



# MOVE

# TEAM ECO-WARRIORS

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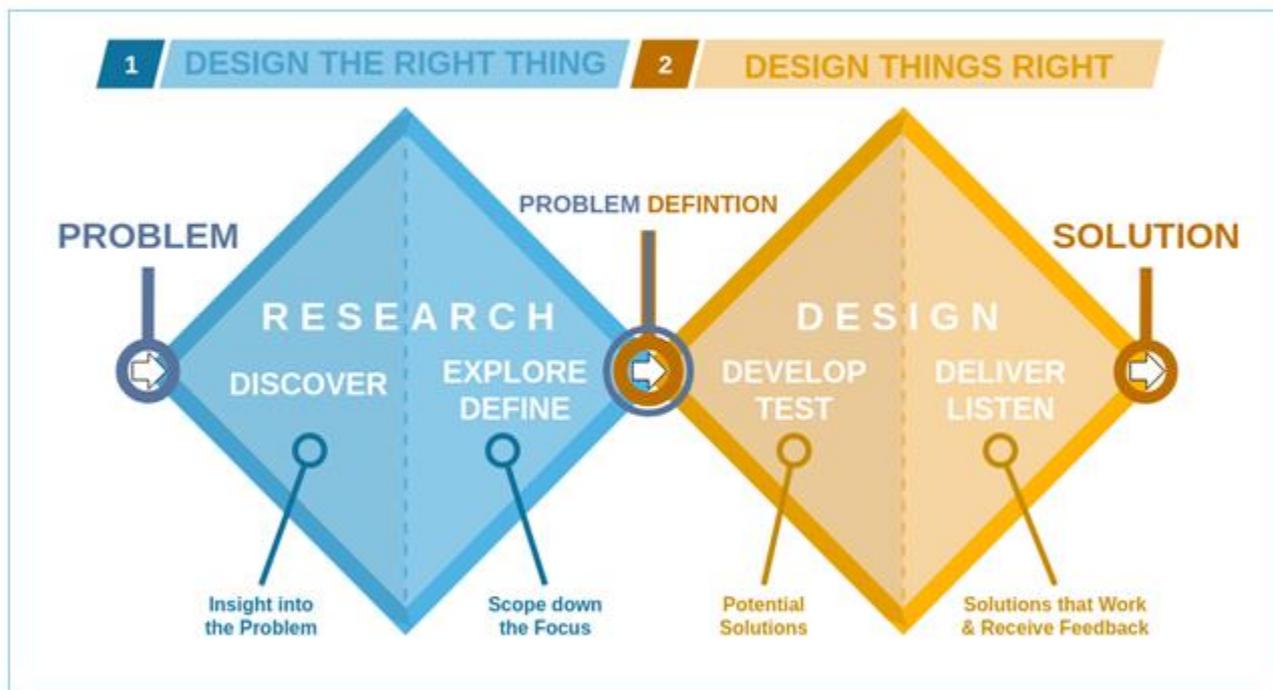
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Mobility is quite an issue when coming to its consequences on the climate. Do you know how much would it mean to decrease by only 10% the amount of driving per year just in the US? Well, it would have the same impact of closing around 30 coal-fired power plants for the same amount of time...

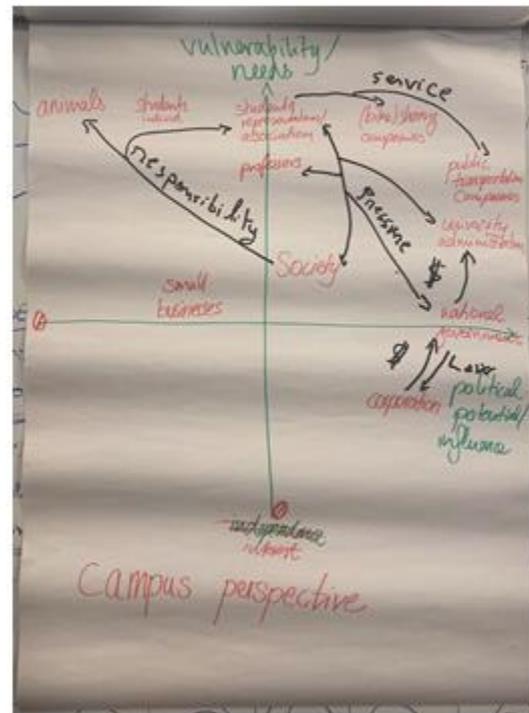
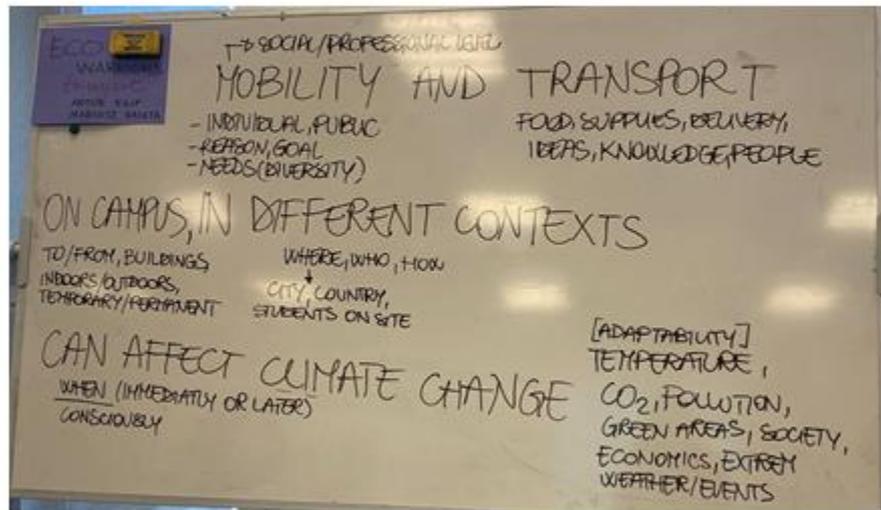
# Design process





We, the eco-warriors, had to focus on mobility related to a university campus, itself a broad and diverse topic if you think about it. To tackle such a big challenge, we were guided in the design of a solution by the double diamond process.

# Discover the problem





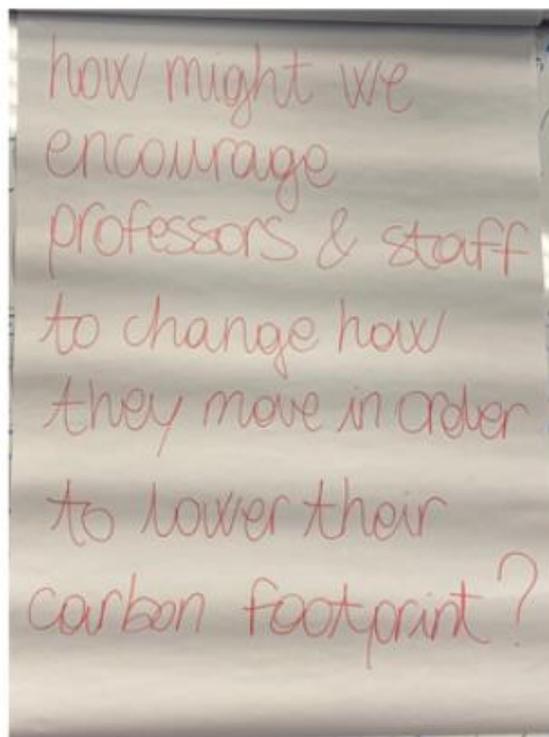
First, we started considering what mobility and transport meant in a university: students can travel between different campuses, as ideas and knowledge can do that being shared on the internet. Also, food supply must arrive on site, together with all the professors and staff members. To consider the need of inclusion it also came up to our minds the lack of availability of lifts in every building. Shifting to the issue of the consequences on climate change, it could have been either now in terms of air quality due to pollution or in the future for the temperature rise caused by greenhouse gases emission.



We had to narrow it down to draw a hierarchy of the parts involved and to recognise how they communicate among each other. To do that we focused on the way the university population gets to the campus every day. As a result, we found out that those that are the most affected by the choices related to the transports are also the ones whose voices are not very loud to be heard around the tables on local mobility.

# Define the problem

How might we encourage professors and staff...



... to change how they move in order to lower their carbon footprint?





We realised that there was a class of stakeholders in the centre of our diagram that was connected both to the most involved in terms of needs and to the ones with political influence, and those connections were not about money or regulations, they were all about pressure and responsibility, all about caring. Thus, we wrote that we wanted to encourage professors and staff members when defining the problem. If only we could enable those who go back and forth to the campus for their entire working life to do that in a more sustainable way maybe, we would have got to the point.

# Develop the solution

*” Converting parking lots to bike parking lots and using the free space for the benefit of the staff members. ”*



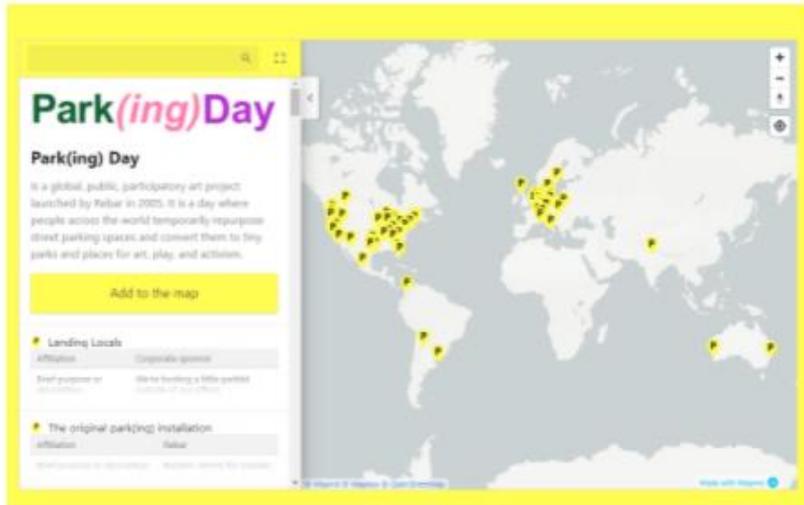


How to do that? For sure they know about the impact of traveling by car, is the most famous and ancient argument on the causes of climate change. And maybe they don't even like all that space car parking spots take on campus. They would love to see something else instead. We came up with a catalogue of alternative solutions of what could take their place. In every single campus, depending on the context and the specific needs of professors and staff, our project can be realised in a different way.

# Park(ing) Day

*Seeking inspiration...*

Our goal is to make it permanent.



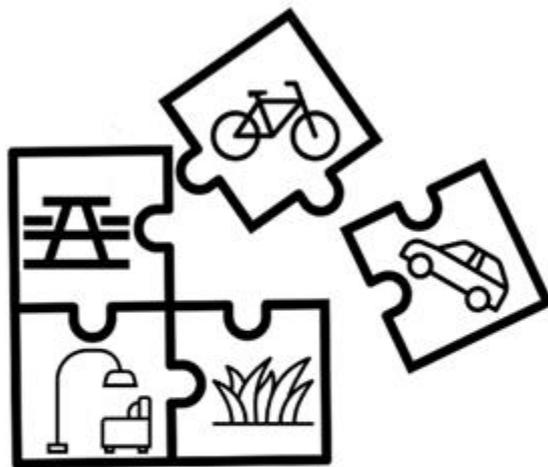
A day where temporarily and across the world, street parking spaces are temporarily changed of purpose for art, play and activism.





It already happens in many parts of the world that street parking is closed for a day and change its function to display fairs, arts, plays and many other forms of self-expression. We are just talking about making it permanent.

# Deliver the solution



CampUsable

...There's space for more





What we want to put the highlight on is the flexibility and adaptability of our project. Here you can see our logo: a puzzle. The pieces of a puzzle perfectly represent the set of ideas we give. They can be arranged in different ways, but what does never fit is the mobility by car. With all the space car parking lots take, nothing else could be there. Doing without them, there's space for more. And the campus becomes green when we make it usable.



The members of the university staff will have a catalogue of modules to choose what they can put in their old car parking. These modules can be combined to create spaces for enjoyment and leisure, as well as working areas and bike parking.

# The modules catalogue



CampUsable

...There's space for more.



## Bike parking spots

Parking for +/-100 bikes,  
would take 108 m<sup>2</sup>,  
which is only 9 car  
parking spots!



### Figures

Parking spaces: 2+

Social benefit: 25

Environmental benefit: 100

Compatibility: solar panels, sedum  
carpets, e-bike charging

## E-bike parking spots



For electrical bikes we  
would design a  
smaller parking space  
that would fit 20 bikes  
and a charger for  
each of them.

### Figures

Parking spaces: less than 1

Social benefit: 50

Environmental benefit: 50

Compatibility: bike parking



All of the roofs over parking space can be covered with solar panels or sedum carpets.



### Figures

Parking spaces: 0

Social benefit: 0

Environmental benefit: 100

Compatibility: bike parking,  
various buildings

Area of 100 m<sup>2</sup>  
gives us enough  
space for 62  
solar panels that  
would generate  
10kW of energy.

1 m<sup>2</sup> of sedum carpet  
reduces pollution by  
15-20%, as well as 7,3 kg  
of CO<sub>2</sub> a year and can  
store up to 150 l of rain  
water.



## Figures

Parking spaces: 3+

Social benefit: 75

Environmental benefit: 25

Compatibility: solar panels, sedum carpets,  
pollutant-absorbing paint

## Figures

Parking spaces: 1+

Social benefit: 100

Environmental benefit: 100

Compatibility: green area

*Reversible*

## Locker rooms + restrooms

A place where you  
can easily change  
and have a  
shower.



## Community vegetable garden



Make use of the  
plants' carbon sink  
effect and grow food for  
lunch breaks or locally  
sourced snacks.

## Bike repair

Bike repair shop and gardening utensils.



### Figures

Parking spaces: 1

Social benefit: 65

Environmental benefit: 35

Compatibility: bike parking

## Green area



You can relax in a completely green area covered with grass.

### Figures

Parking spaces: varies

Social benefit: 85

Environmental benefit: 100

Compatibility: various



## Figures

Parking spaces: less than 1

Social benefit: 25

Environmental benefit: 75

Compatibility: green area, benches

## Figures

Parking spaces: 1+

Social benefit: 100

Environmental benefit: 15

Compatibility: green area

Improve the area's aesthetics and invite staff to sit down during breaks. Store rainwater temporarily to use for irrigation and enjoy the cooling effect on the microclimate.

Fountain



Picnic area, benches



Spaces for eating your lunch surrounded by nature.



## Recreational area

Taking part in recreational activities, especially outdoors, can greatly improve physical and mental health.



### Figures

Parking spaces: 1+

Social benefit: 100

Environmental benefit: 15

Compatibility: outdoor gym

## Outdoor offices & Social area, covered



Spaces equipped with wired break tables and seats, with stone bases.

### Figures

Parking spaces: 2+

Social benefit: 100

Environmental benefit: 0

Compatibility: -



Figures

Parking spaces: less than 1  
Social benefit: 50  
Environmental benefit: 0  
Compatibility: solar panel

Public transport live timetable

Packaged service which uses live bus arrival data to display bus, metro and train stops on a map of the local area.



Figures

Parking spaces: less than 1  
Social benefit: 50  
Environmental benefit: 100  
Compatibility: various

Recycling area



Containers for plastic, glass, paper, but also harmful electro-waste.



## Kitchen



A kitchen that provides both a nice place for eating your lunch together with colleagues and the possibility to prepare a meal.

### Figures

Parking spaces: 3+

Social benefit: 100

Environmental benefit: 0

Compatibility: -

## Sports centers

An outdoor gym enables an easy and cheap work-out area right by your office.



### Figures

Parking spaces: 1

Social benefit: 100

Environmental benefit: 0

Compatibility: recreational area



## Figures

Parking spaces: 1

Social benefit: 100

Environmental benefit: 0

Compatibility: e-car

## Figures

Parking spaces: 1

Social benefit: 0

Environmental benefit: 50

Compatibility: disabled parking spots, carpool parking spot, family parking spots

## Disabled parking spots

Reserved parking area for people with disabilities.



## Electric car parking spot with chargers



Chargers could be powered by the solar panels installed on the roof.

## "Family" parking spots



Reserved parking spot for parents who must take their children to school.

### Figures

Parking spaces: 1

Social benefit: 50

Environmental benefit: 0

Compatibility: e-car

## Carpooling parking spot

Parking spots reserved for staff that carpool on a daily basis.



### Figures

Parking spaces: 1

Social benefit: 50

Environmental benefit: 50

Compatibility: e-car



# Survey

3. Which of these services for the staff would you like to find where your car park is?

[environmental rating; social rating] expressed in terms of benefit out of 100 from the current situation

not interested    little interested    interested

lockers and restrooms covered either with solar panels (green energy) or sedum carpets (carbon offset) [25; 75]

bike repair and storehouse for garden

1. Which of these alternative solution for the mobility of the staff would where your car park is?

[environmental rating; social rating] expressed in terms of benefit out the current situation

not interested    little interested    interested    very intere

disabled parking spots [0; 100]

permanent parking spots [0; 50]

carpooling and rotational parking spots [50; 50]

2. Which of these social areas for the staff would you like to find where your car park is?

[environmental rating; social rating] expressed in terms of benefit out of 100 from the current situation

not interested    little interested    interested    very interested    enthusiastic

community vegetable garden [100; 100]

fountain for cooling effects [75; 25]

1. Which of these alternative solution for the mobility of the staff would you like to find where your car park is?

[environmental rating; social rating] expressed in terms of benefit out of 100 from the current situation

not interested    little interested    interested    very interested    enthusiastic

disabled parking spots [0; 100]

permanent parking spots [0; 50]

carpooling and rotational parking spots [50; 50]

electric car parking with charging columns [50; 0]

bike parking spots covered either with solar panels (green energy) or sedum carpets (carbon offset) [10...

electric bike parking spots with charging columns [50; 50]





To realize the project, it is necessary to know the particular needs of the staff members. That's why we have developed a survey system that allows us to know their priorities, in this way the management board can decide what elements they want to have and how to distribute them.

This idea came from the first round of testing, when we gave our summer school's colleagues one parking spot each letting them giving it up and trading it to put the modules they wanted. However, this was a representation quite far from reality, involving too many decision makers.

# Test the solution

## First testing



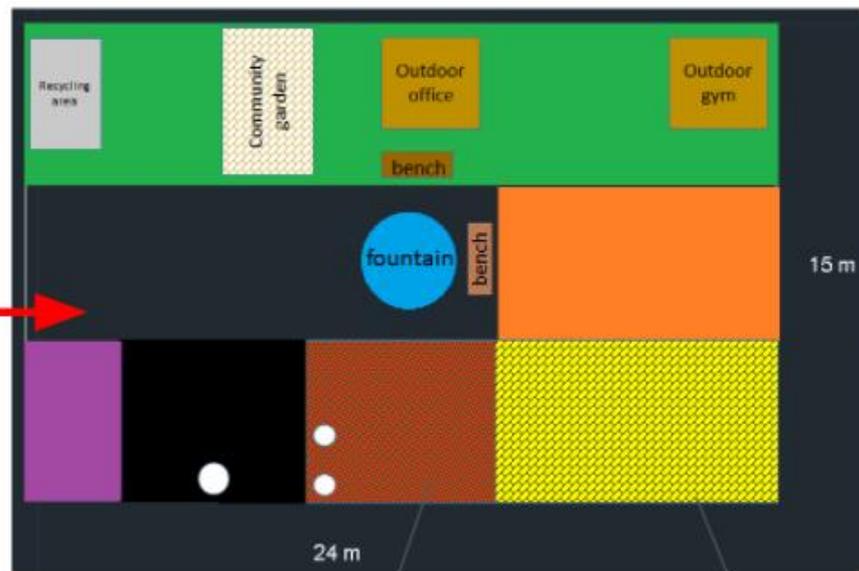
Module	Environmental ratings (0-100)	Cost of investment (€)	Value 1 (€)	Value 2 (€)	Value 3 (€)	Value 4 (€)	over 100
Disabled parking spots	+10	+100					
'Family' parking spots, permanent	+5	+50					
Carpooling parking restrictions	+30	+30					
Electric car parking spots with chargers, "solarless"	+30	+0					
Bike parking spots covered, solar panels	+100	+20					1
2 bike parking spots	+30	+10					
EV1: Locker rooms + restrooms (option A: green covered, option B: pollutant absorbing panels, solar panels or green roof, water collection basin)	+20	+70					2

## Second testing





# Module planning



Sedum carpets for bike parking

Lockers & restrooms with solar panels





We decided to do a very visual model approach and prepared some exemplary modules of the three different changes that can be made from parking spots. A visual model may be motivating and encouraging to get the project undertaken.

Firstly, we are showing one parking spot that combines a green space, a fountain and two benches to an inviting space for a lunch hangout. It shows the potential of a single parking spot being converted.



**fountain**



The second one is a larger module, a covered bike park, that replaces 3 cars with around 20 bikes and 8 e-bike loading stations. It shows how the demand for space for transportation and vehicles can be minimized and free up space for other social or environmental needs. The roof can be covered in solar panels e.g. for lighting and charging, or with a sedum carpet as a carbon offset and to improve air quality.



**bike park**



The third and last one shows a social area, namely a building unit for showers, restrooms and lockers. This possibility could be crucial to long-distance bikers or for staff with a formal dress code. Again, the module can be fitted with solar panels, the rain water from the roof can be collected for irrigation, and the walls be covered with e.g. ivy or bamboo or even a mural painted with pollutant-absorbing paint.



**showers  
lockers**



After seeing what difference seven parking spots may make, imagine what could be achieved with sixteen. There's space for more...



*THANK YOU for your attention!  
Take care of the climate!*



**MOVE**

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Summer School 2021  
**'GREEN CAMPUS'**  
WARSAW 2021



**CampUsable**

...There's space for more



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**Warsaw University  
of Technology**



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