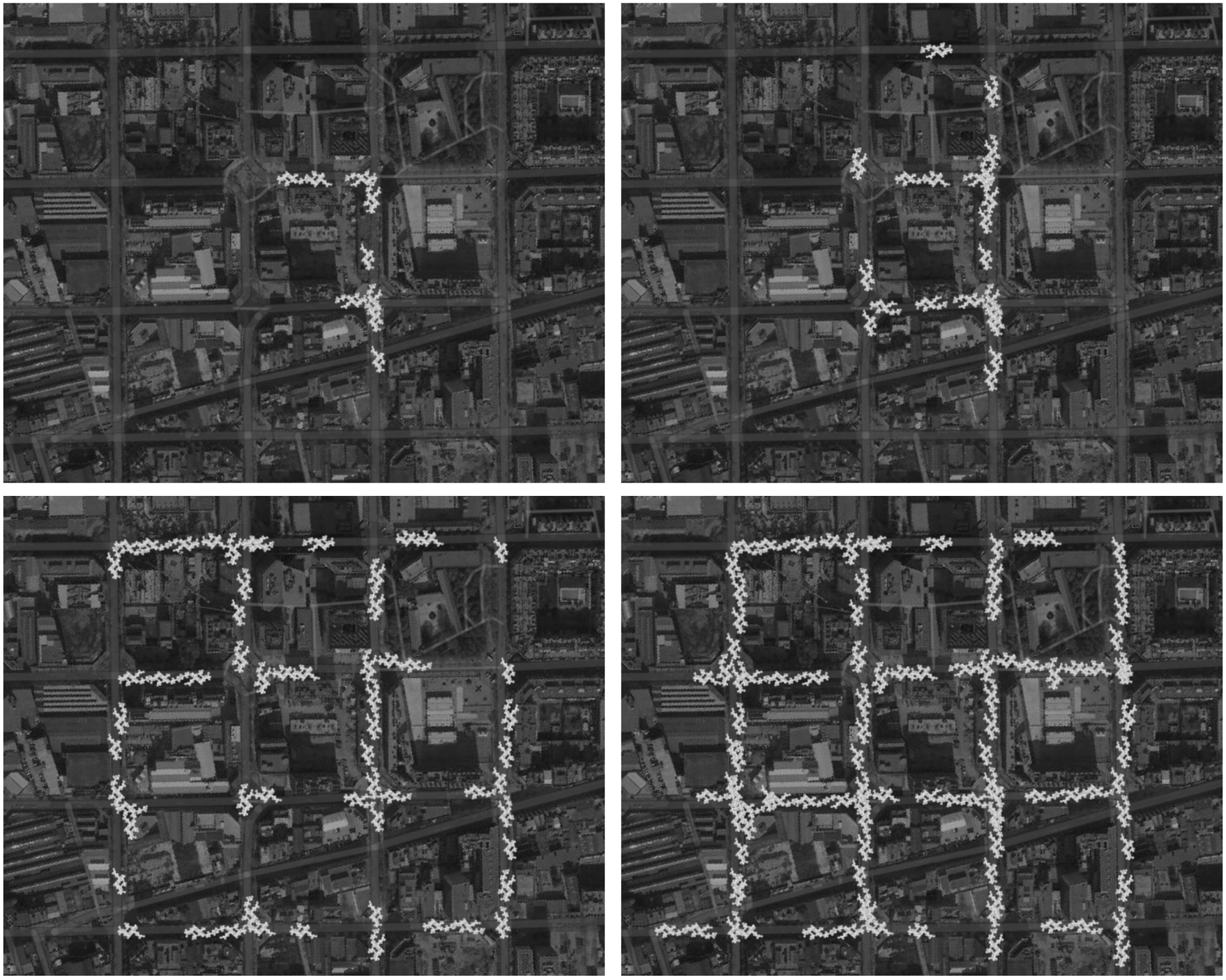


SIDEWALKS

STREETS

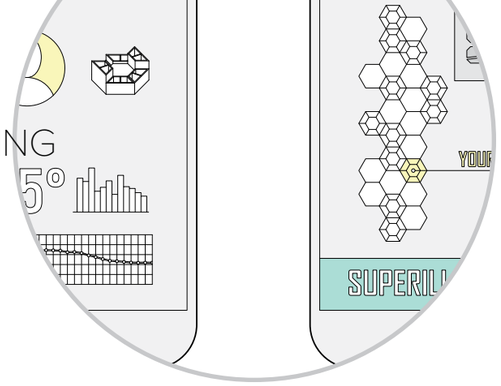
PUBLIC SPACE IS CREATED OUT OF EXISTING INFRASTRUCTURE THAT BECOMES MORE OBSOLETE

WHERE IS THIS GOING IN THE SUPERBLOCK

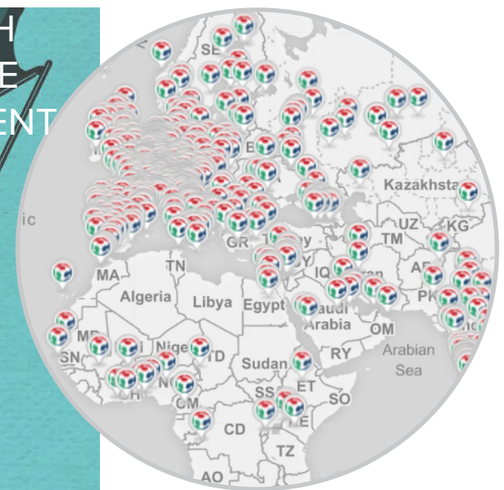


ATTRACTIVE LOCATIONS

USE OF TECH &
EFFICIENT MONITORING



DATA SHARING WITH
OTHER CITIES IN THE
WORLD TO IMPLEMENT
THE INSTALLATION



INTERCONNECTIVITY IN
THE NETWORK

DENSIFY PUBLIC
SPACE > CREATE MORE
ACTIVITY

BARCELONA

HOW THIS PROJECT STARTS AND GROWS

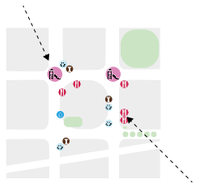
IMPLEMENTATION

$$$

CITY COUNCIL/SPONSOR FUNDS SENSORS

FAB LAB

INITIAL PLANTER AND COM-POSTER PRODUCTION BY THE FAB LAB STAFF



RESTARANTS PICK UP PLANTERS AND COMPOSTERS AND PLACE THEM IN THE SUPERBLOCK

RESTRAURANTS PARTICIPATING UPLOAD WHAT FOOD SCRAPS THEY HAVE DAILY

PUBLIC INVOLVEMENT

ADS ON SOCIAL MEDIA SPREAD WORD OF URBAN PROJECT AND APP TO GET INVOLVED

ONCE DOWNLOADED USERS ARE NOTIFIED WHERE NEAREST COM-POSTERS ARE TO START A CLUSTER

FAB LAB

CITIZENS GO TO FABLAB TO MAKE THEIR PLANTER

USERS CAN GROW WITH FOOD SCRAPS OR SEEDS

USERS PLACE THEIR PLANTER INTO A CLUSTER

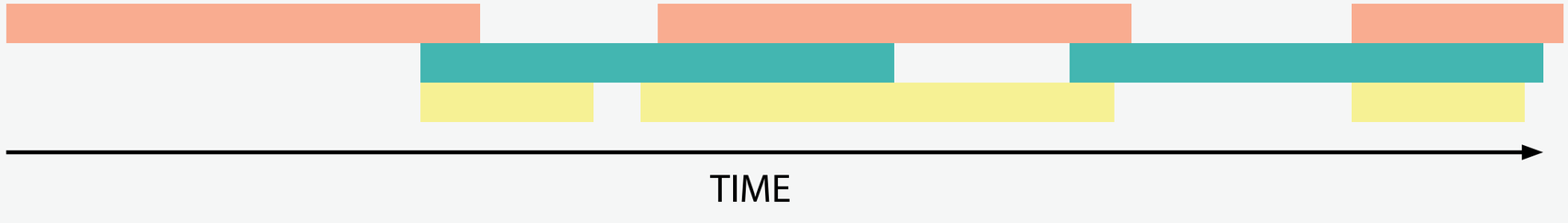
SOCIAL INTEGRATION

CAN BE REARRANGED TO ACCOMODATE NEW PROGRAM

FARMERS MARKETS

ART GALLERY

RESTAURANT SEATING



THANK YOU

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Institute for
advanced
architecture
of Catalonia

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