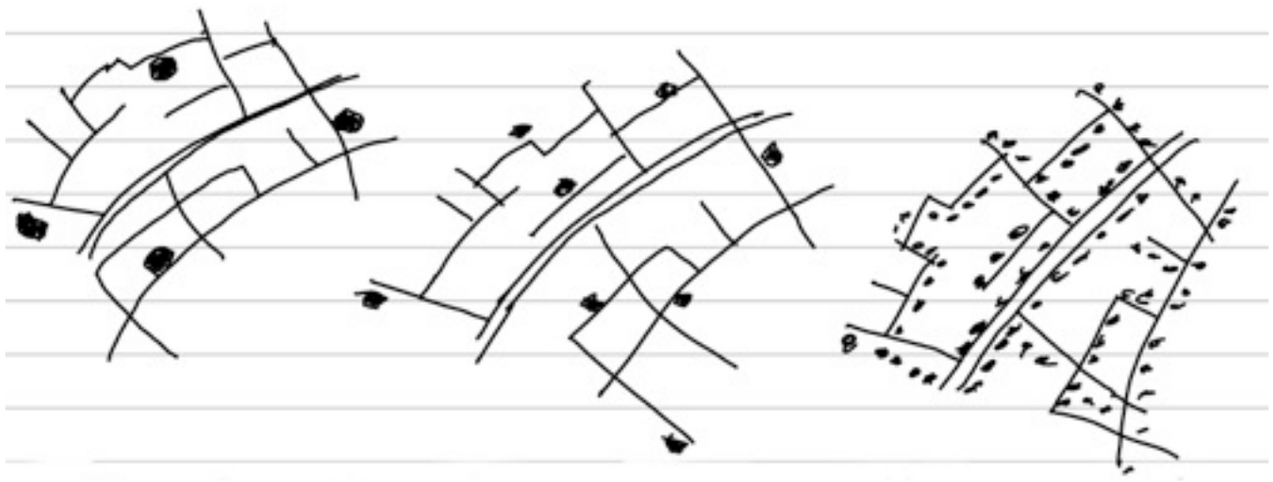

FOR GARBAGE

waste disposal placement analysis /Schlieren/

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Detection of a problem

- everybody is a garbage producer
- garbage stinks and is awful, we get rid of it
- garbage is a resource, so we collect it
- what is the optimal distance ratio between

Collectors and producers?

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Statistics of garbage production

= 5	Switzerland:	600
= 7	France:	590
= 7	Luxembourg:	590
= 9	Netherlands:	560
= 9	Ireland:	560
= 9	Denmark:	560
# 12	Germany:	546
# 13	Austria:	510
# 14	Canada:	500
# 15	Hungary:	490
= 16	Belgium:	480
= 16	United Kingdom:	480
# 18	Italy:	460
# 19	Portugal:	440
# 20	Finland:	410
= 21	Korea, South:	400
= 21	Japan:	400
# 23	Spain:	390
# 24	Greece:	370
# 25	Sweden:	360
# 26	Turkey:	330
# 27	Poland:	320
= 28	Mexico:	310
= 28	Czech Republic:	310

1.6kg/day

0.85kg/day

kg of municipal (not assorted waste) per year per person

www.nationmaster.com/compare/

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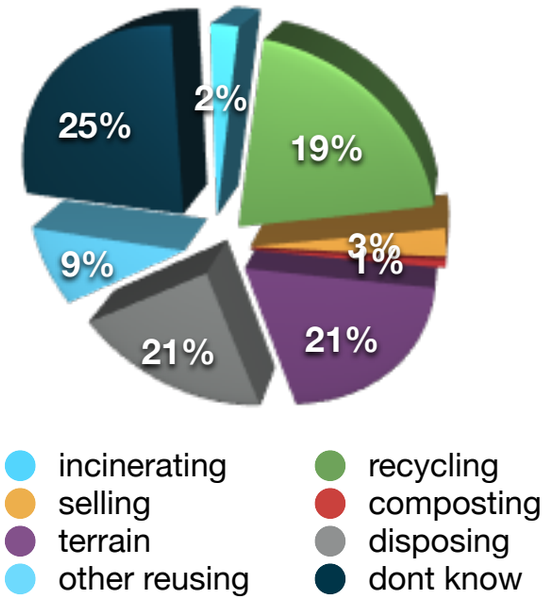
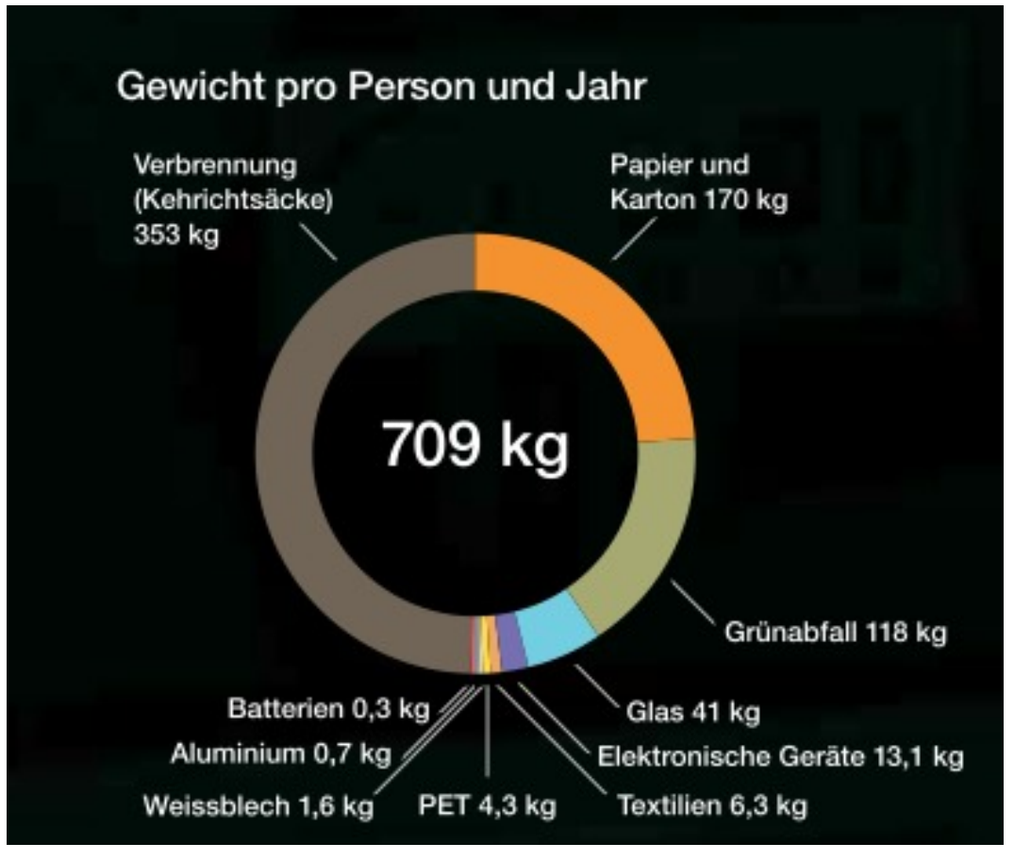
Czech republic



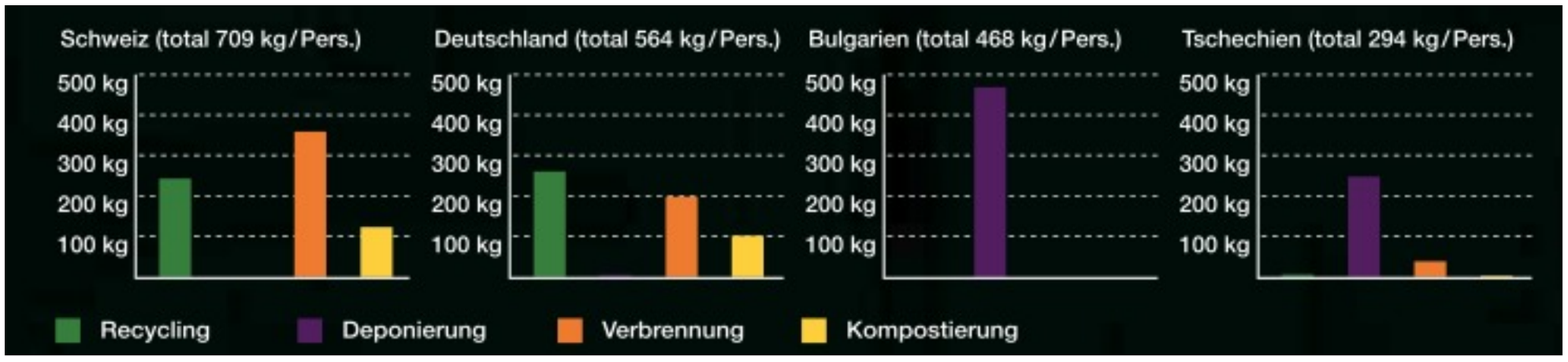
Switzerland



Tschechien versus Switzerland

Pollution > Carbon dioxide 1999	29,709	11,075
	Ranked 32nd. **168% more** than Switzerland	Ranked 57th.
Pollution > Carbon Dioxide per capita	12.0	6.0
	Ranked 7th. **100% more** than Switzerland	Ranked 23rd.
Pollution > Municipal Waste per capita	310.0	600.0
	Ranked 28th.	Ranked 5th. **94% more** than Czech Republic
Pollution > Nuclear waste	45	64
	Ranked 14th.	Ranked 12th. **42% more** than Czech Republic

www.nationmaster.com/compare/



Container

- size
- form
- function

User

- walking distance
- energy/motivation
- CO2 Emission

Collector

- distance
- energy
- CO2 Emission

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Containers

Assorted

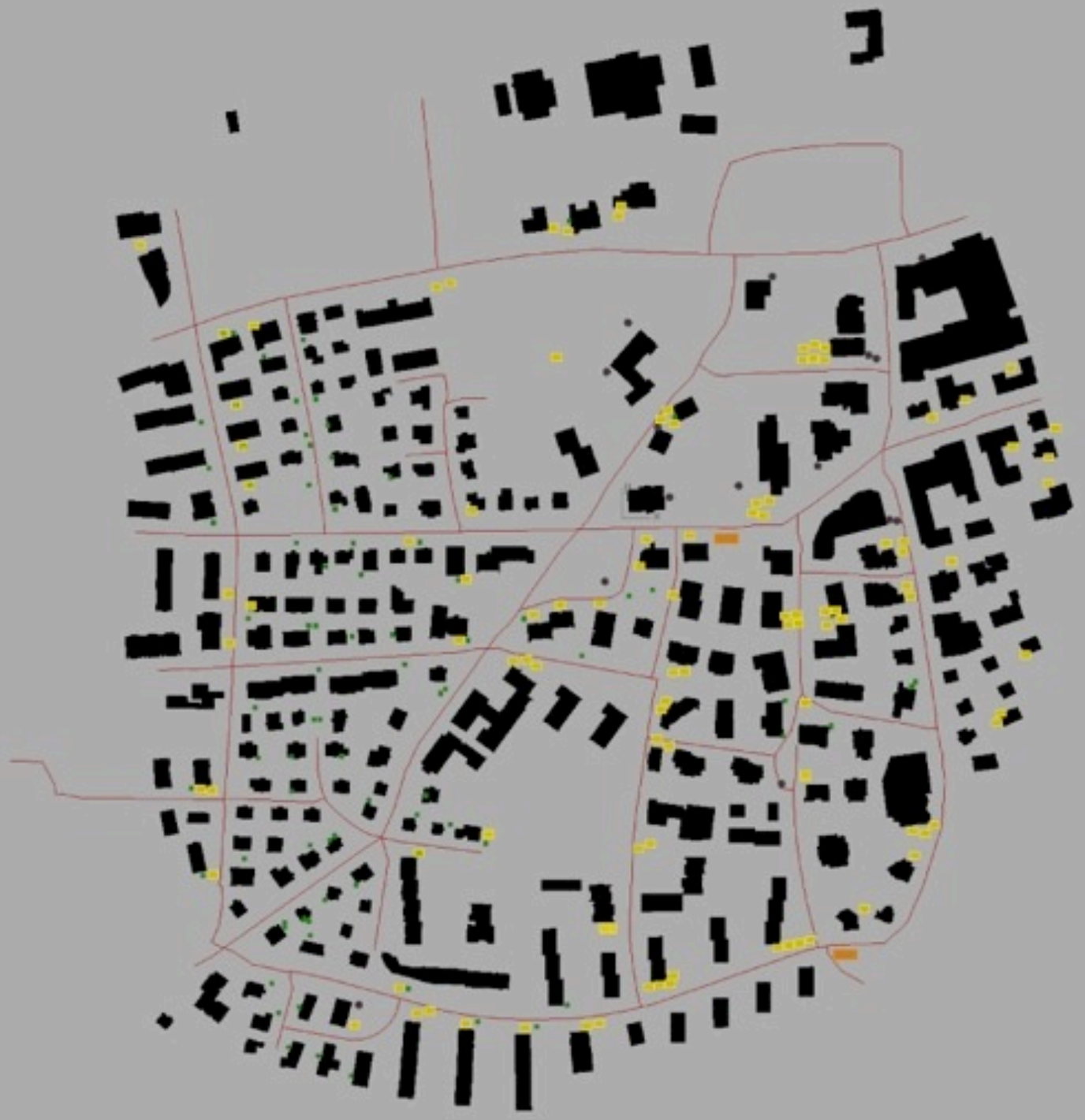



Small at public spaces

Bio +
“Rest”Containers

Mapping the situation

all garbage disposal places



Analysis

Current situation

x - non-assorted garbage disposal places

Analysis

Current situation

x - assorted garbage disposal places

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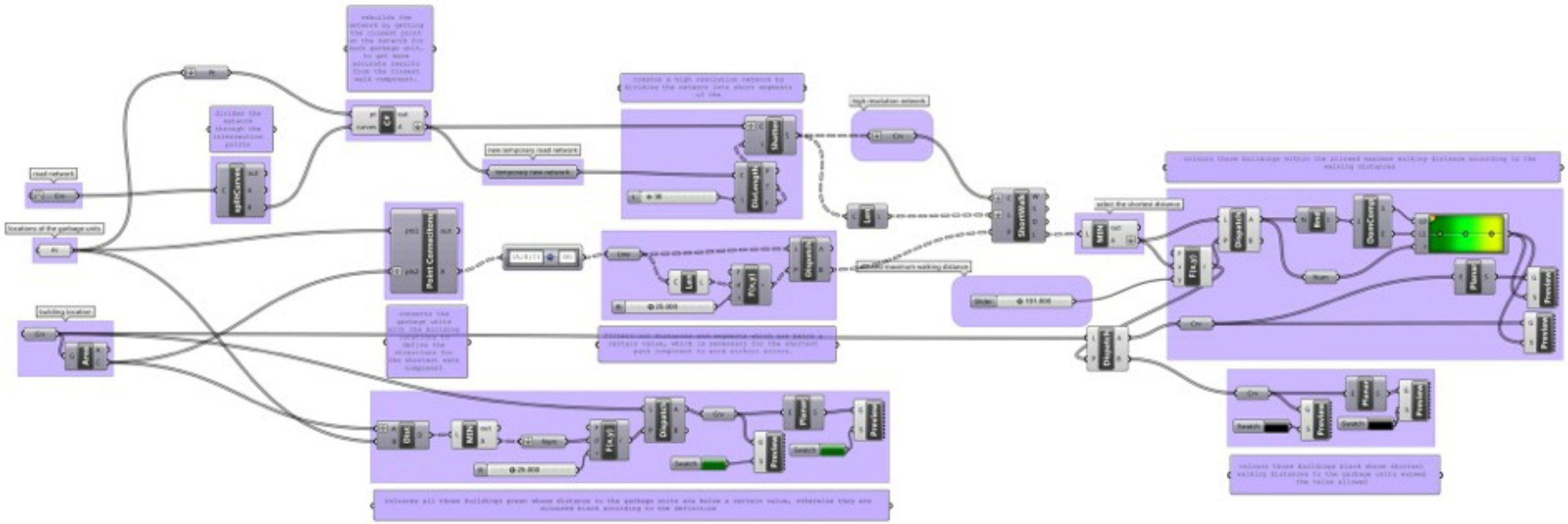
The code for the analysis



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Problem 1: CO2 Emission

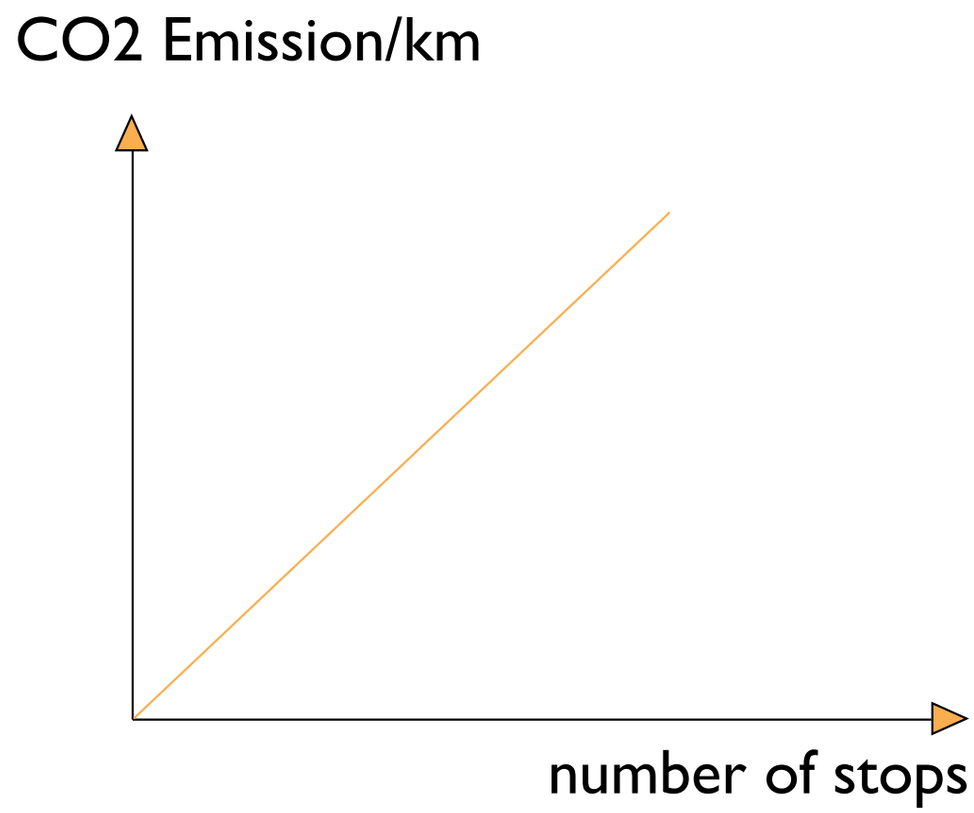
car	person
150 - 400 g/km	10 - 40 g/km

the production of the car depends on the type of fuel and fuel consumption (liter per 100km)

So we will compare the distance (variable1) and CO2 production (variable2)

so we can count production of CO2 for 1 liter fuel burnt: consumption x (CO2 fuel production factor)644x0,99x (44/12) = consumption x 23,38 g

Problem 1: CO2 Emission



town cycle: fuel consumption 10 l/100km - average speed 40km/h
land cycle: fuel consumption 5 l/100km - average speed 80km/h

The CO2 emission is counted with the following function:

Average speed of the car 10 km/hour,
Average fuel consumption 6.4l/100km
Average CO2 production is 150g/km
Average consumption 0.64 L / hour

Total emission of CO2 in grams per km = average consumption*23,38 = 150g/km
Total emission per 1 hour: 10(km)*150g = 1500g/h

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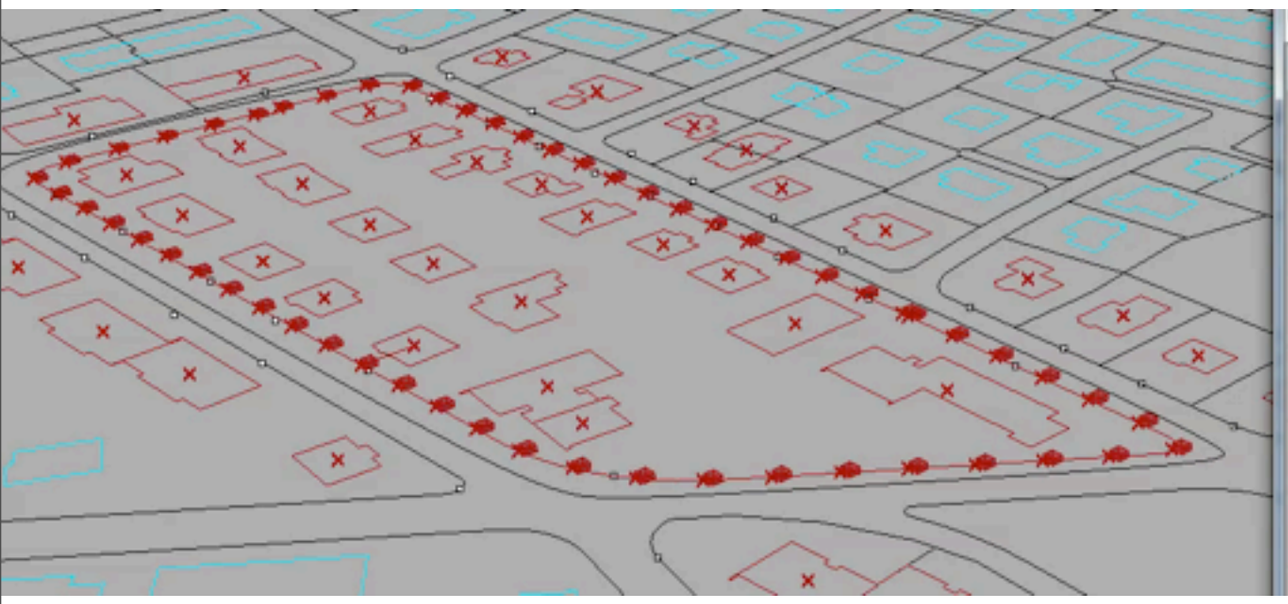
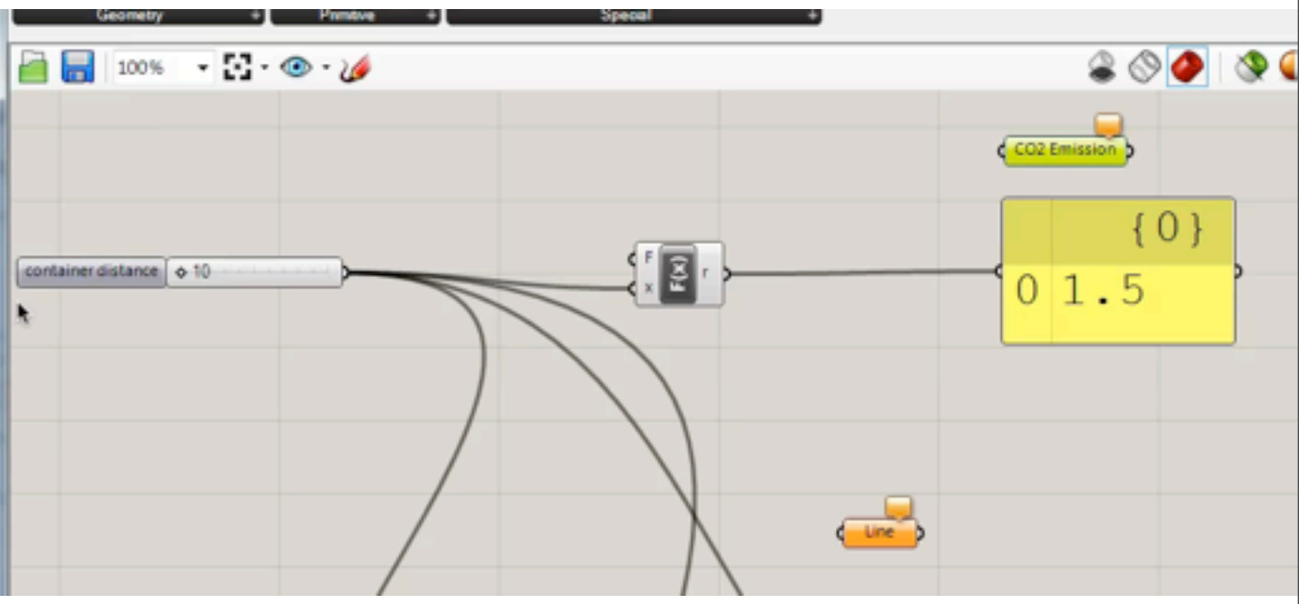
Problem 1: CO2 Emission





The CO2 Emission per meter gets smaller with the distance between the containers

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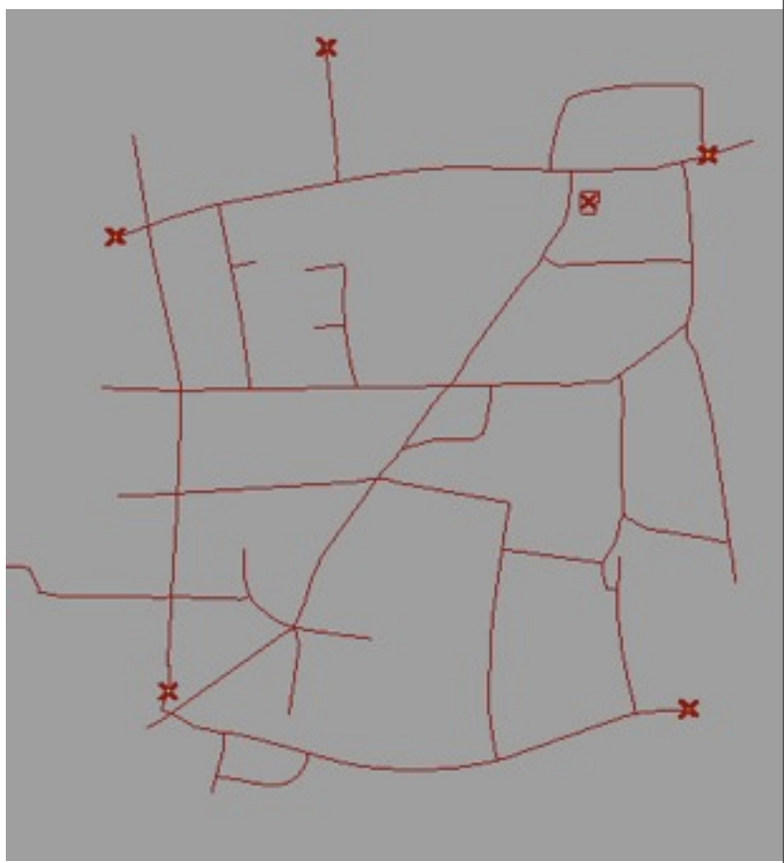
Problem 2: walking distance

In this model we also found out, that the optimal distance between the containers according to the arial distance is 62 m - walking dist. up to 89 m

The statistics say: walking distance: 67m!!!

Problem 3: Container distribution

For the next step: simplifying the problem



How to distribute containers on the street net regularly?

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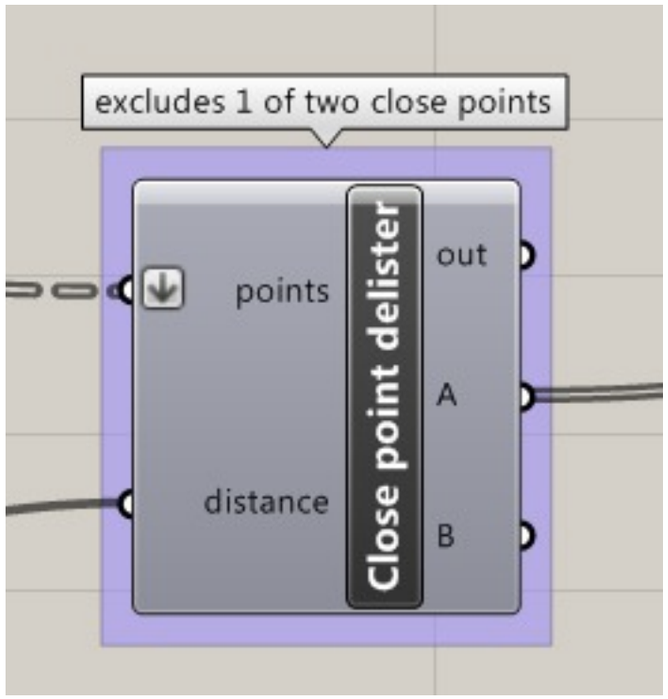
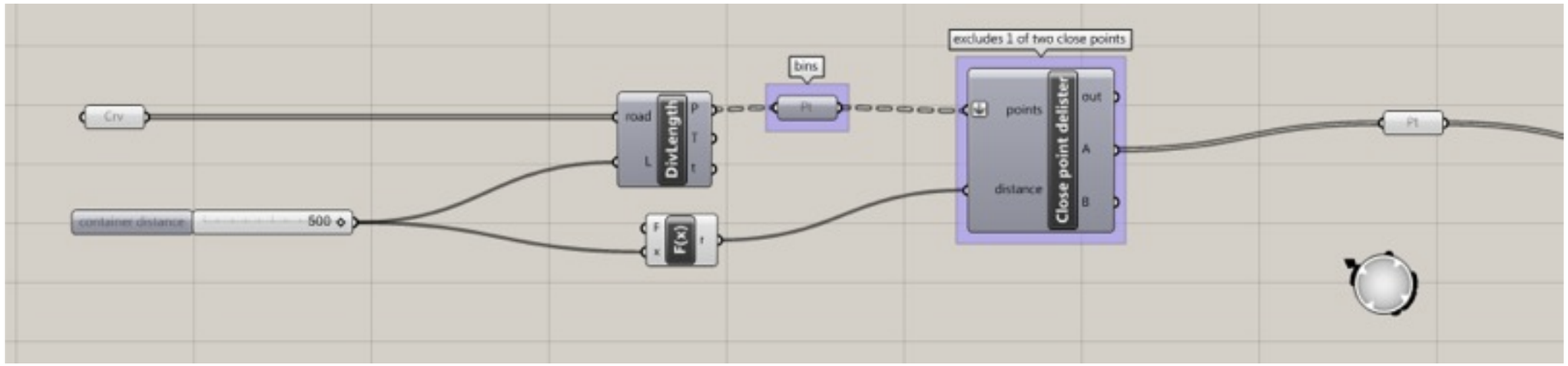
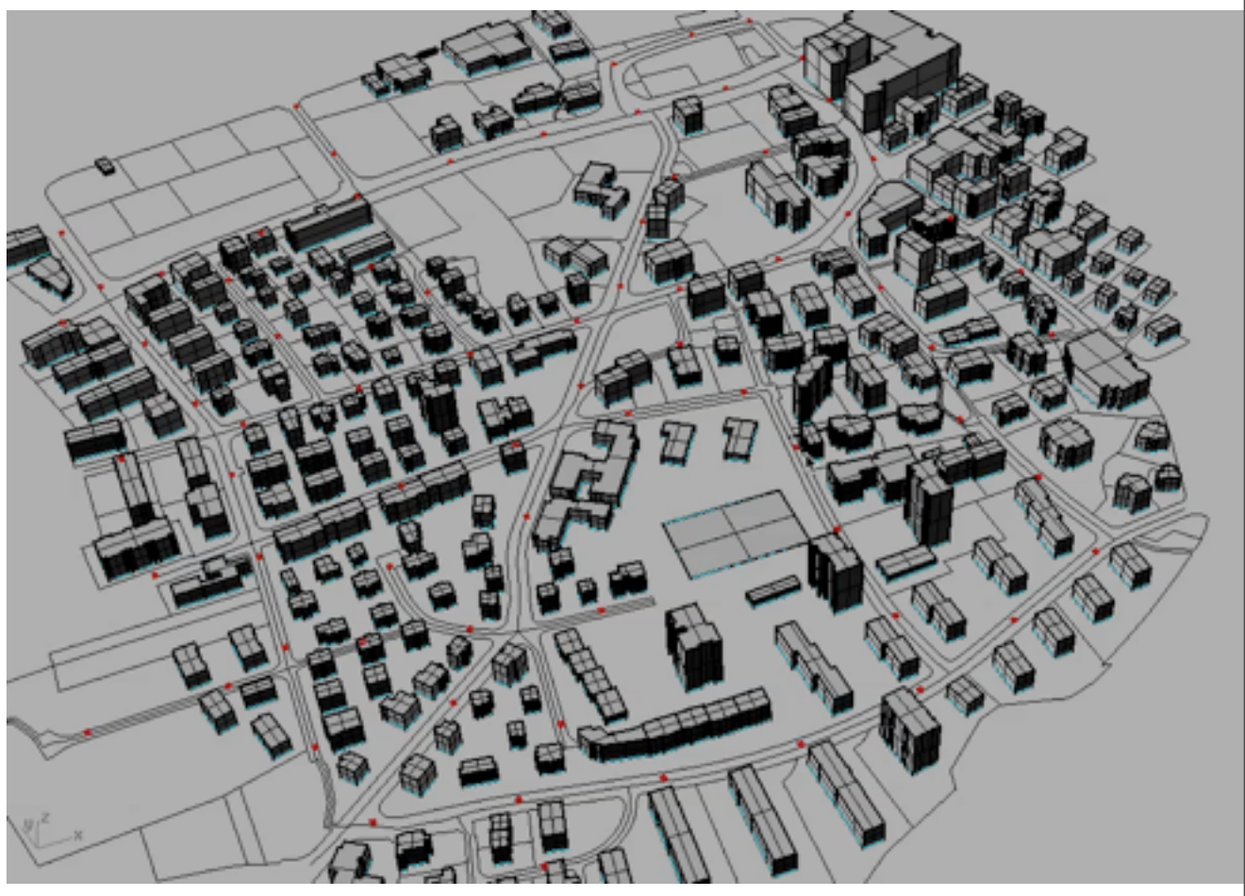
Problem 3: Container distribution




```
  List<int> delPts = new List<int>();

  for (int i = points.Count - 1; i >= 0; i--) {
    if(isInCollision(points, points[i], distance))
    {
      points.RemoveAt(i);
      delPts.Add(i);
    }
  }

  A = points;
  B = delPts;
}

/**/
public bool isInCollision(List<Point3d> pts, Point3d pt, double distance)
{
  foreach(Point3d pt1 in pts)
  {
    if((pt1.DistanceTo(pt) <= distance) && (!pt1.Equals(pt)))
    {
      return true;
    }
  }
  return false;
}
```

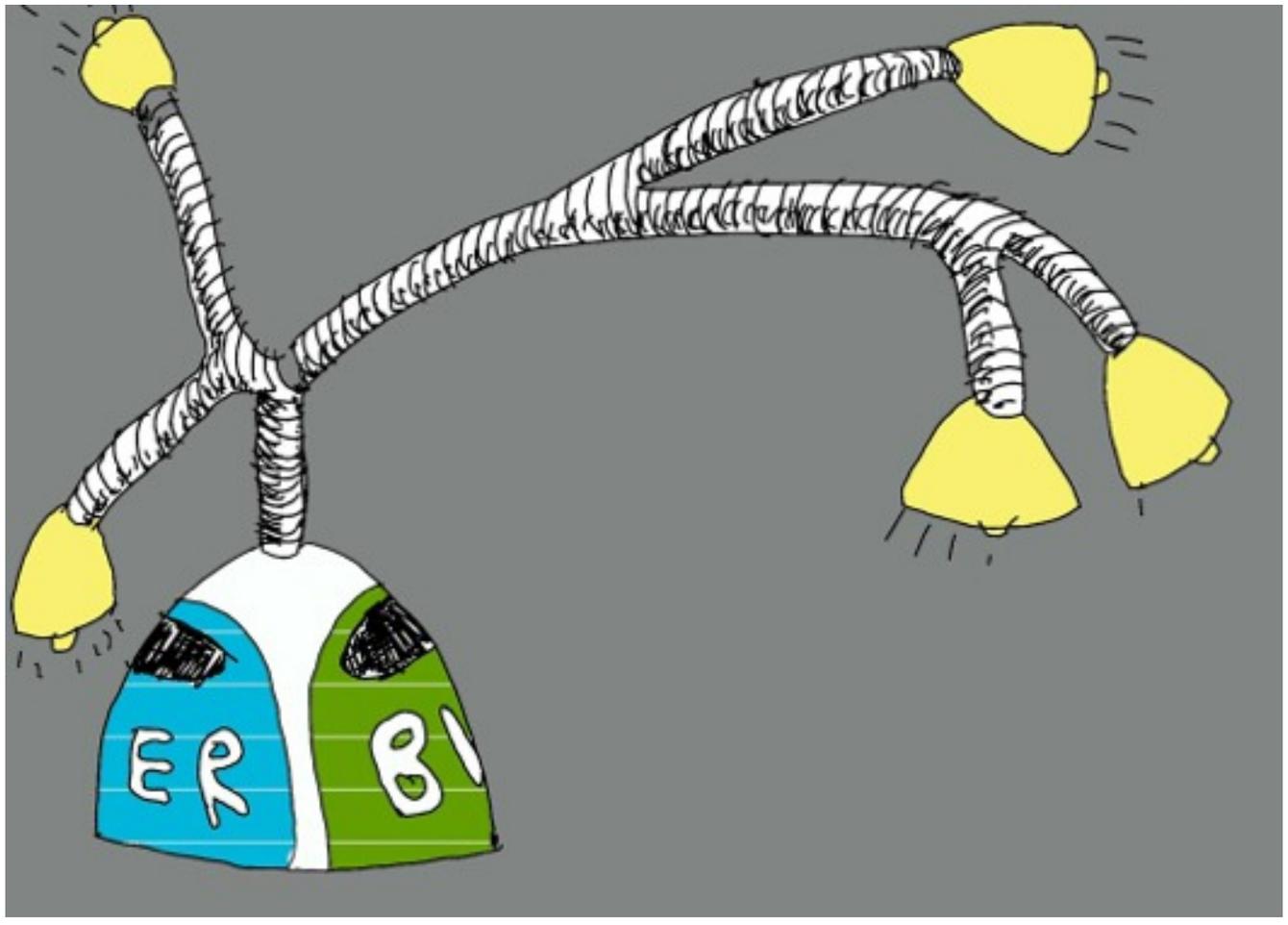
Problem 3: Container distribution





Final solution

- Solution miniGEG - Garbage Energy Generator



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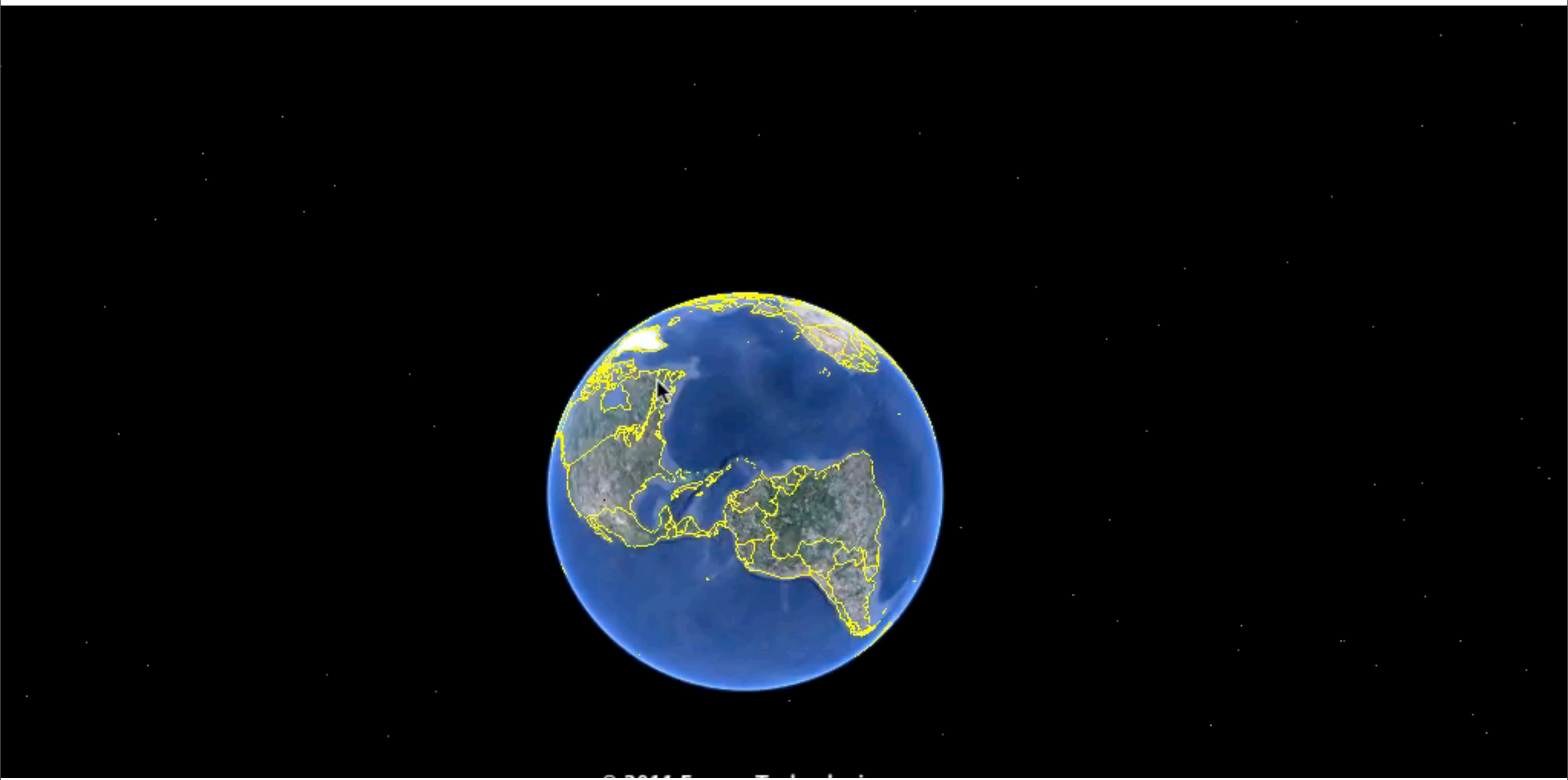
EarthAnchorPoint



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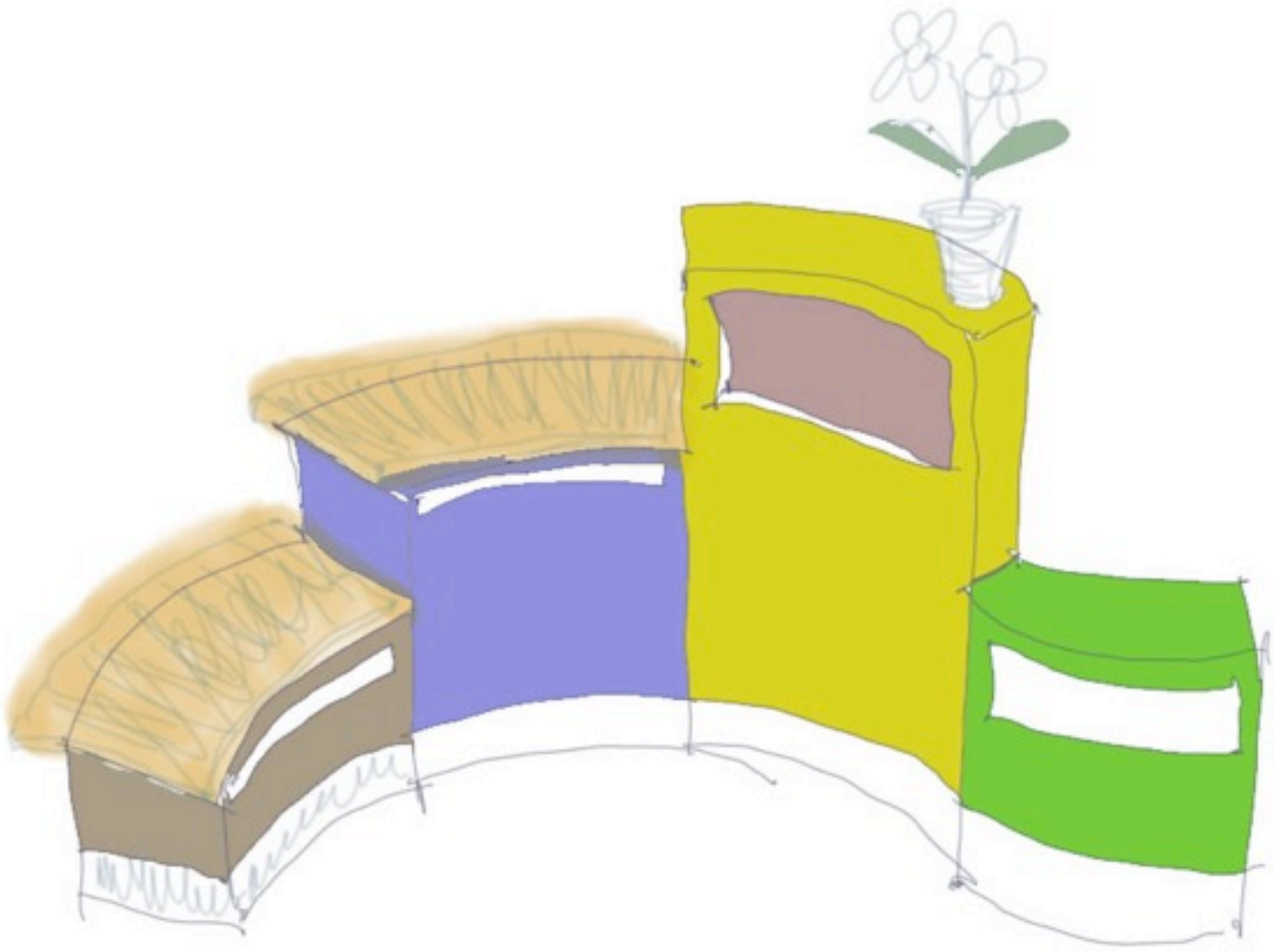
Containers of the future



Product of collaborative sketching:-)

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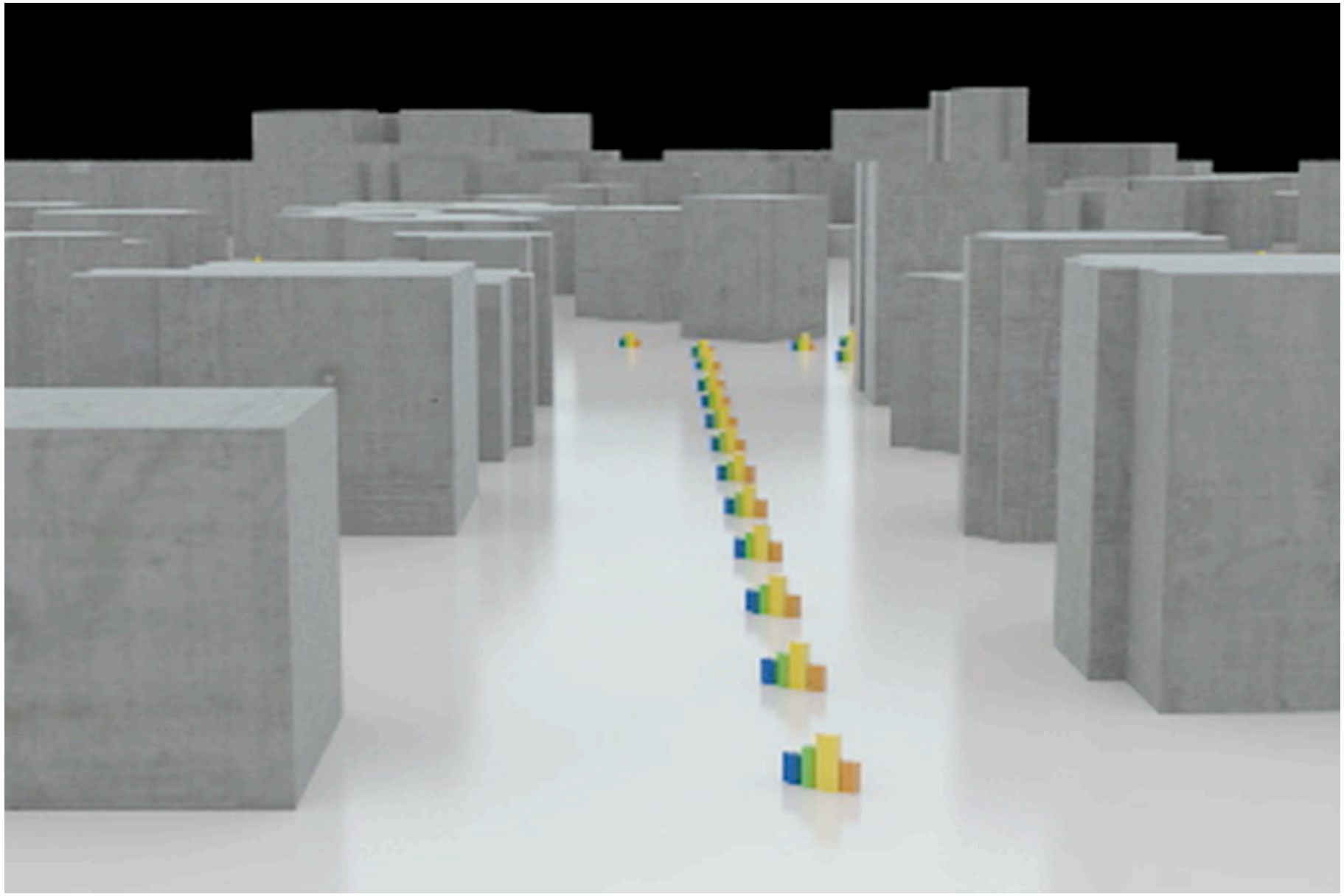
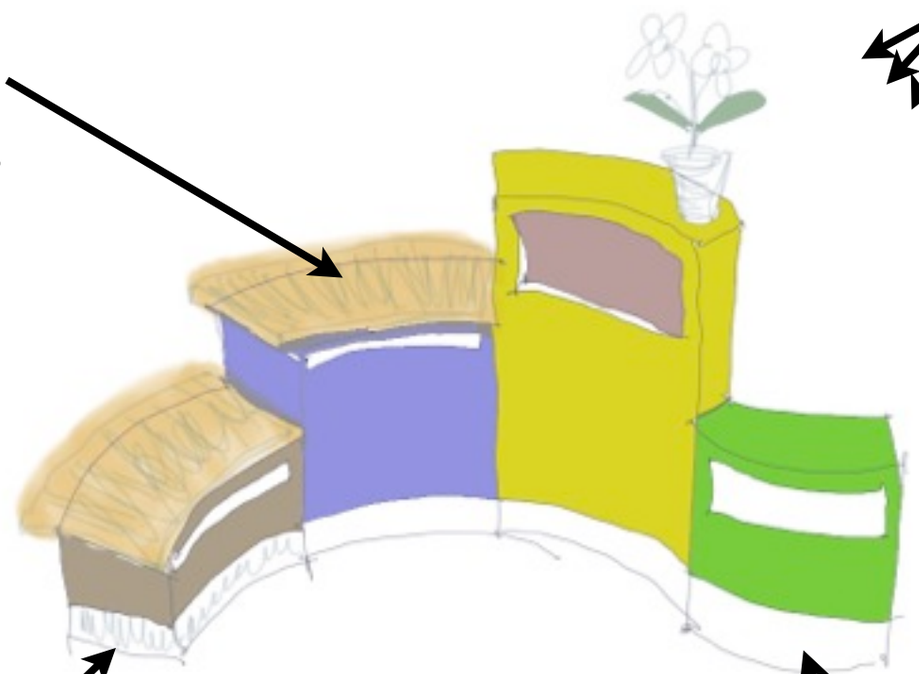


Containers of the future

Benches for disabled, old, kids

Color markers



Endless modularity

Energy generators

Product of collaborative sketching:-)

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