

Design Challenges for Participation in Climate-Resilient City Making



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The Four Horsemen of Climate Change Endgame

- Interrelated shocks and stresses
- Increasing protracted crises
- **Living** in a state of permacrisis

FAMINE

EXTREME WEATHER

WAR

DISEASE

"Permacrisis" is a term that perfectly embodies the dizzying sense of lurching from one unprecedented event to another, as we wonder bleakly what new horrors might be around the corner.

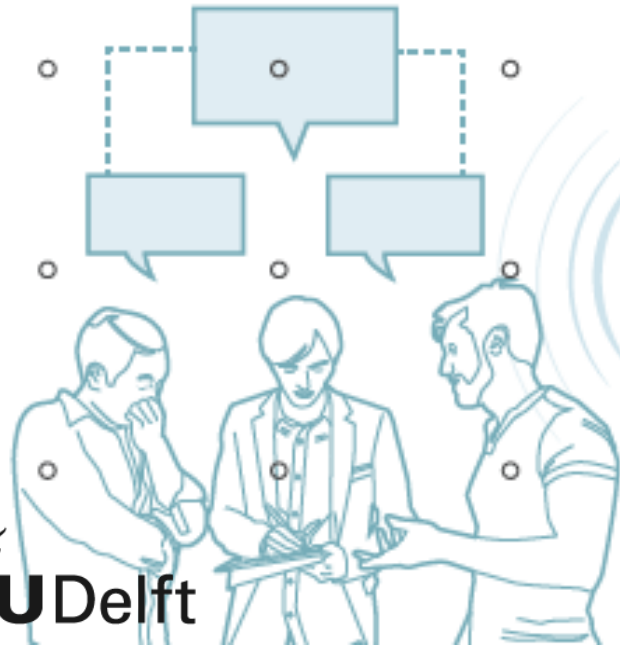


- 60% of urban space is privately owned
- Lack of spatial cohesion = lack social cohesion
- Lack of public engagement in policy making
- Behavioural change is needed, but also **co-creation** of the transition

Sharpening our tools for co-creating climate-resilient cities



01. _____ Awareness building
02. _____ Eliciting knowledge
03. _____ Representing behavior in models
04. _____ Engaging citizens in scenario building and evaluation



01. _____ Awareness building



Fig. Group 5 children playing the Circular Quartet game, December 2022.

Spelregels

Regel 1: Om de beurt, elke speler 2 kaarten pakken

Regel 2: Medespeler vragen naar een kaart van jouw kwartet

Regel 3: Heeft jouw medespeler wel dit kaart, mag je weer vragen?

Regel 4: Heeft jouw medespeler niet, mag je uit de pot pakken

 1. Klei 2. Gebouw constructie 3. Huis 4. Slopen	 1. Klei 2. Gebouw constructie 3. Huis 4. Slopen
 1. Klei 2. Gebouw constructie 3. Huis 4. Slopen	 1. Klei 2. Gebouw constructie 3. Huis 4. Slopen

Serious gaming

- Engaging and fun
- Upscaling to include carbon footprint of everyday consumption
- Learning goals are fixed

02. _____ Knowledge elicitation



Game adaptation

- Learning is open and bi-directional
- Learn about consumer values, acceptable alternatives, barriers to change

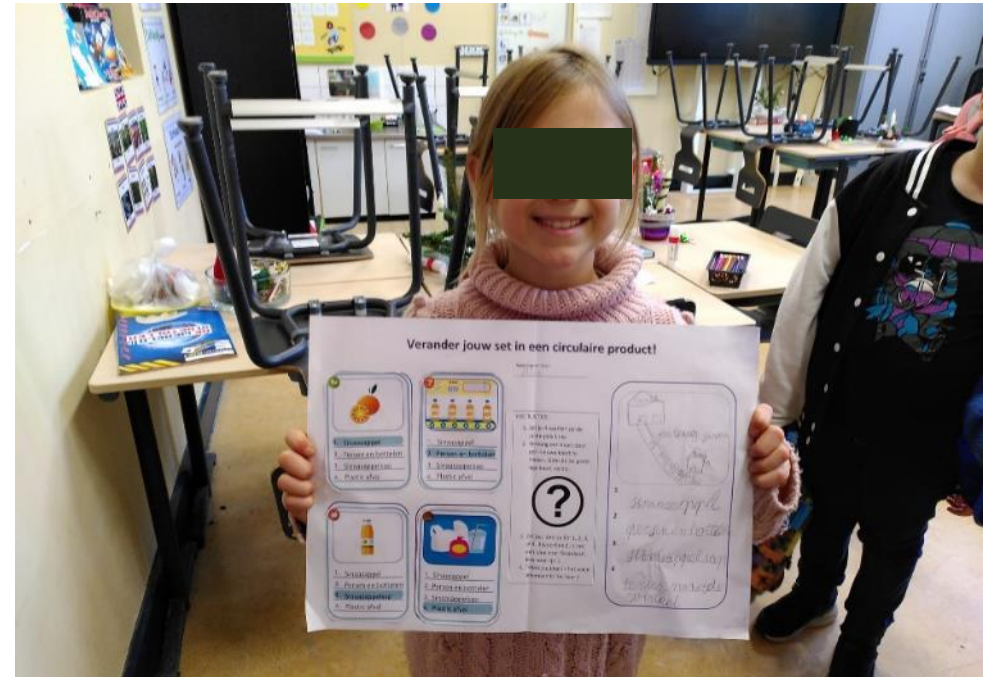


Fig. Student showing final result- from linear production to circular

Design Challenge 1- Scaling participation

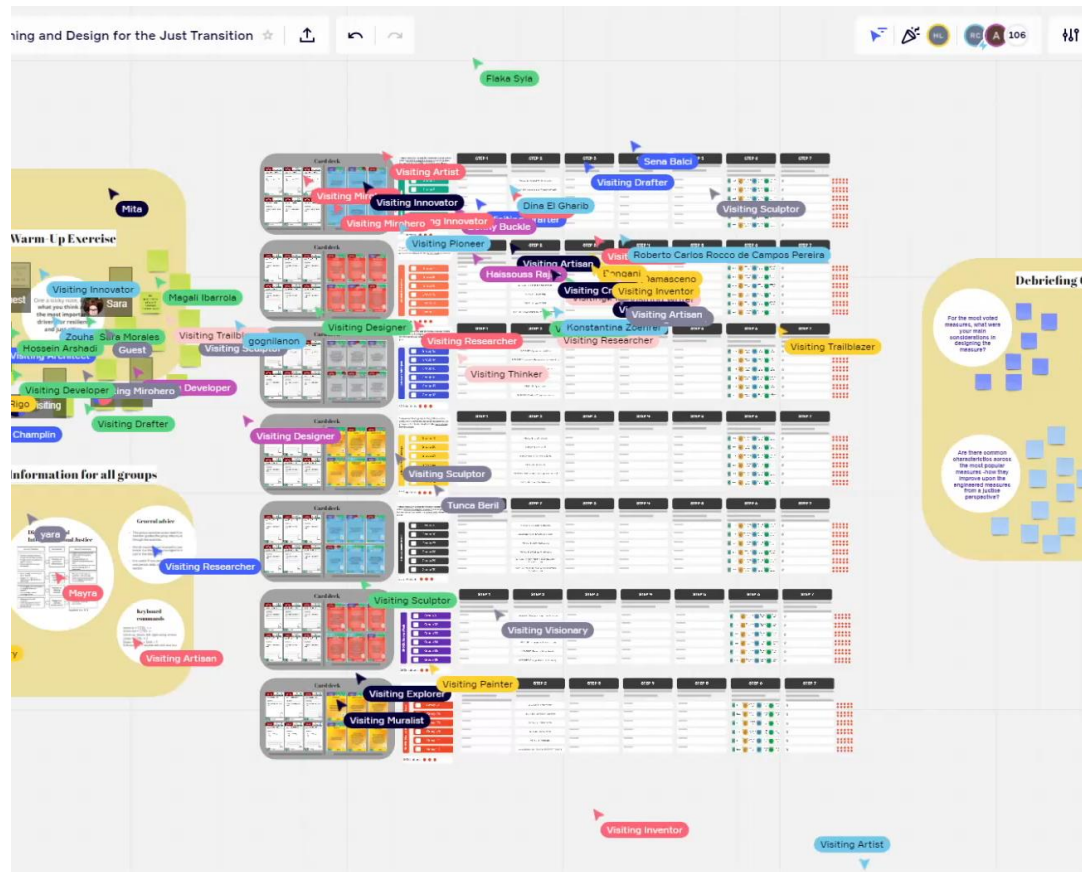


Fig. 166 students participating in 72 countries online during Autumn School Planning & Design for the Just Transition, November 2021.

Game adaptation

- Covid-19- crisis spurred innovation
- Including justice perspective in engineering resilience measures

To download RElastiCity game open source, click on view materials (yellow button)



Design Challenge 2- Co-creating models

03. _____ Representing behavior in models

Capturing behavioural change in time and space

- Re-thinking PPGIS for stated adaptation surveying
- Making our models more representative while safeguarding privacy



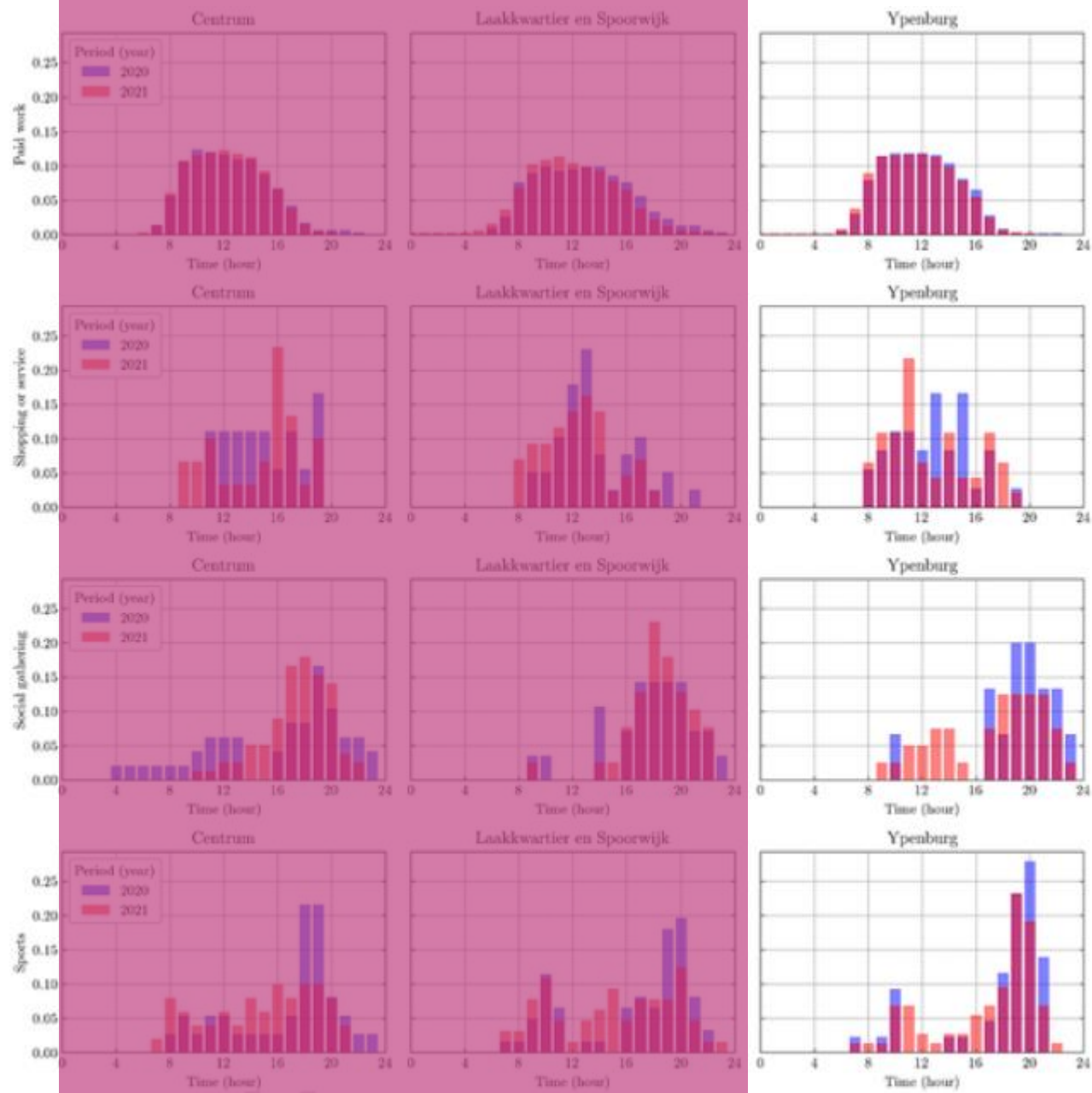
Measuring social resilience in cities: An exploratory spatio-temporal analysis of activity routines in urban spaces during Covid-19

Carissa Champlin ^{a*}, Mikhail Sirenko ^b, Tina Comes ^b



Map-based survey of activities during
Covid-19 third wave in The Hague

Fig.

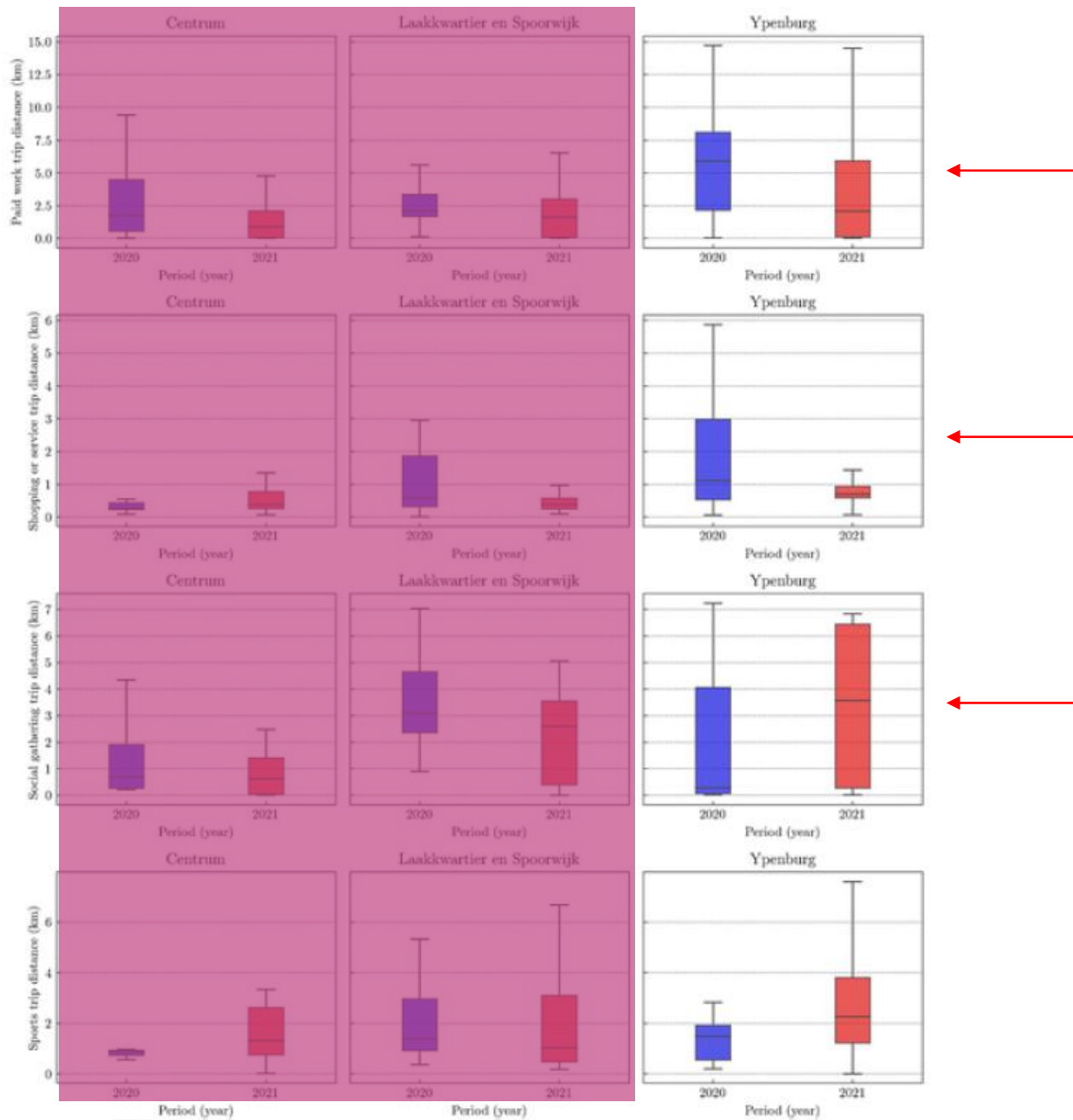


03. _____ Representing behavior in models

Case of Ypenburg

- Work times bounced back to normal
- New normal peak hour for shopping at 11am

Fig. 4. Average temporal weekday activity pattern - timing β . The x-axis represents time, an hour of the day, and the y-axis shows the % of people doing an activity at the given hour on an average over all week days.



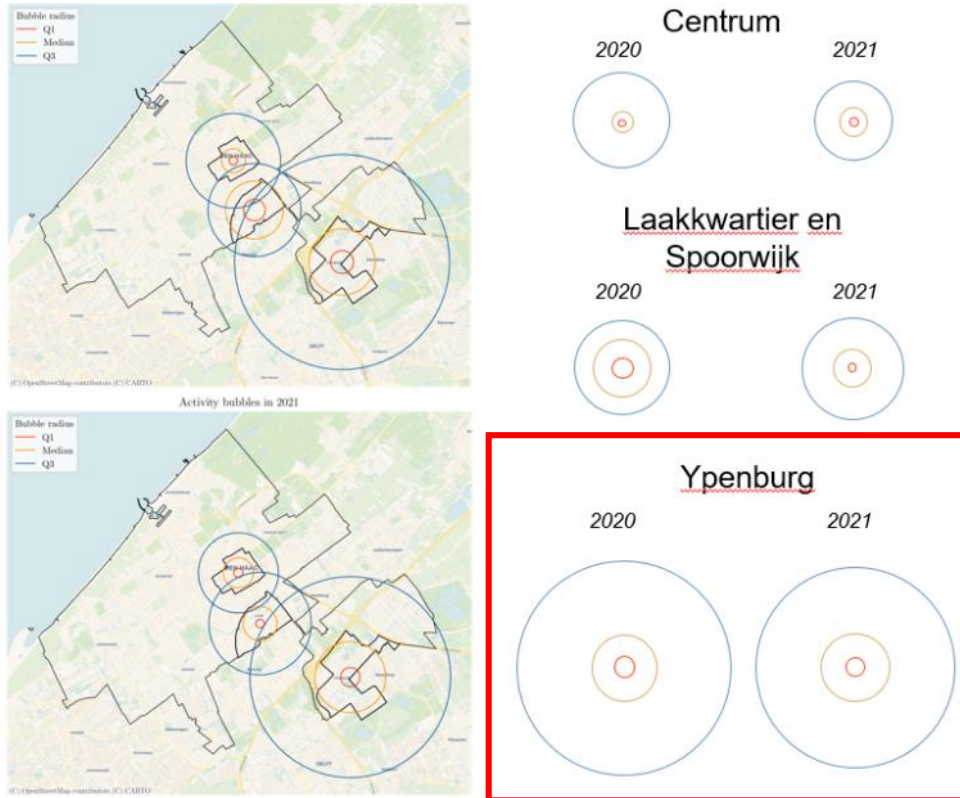
03. Representing behavior in models

Case of Ypenburg

- Decrease in median distance traveled to work
- Decrease in median distance traveled to shopping
- Increase in median distance traveled for social gathering

Fig. 6. Travel distances δ . Haversine distances between residents' homes and destinations by activity category. The colour of the boxplots represents the period: pre-pandemic 2020 or pandemic 2021.

03. _____ Representing behavior in models



Case of Ypenburg

- Not a huge drop in Q3 average distance radius – why?
- Covid-19 accelerating transition towards 15-minute city
- Travel time savings undermine this transition
- Higher risk of infection in suburban districts

Table 4
E radius of activity bubbles for the case districts.

		Centrum	Laakkwartier en Spoorwijk	Ypenburg
2020	Q1	0.3	0.7	0.7
	Median	0.8	1.9	2.2
	Q3	3.1	3.0	7.0
2021	Q1	0.3	0.3	0.6
	Median	1.0	1.1	2.2
	Q3	2.5	3.2	6.4

“Transitions to a 15-minute city, perhaps accelerated by the pandemic, must be carried out with a deep understanding of citizen behaviour” – from article



Design Challenge 3- Co-creating environments for distributed digital participation



Fig. Connected Urban Twins created by City Science Lab, Hagencycity University

04. — Engagement in scenario
building and evaluation

Distributed digital participation

- Bringing scenario building to your home or phone
- Co-creating city models
- Collaboration with City Science Lab

04. _____ Engagement in scenario
building and evaluation



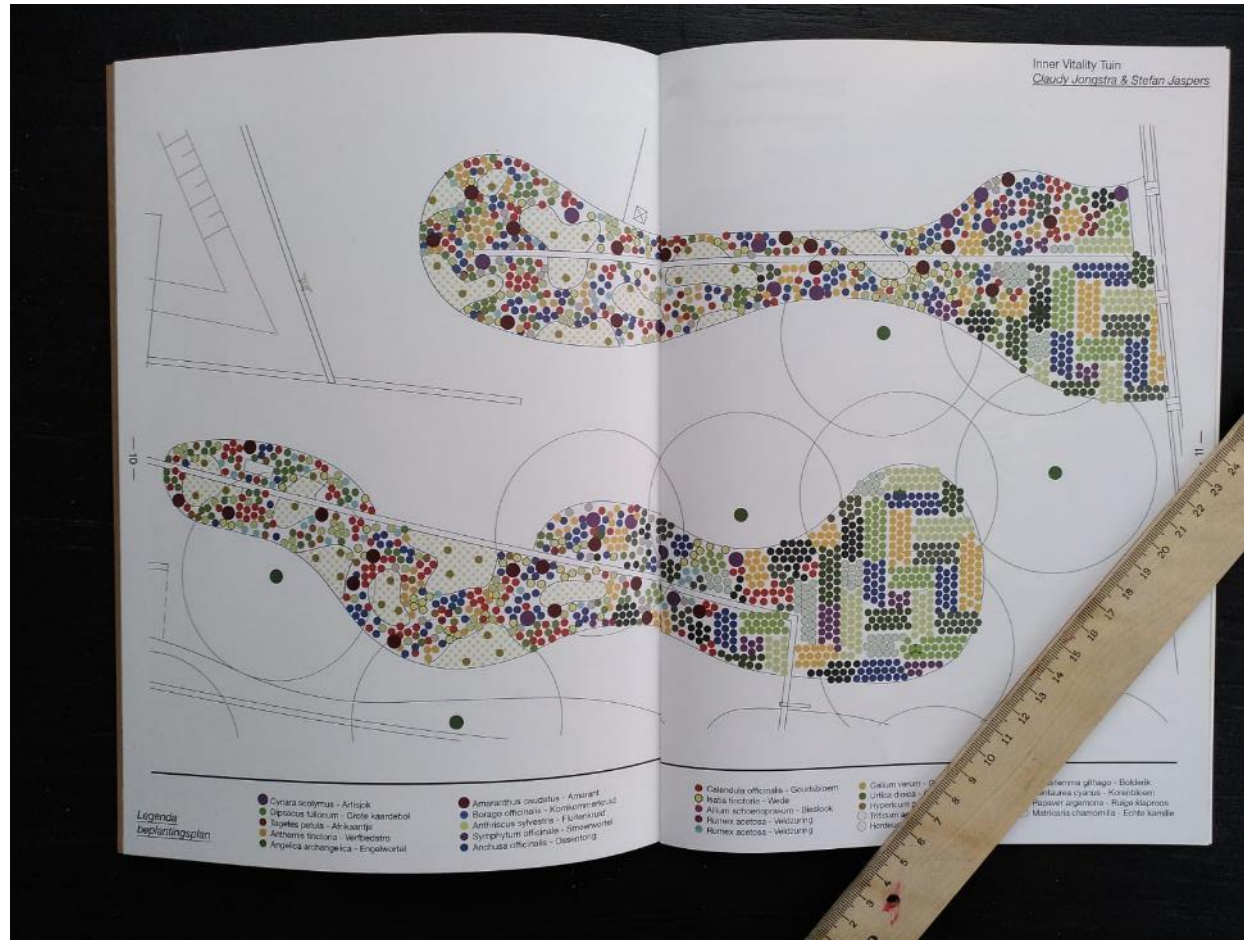
**Co-designing
green-blue
interventions in our
cities and
neighborhoods**

How to represent space for planners?



Fig. <https://www.architectdirect.nl/algemeen/wat-is-een-bestemmingsplan/>

How to represent space for landscape architect?



How to represent space for ecologist?

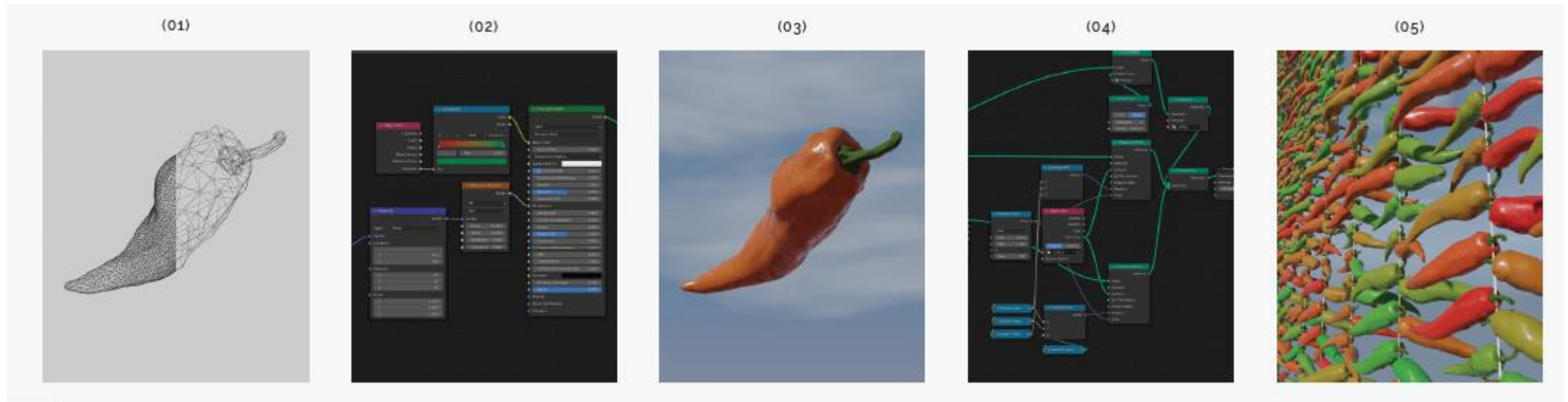


Fig. Sim-TAX Research into simulation of Taxonomy of plans using 3D Modelling and parametric software for connected garden



How to represent space for civil engineer?



Fig. <https://www.kabelenleidingoverleg.nl/nieuwsberichten/consultatie-informatiemodel-kabels-en-leidingen/>

04. _____ Engagement in scenario
building and evaluation

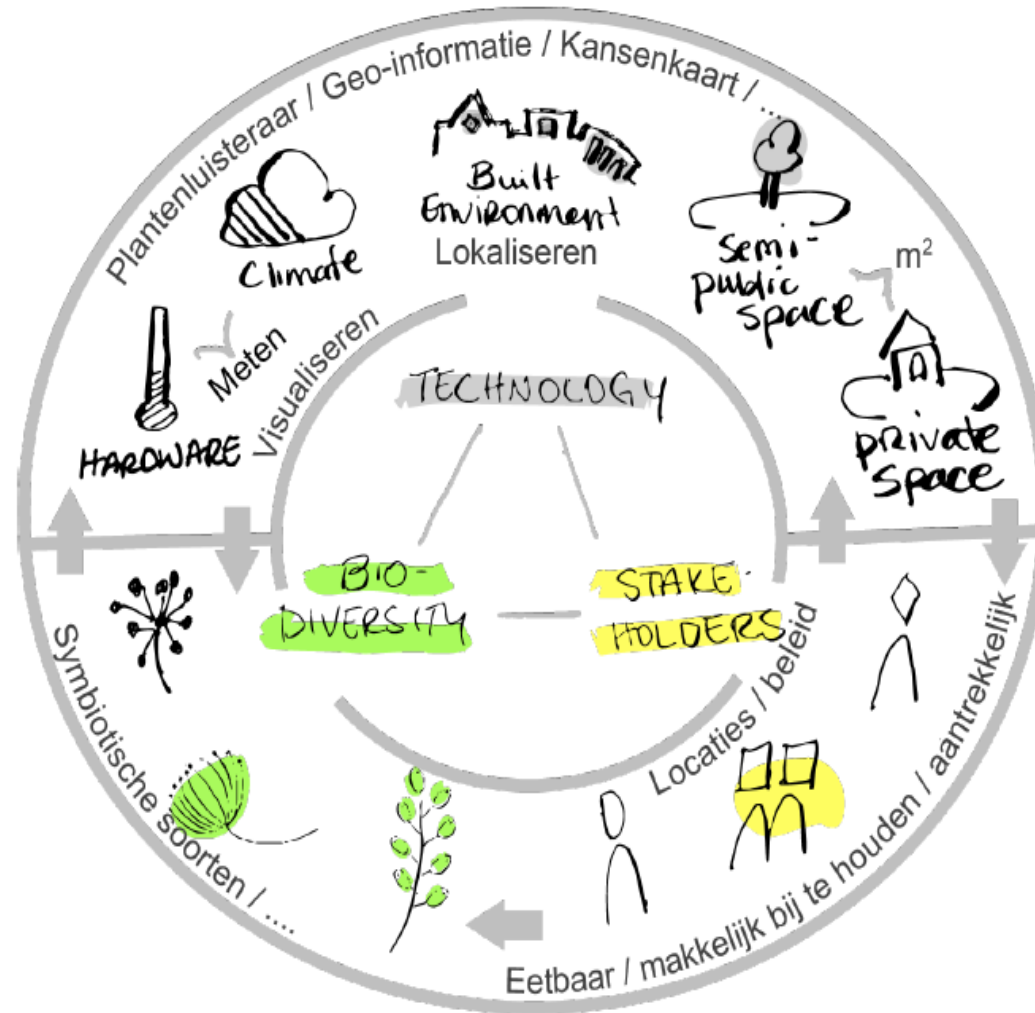
How to represent space for citizens?





*How are we studying
these design challenges?*

RAAK-PRO project proposal: Neighborhood as Biotope



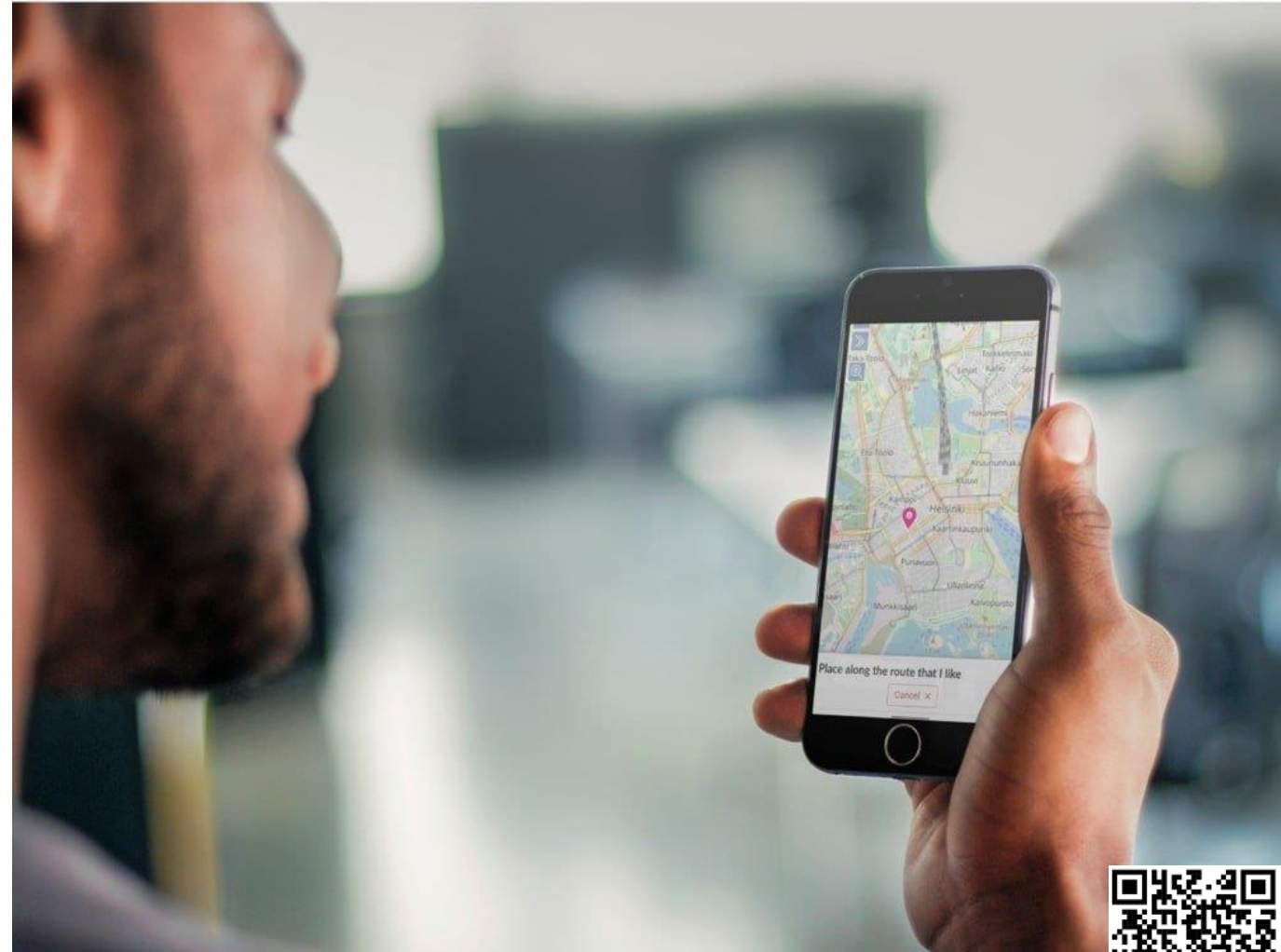
Partners:

- Hogeschool Rotterdam
- Delft University of Technology
- City of Rotterdam
- City of Den Haag
- South Holland Province
- Stichting Mathenesse aan de Maas
- Stichting I'M BINCK
- Bioto
- Powerboat
- PuurPxl
- Tygron
- Heijmans Vastgoed B.V.

PPGIS tool design

- Citizen Voice User Stories, led by Juliana Goncalves
- Collaboration with City Science Lab, HafenCity U. and CUSP (TPM)
- PhD Position: Distributed Participation for Climate-Resilient City Making

View vacancy:



Maptionnaire.com

Understanding Emergent Behaviour in the Energy Transition



TOPSECTOR ENERGIE
Innovatie voor een duurzame toekomst

Zoeken

Of zoek een project in de projectendatabase

Home

Missies

Topsector algemeen

TKI Wind op Zee

TKI Urban Energy

TKI Nieuw Gas

TKI Energie & Industrie

TKI Biobased Economy

TOPSECTOR ENERGIE

De Topsector Energie is de drijvende kracht achter innovaties die nodig zijn voor de transitie naar een betaalbaar, betrouwbaar en duurzaam energiesysteem. De missies voor energietransitie en duurzaamheid bepalen de prioriteiten van de Topsector Energie.



Amplifying Weak Signals (AWeS)

- Engaging peripheral actors
- Actors, knowledge types and instruments as building blocks

Research collaboration with Claudiu Forgaci, and student assistants Ruta Vittkute, Ann Eapen & Janne Groot



Selection of AWeS methodology building blocks

Fig. 5

In conclusion

- Our crises are increasingly intersecting yet our society and urban space has never been so fragmented
- Digital technologies can **scale** participation, but require contextualization & integration with low-/no-tech methods
- We need new methods of engaging citizens in **co-creating** climate-resilient cities
- Citizens should be involved in the **co-creation** of these tools, models and methods



Thank you!