

# Hyper local citizen engagement



**Paul Biedermann**  
PhD • Independent Civic Tech  
Partnerships & Growth Lead  
[paul@citizendialogkit.com](mailto:paul@citizendialogkit.com) | <http://citizendialogkit.com>



**Od planiranja do prakse:  
mobilnost, javni prostori i glas građana**  
**Varaždin 10. - 11. 6. 2026.**

# Challenges of Citizen Engagement

Civic engagement is now expected and increasingly legally mandated <sup>1,2</sup>

→ **But how do you get quality data from an increasingly diverse population?**

→ **How do you engage people beyond your existing communication channels?**

[1] Vlaams Parlement. 2018. Decreet over het lokaal bestuur.

[2] Schiltz et al. 2018. Resolutie betreffende burgerparticipatie. <https://www.vlaamsparlement.be/parlementaire-documenten/parlementaire-initiatieven/1233484>



# Poor Citizen Engagement

The cost of bad citizen engagement is huge.

- **Backlash [1]**
- **Reverting decisions is costly [6]**
- **Loss of trust [2,3-5]**

[1] Good Move Chaos in Schaerbeek, The Brussels Times, 27/06/24

[2] Gemeente- Stadsmonitor, <https://gemeente-stadsmonitor.vlaanderen.be>

[3] Heistenaars minder tevreden over participatie volgens gemeentemonitor. GVA, 26/01/24

[4] Nergens voelen mensen zich zo onveilig als in Turnhout. De Standaard. 20/02/24

[5] Hoe laat uw burgemeester uw gemeente achter? De Standaard. 19/02/24

[6] Pas vernieuwde Marktplein van Harelbeke heringericht tot markttuin. vrt nws. 16/06/24.



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# Common methods

Current citizen engagement methods present serious barriers for many people.

## **Preference bias**

Only people who have a vested interest engage.

## **Availability bias**

Only people with time and resources can engage.

## **Social bias**

Only people with social and language skills can engage.

## **Disconnected from context**

At home and removed from real setting.

## **Restricted in time**

Only a snapshot at one particular moment.

# Urban and Civic Interaction Design

Engaging people where they are, in the relevant context, yet using the possibilities of emerging technologies for civic life.

## Urban

Situated in the city or public spaces. Architectural dimension.

## Interaction Design

Human(-computer) interaction, technology and design.

## Civic

“Strive towards collective well-being” (M. de Waal).

- [1] M. Brynskov et al. Making, City. "Urban Interaction Design Towards City Making." (2014).
- [2] Claes S., Coenen, J., and Vande Moere, A. 2018. Conveying a Civic Issue Through Data via Spatially Distributed Public Visualization and Polling Displays. In Proceedings of NordiCHI '18.
- [3] Wouters, N., Huyghe, J., and Vande Moere, A.. "StreetTalk: participative design of situated public displays for urban neighborhood interaction." Proceedings of NordiCHI'14.



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**KU LEUVEN**



**LUCA**  
SCHOOL  
OF  
ADTS

# Emerging Technologies

open data

digital fabrication

Robotics

virtual /augmented reality

tangible interfaces

interactive displays



community

action research

building

empowerment

city

participation

## Space

## Design

neighbourhood

user-centered design

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# Media architecture context



[1] Billboards in New York in late 1800's.

# Media architecture context



[1] Centre Pompidou. Richard Rogers, Renzo



[2]. Galleria Centecity - UNStudio.

# Towards a human and neighbourhood scale



[1] Fietsenteller in Hasselt. Foto doot Kris Van de Sande. <https://belgischeradiounie.net/>.

[2] Thomas More + Rurant: Olen verwelkomt sprekende zitbank met AI, vrt, Johanna Van Doninck. Juli 2025. <https://www.vrt.be/vrtnws/nl/2025/07/09/frank-de-bank-olen-rurant-ai-technologie-thomas-more/>

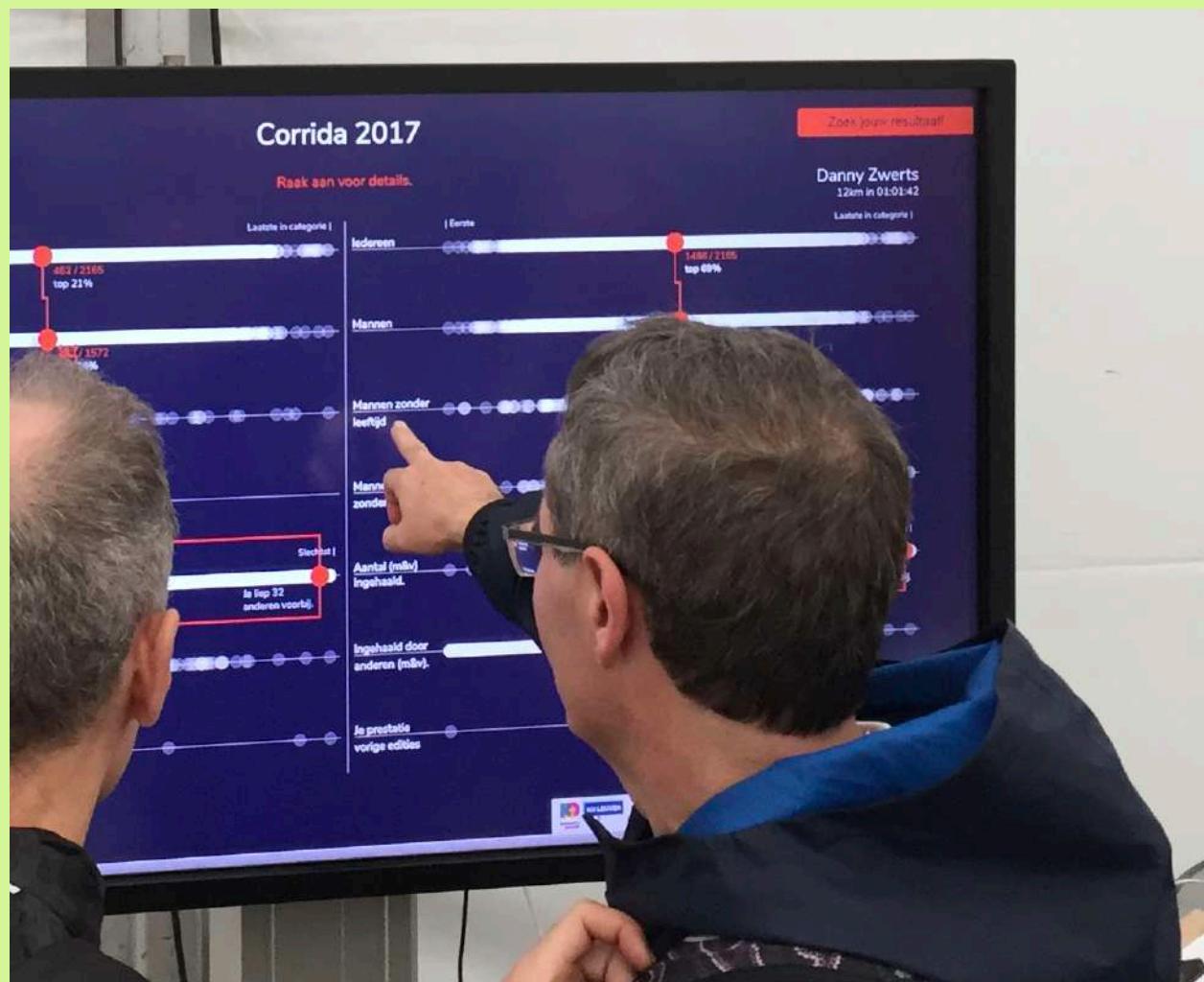
# To data exists in-situ.



[1] Lisa Koeman, Vaiva Kalnikait and Yvonne Rogers. 2015. "Everyone Is Talking About It!": A Distributed Approach to Urban Voting Technology and Visualisations. CHI'15.

[2] Claes S., Vande Moere A. (2017). What Public Visualization Can Learn from Street Art. Leonardo - Art, Science and Technology, 50 (1), 90-91.

# Using a wide range of media and technologies.



[1] Coenen, J. and Vande Moere, A. (2021), Public Data Visualization: Analyzing Local Running Statistics on Situated Displays. Computer Graphics Forum, 40: 159-171. <https://doi.org/10.1111/cgf.14297>

[2] Claes, Sandy, Karin Slegers, and Andrew Vande Moere. "The bicycle barometer: design and evaluation of cyclist-specific interaction for a public display." Proceedings of the 2016 CHI Conference on Human Factors in Computing Systems. 2016

[3] Coenen, Jorgos, Sandy Claes, and Andrew Vande Moere. "The concurrent use of touch and mid-air gestures or floor mat interaction on a public display." Proceedings of the 6th ACM International Symposium on Pervasive Displays. 2017

# To communicate information, gather or both ...



[1] Vande Moere, A., Tomitsch, M., Hoinkis, M., Trefz, E., Johansen, S., Jones, A. (2011). Comparative Feedback in the Street: Exposing Residential Energy Consumption on House Façades. In: Campos, P., Graham, N., Jorge, J., Nunes, N., Palanque, P., Winckler, M. (eds) Human-Computer Interaction – INTERACT 2011.

[2] Biedermann, P., Coenen, J., De Roeck, D. and Vande Moere, A., 2023, July. PosterTalk: Expanding participatory agency in public survey platforms via middle-out gatekeeping. In Proceedings of the 2023 ACM Designing Interactive Systems Conference (pp. 2573-2592).

[3] Jorgos Coenen, Paul Biedermann, Sandy Claes, and Andrew Vande Moere. 2021. The Stakeholder Perspective on Using Public Polling Displays for Civic Engagement. In Proceedings of the 10th International Conference on Communities & Technologies - Wicked Problems in the Age of Tech (C&T '21).

# DATA ON SITE



-1352 verhouding  
wooningparkings  
en woningen

By van stad Antwerpen 2016

nieuwe data...

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Wat vind je van de  
verkeersdrukke hier?

Geef  
uw  
mening

Kom morgen terug voor resultaten



**1 AIR QUALITY & GREEN**  
Green areas (from 1 tree to a green area) filter the polluted air

**2 UNHEALTHY (>25PM)**

MONDAY TODAY

**3 Green area per inhabitant**  
m<sup>2</sup> inhabitant

neighborhood 25 **157** city of A

Source: city of A

**Green area**

- woongebied
- bedrijven
- groen en recreatie
- landbouwgebied
- infrastructuurontginning

**4 Results of yesterday**

Do we need more green?

**5 DO WE NEED MORE GREEN?**

# CITIZEN DIALOGUE KIT

## 1/ Hardware

- Off-the-shelf components
- Enclosure design

## 2/ Software

- Custom firmware, back-end and CMS

## 3/ Methodology

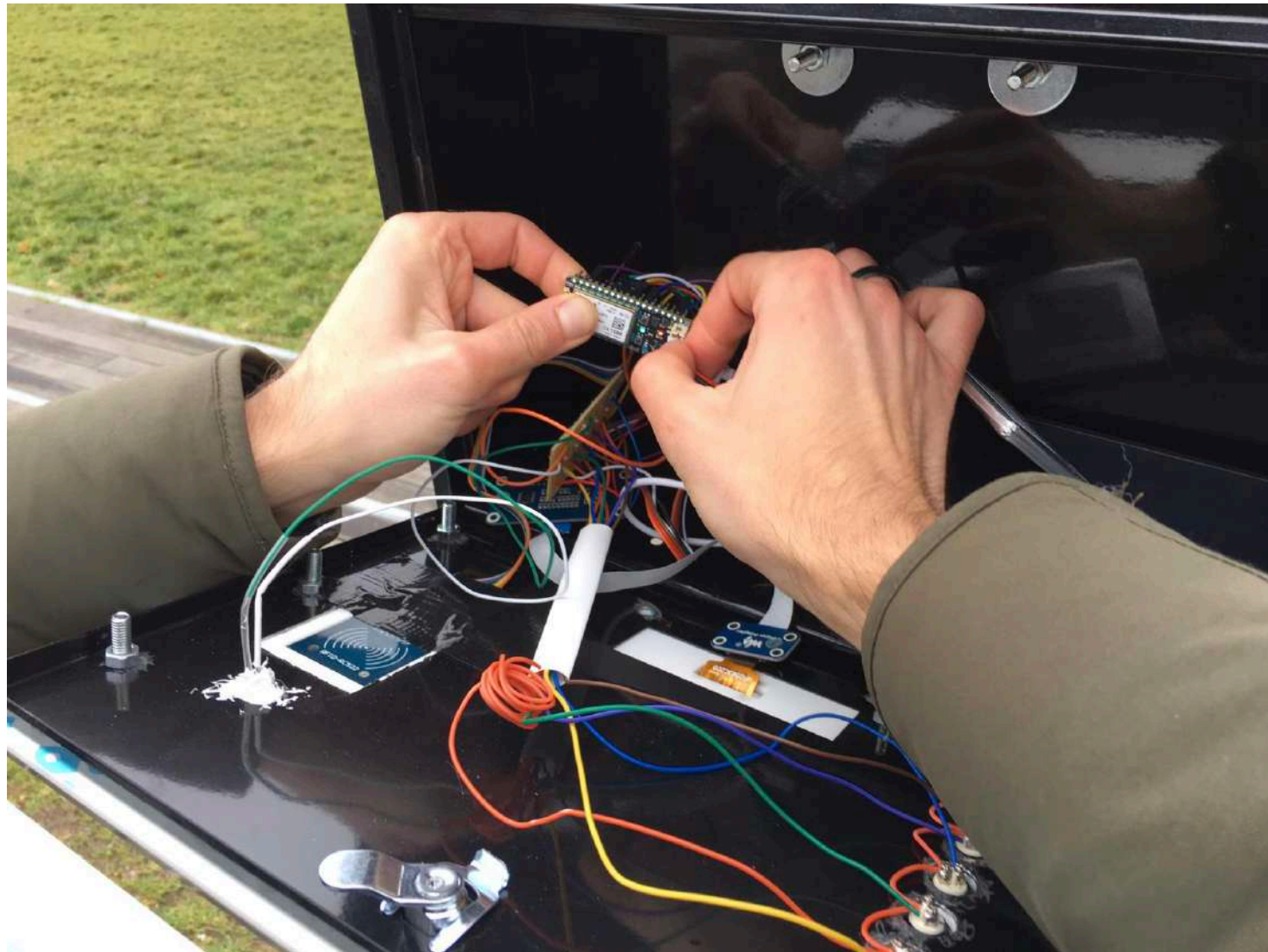
- Workshops for concept and narrative development





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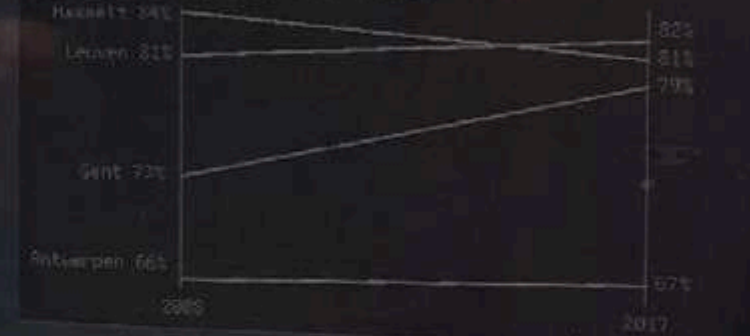


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Maak jij gebruik van sport- en recreatievoorzieningen?

Evolutie van tevorenheid over sport- en recreatievoorzieningen van 2005 naar 2017. (stadsmonte.be)



Druk om te antwoorden. Even geduld.

- Wekelijks
- Maandelijks
- Half-jaarlijks
- Minder dan jaarlijks
- Noot

Jorgos Coenen, Maarten Houben, and Andrew Vande Moere. 2019. Citizen Dialogue Kit: Public Polling and Data Visualization Displays for Bottom-Up Citizen Participation. In DIS '19 Companion.



VLAAMS-  
BRABANT



Den Haag



leuven

gemeente ALKMAAR

DÜSSELDORF  
Marketing



Visit  
Hasselt

Porto.

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# CDK Displays

## Readable

Also in direct sunlight

Always on with e-paper screen

## Easy to install

No connection to local infrastructure

Monitor and manage remotely through IoT

## Ultra energy efficient

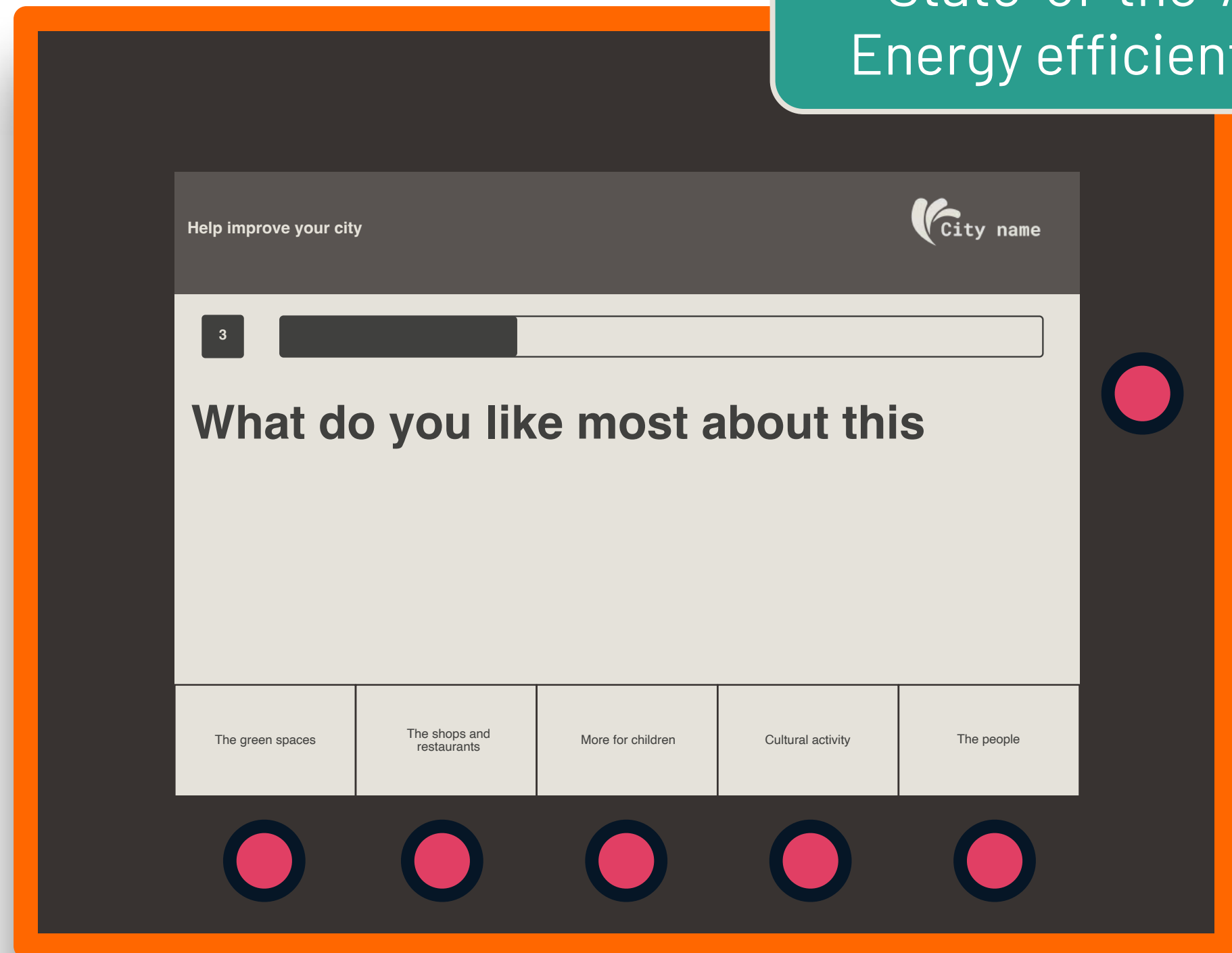
Works for months on battery

No maintenance

## Extensible

Connect through API

State-of-the-Art  
Energy efficient IoT



citizen dialog kit

Your displays

Add Display

Tagged: group2

**Huishoudelijke verwarming is een grote bron van fijnstof (PM10).**

Aandeel in fijnstof voor huishoudelijke verwarming.

Gas	1%
Olief	2%
Steenkool	10%
Hout	87%

Source: Klaaske Miller (MeteoWatch)

**Rood-DoS1**

- 2018-04-13 at 02:00:37
- Black-White-Red
- group2

Display Info Plan Content

**Had je dit verwacht?**

Luchtvervuiling kan op verrassende manieren gemeten worden. Hier zie je PM2.5 deeltjes (fijn stof, rook...) gemeten in de Schapenstraat (µg/m³).

Source: Luchtmet.nl

**Interactief**

- 2018-04-14 at 06:55:13
- Black-White
- group2, group3

Display Info Plan Content

**HOE WIL JIJ HELPEN?**

REAGEREN

- Veel beter verwacht
- Beter verwacht
- Slechter verwacht
- Ongeveer verwacht
- Geen verwachting

**Demo-Yellow-1**

- 2018-04-14 at 07:47:53
- Black-White-Yellow
- group2

Display Info Plan Content

# The Team

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**dr. Jorgos Coenen - CEO**

**Focus:**

Sales, facilitation and design  
Research & Development  
Front-end development



**Jef Van den broeck - CTO**

**Focus:**

Low-power electronics  
Embedded systems engineer  
IoT systems



**Ennio Pillecyn - COO**

**Focus:**

IoT and server communication  
Embedded systems engineer  
Finance and business processes



**dr. Paul Biedermann  
Gregory Denis**

**Focus:**

Participation design  
New project development



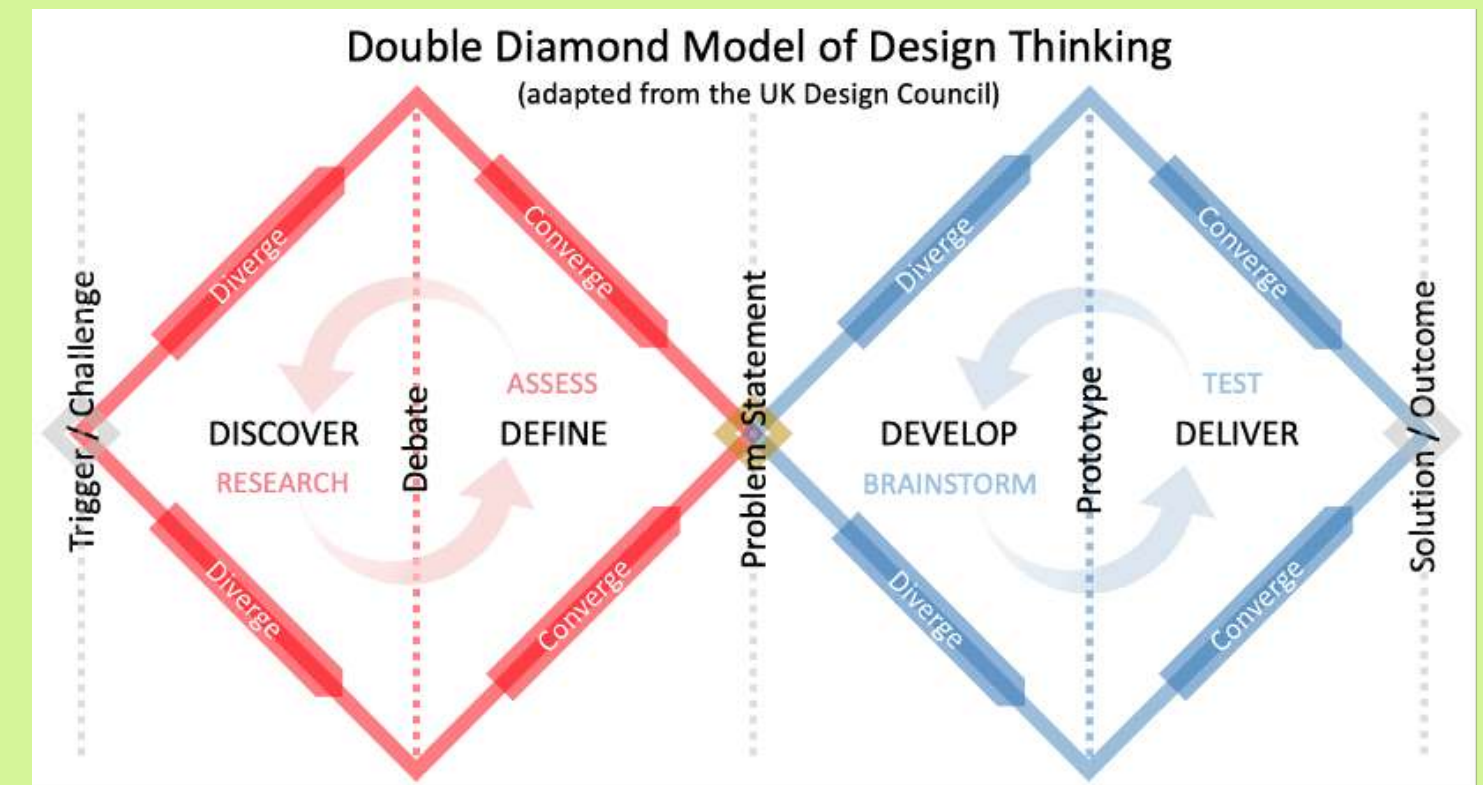
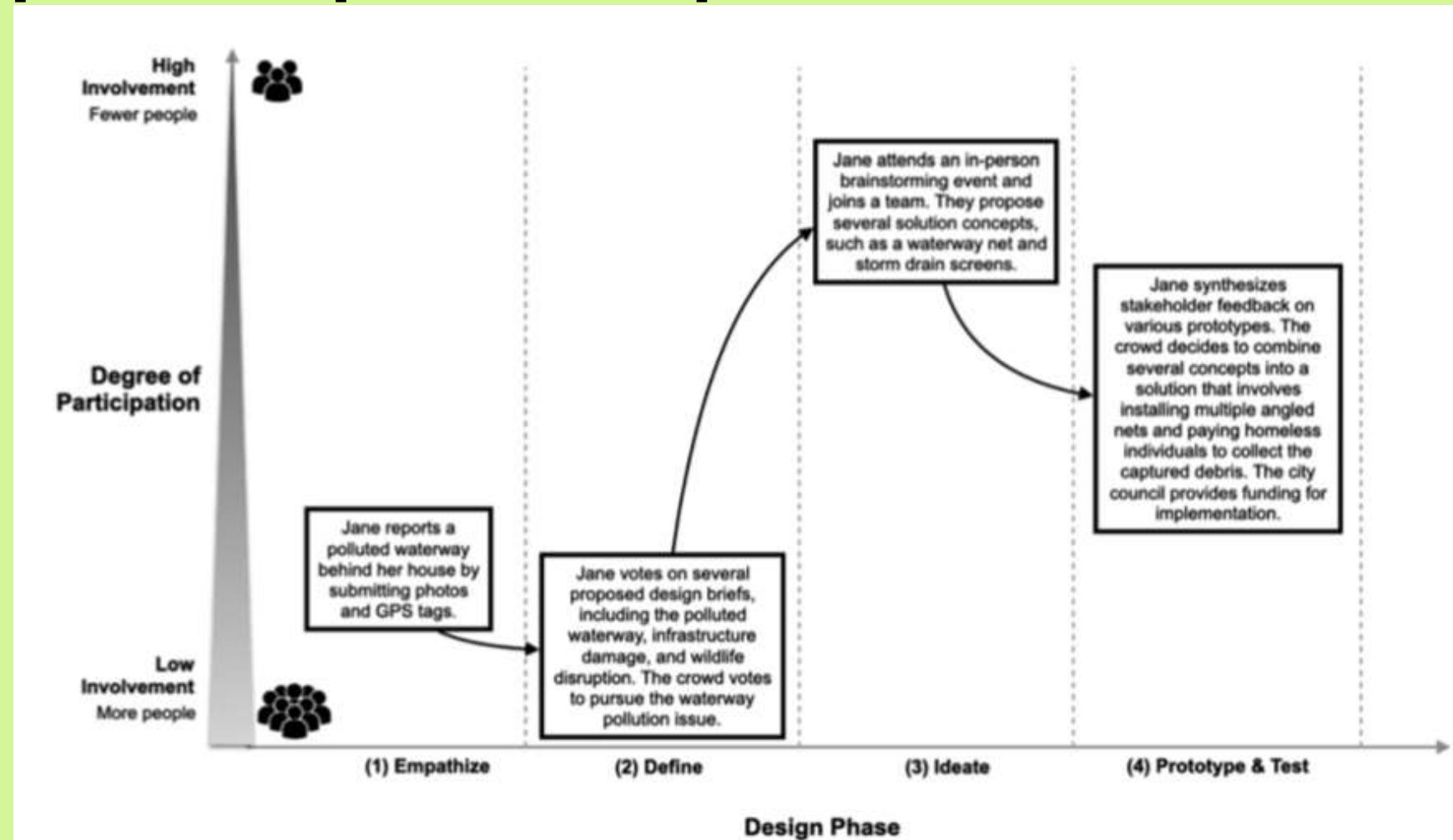
**prof. Andrew Vande Moere  
prof. Sandy Claes**

**Focus:**

Research & Development  
Participation methodology  
Business strategy



# Relevance at different stages of the participation process



[1] Reynante et al. 2021. A Framework for Open Civic Design: Integrating Public Participation, Crowdsourcing, and Design Thinking. Digit. Gov.: Res. Pract. 2, 4. <https://doi.org/10.1145/3487607>

[2] The Design Council. The Double Diamond: A universally accepted depiction of the design process. <https://www.designcouncil.org.uk/our-resources/the-double-diamond/>

# Evaluating temporary mobility changes on-site

Two proposed mobility changes were evaluated on-site using CDK survey devices. We collected the opinions of the actual passers-by, including cyclists, pedestrians and neighbours. A collaboration with Mobiel21.

**406** participants in **23** days.

**2x** participants of the concurrent online survey

**20%** are younger than **25** years old

Only **1%** in the online survey

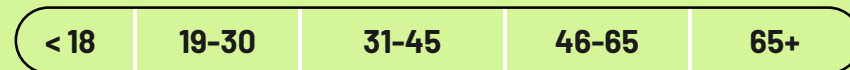
**62 %** believe the changes improve safety

Locals did not like one-way traffic.



# Ages of participants compared

In **Genk** (BE), on the topic of sports, with the Dialog Box placed in central locations, the distribution is very even.



**90** participants  
**20** older than 65

In **Wiesbaden** (DE), on the topic of cemetery planning, with the Dialog Box placed at that location: **43% of respondents are over 65.**



65+

**139** participants  
**71** older than 65

In **Bruges**, with the Dialog Box placed near a skatepark and a playground: nearly **58% of respondents are under 18.**



< 18

**353** participants  
**208** younger than 18

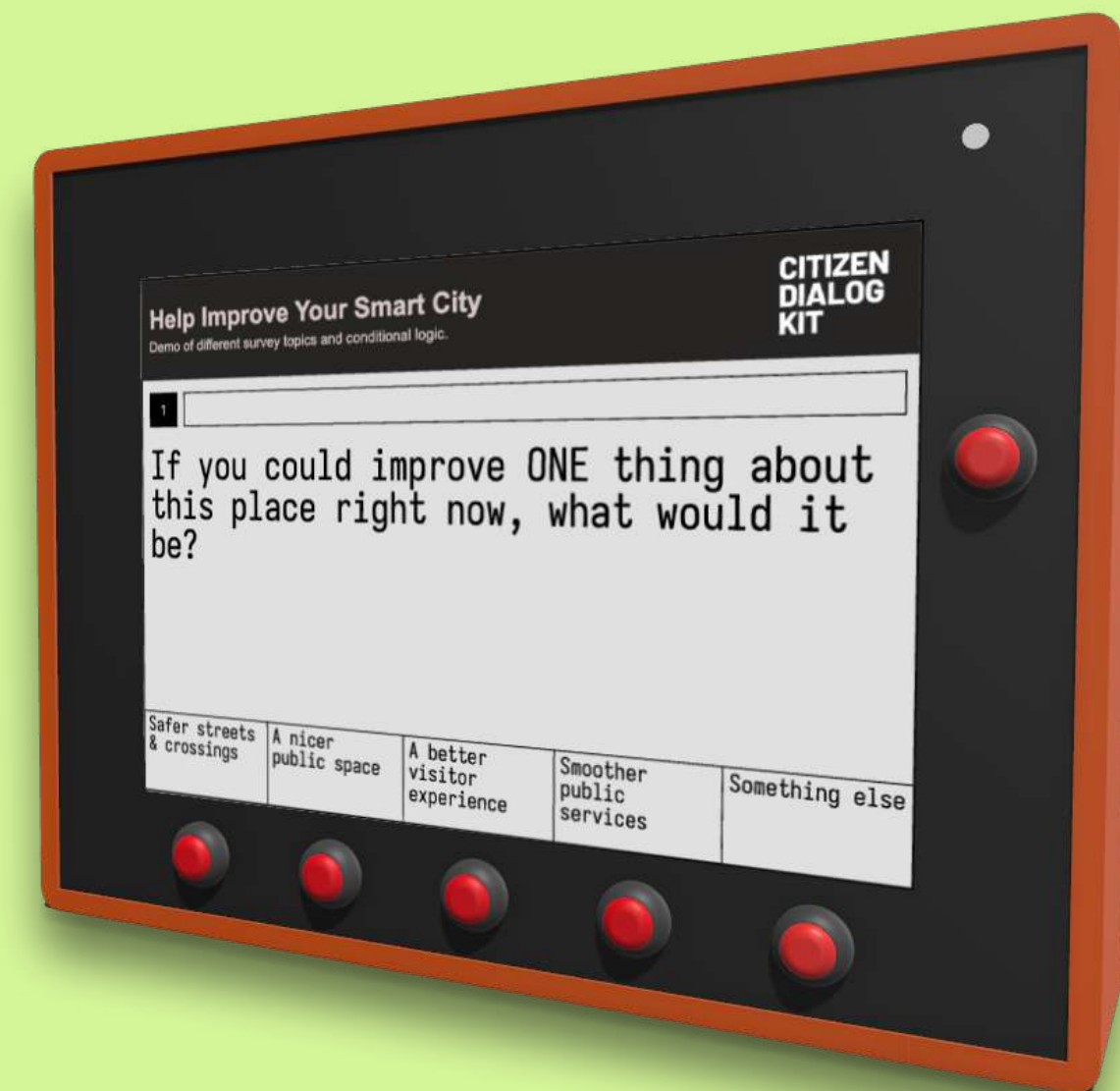
# Future Works

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**Quantitative + Qualitative**



# 8 practical do's and don'ts from research and practice

# 1. Situate the installation in the relevant context.

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## Context promotes relevance and motivation

- 2x – 8x more submissions on-site vs. online [1,2]
- More young people, particularly when targeting relevant locations

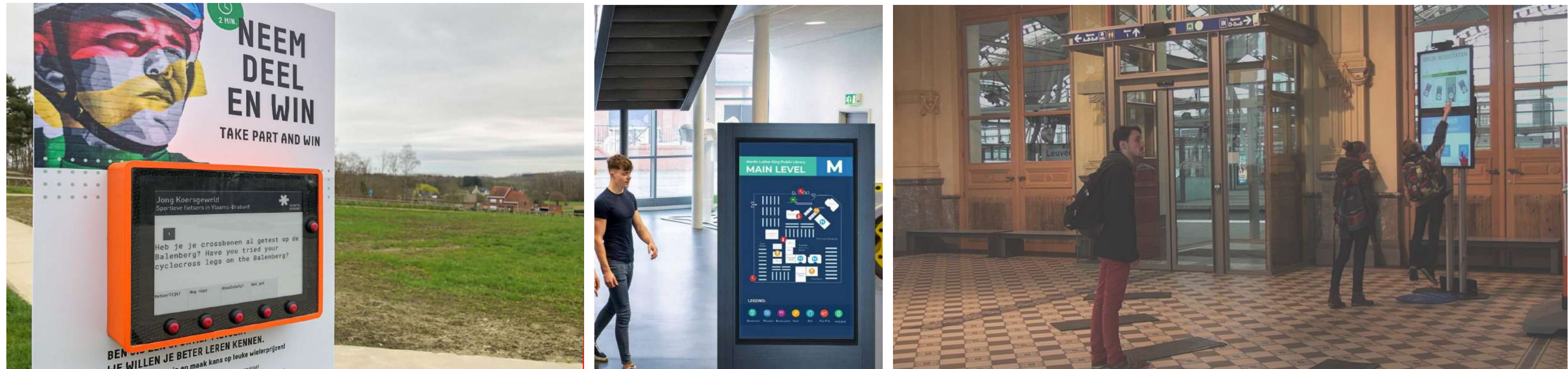
[1] Coenen et al. 2021. The Stakeholder Perspective on Using Public Polling Displays for Civic Engagement. In Proceedings of the 10th International Conference on Communities and Technologies (C&T'21). <https://doi.org/10.1145/3461564.3461585>  
 [2] Goncalves et al. 2014. Eliciting situated feedback: A comparison of paper, web forms and public displays. Displays 35, 1: 27–37. <https://doi.org/10.1016/j.displa.2013.12.002>



## 2. Make it extremely obvious how to interact

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- Prevent interaction blindness [1]
- Stick to one interaction modality, especially when not facilitated [2]

[1] Müller et al. 2009. Display Blindness: The Effect of Expectations on Attention towards Digital Signage. In Pervasive Computing, 1–8.

[2] Ojala et al. 2012. Multipurpose Interactive Public Displays in the Wild: Three Years Later. Computer 45, 5: 42–49;

### 3. Use the temporary quality of actions and experiment with materiality

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→ Temporary nature and material choices impact engagement [1]

[1] Claes, Slegers & Vande Moere 2016 (CHI)



# 4. Be mindful of hyperlocal effects

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- Potential for hyperlocal insights and effects on results [1]
- Location implies authorship and impacts perception of information and motivation

[1] Coenen et al. 2019 (PerDis); Claes et al. 2018 (NordiCHI)



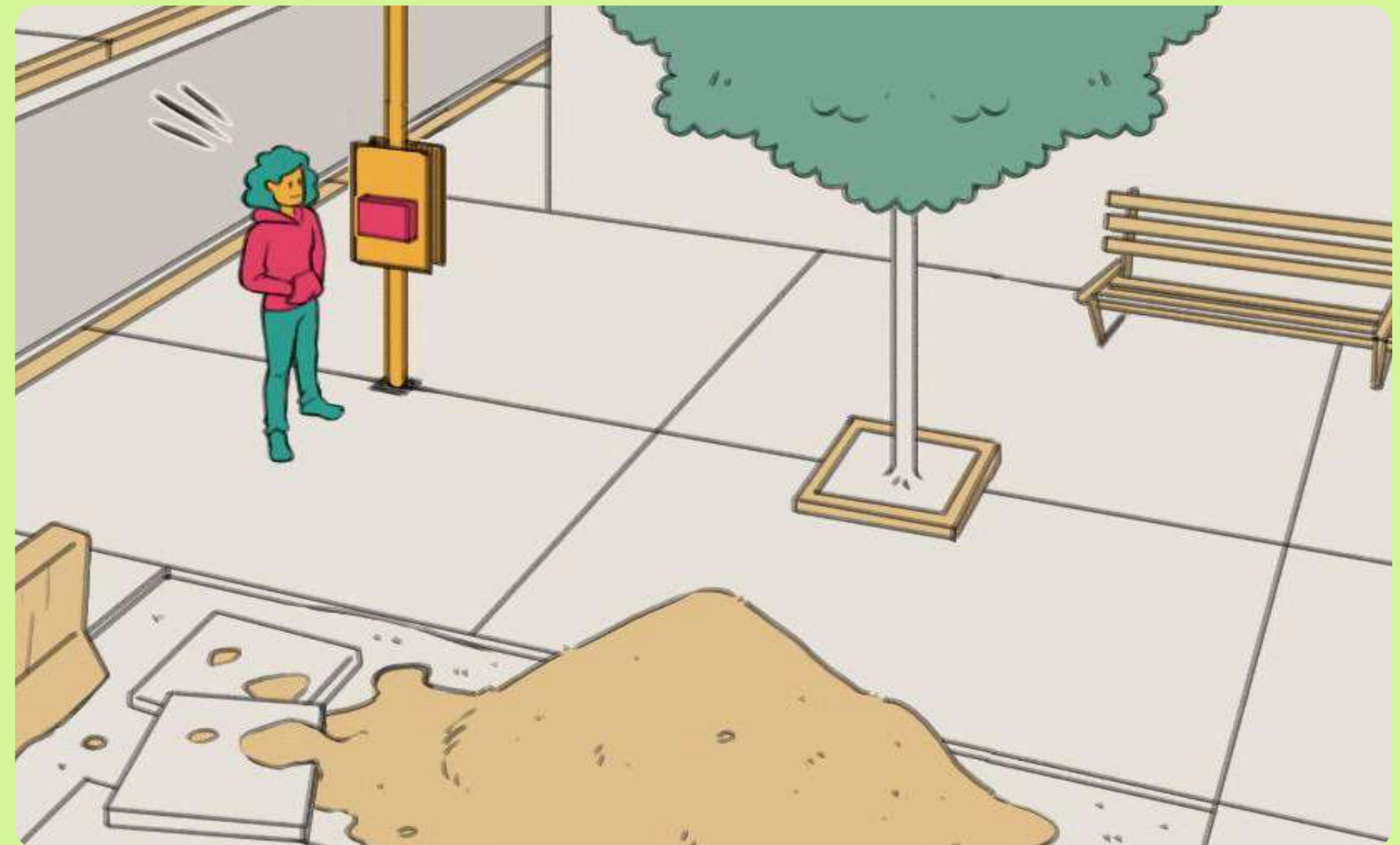
# 5. Locate suitable context for engagement

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→ Find places where people spend time, socialise, are not in a hurry [1]

[1] Fischer & Hornecker 2012 (CHI)



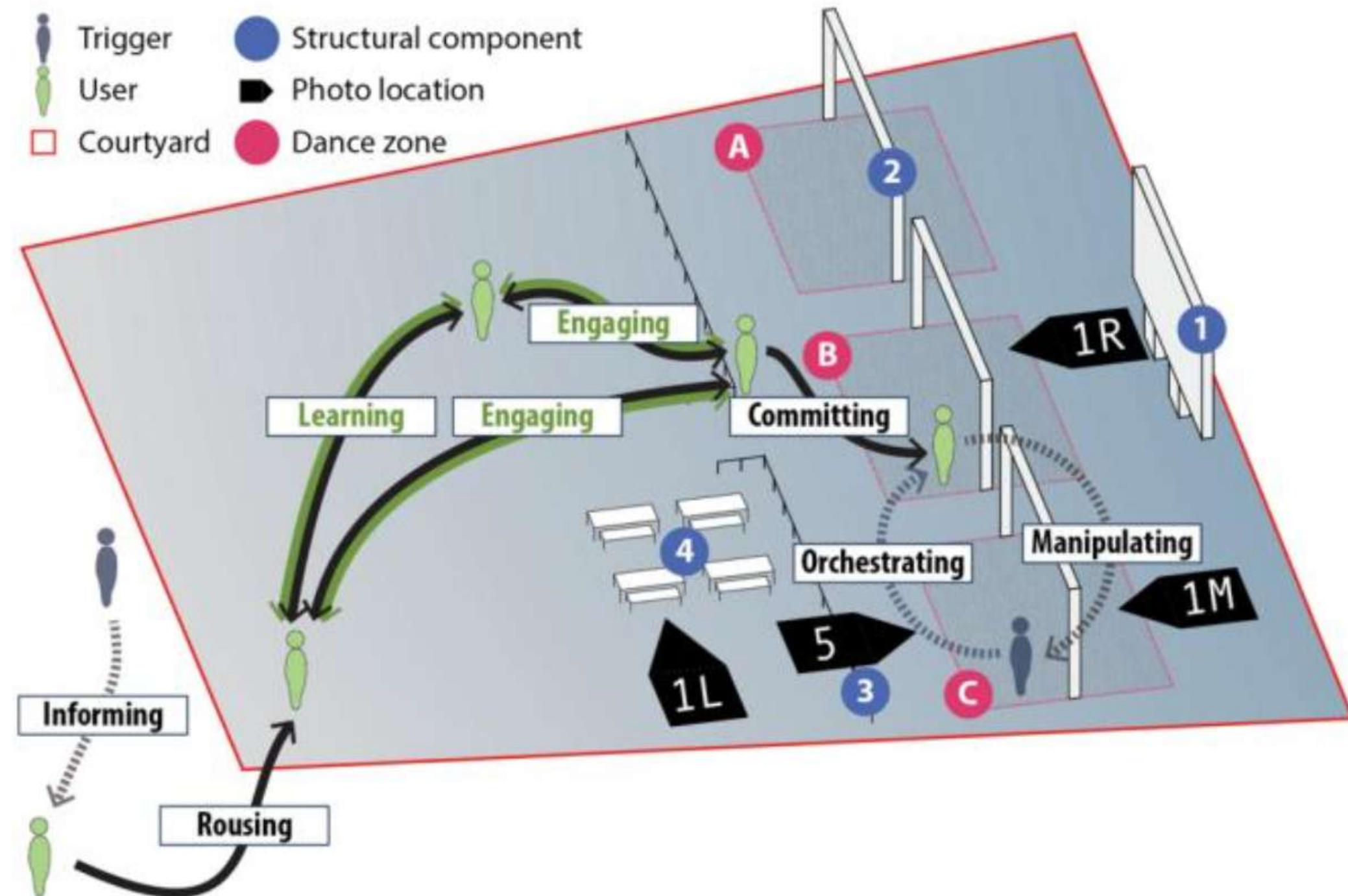
# 6. Balance privacy and visibility

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- Encourage the “honeypot effect”
- Prevent social embarrassment [1]

N. Wouters et al. 2016. Uncovering the Honeypot Effect: How Audiences Engage with Public In Proceedings of DIS '16, 5–16.



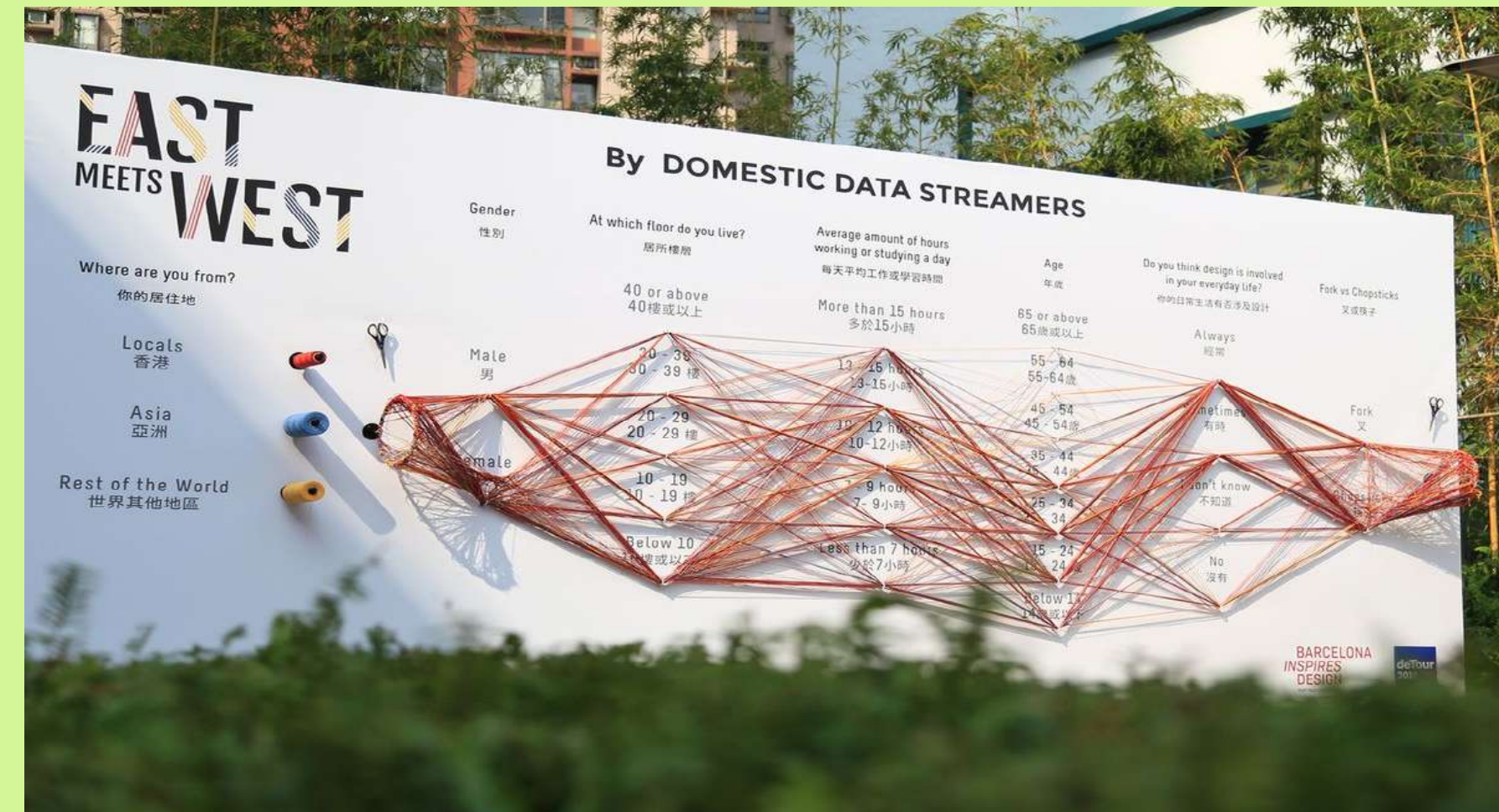
# 7. Analogue vs. digital

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- Analogue participation requires more facilitation but much easier to start [1]
- Analogue can also be interactive and emergent

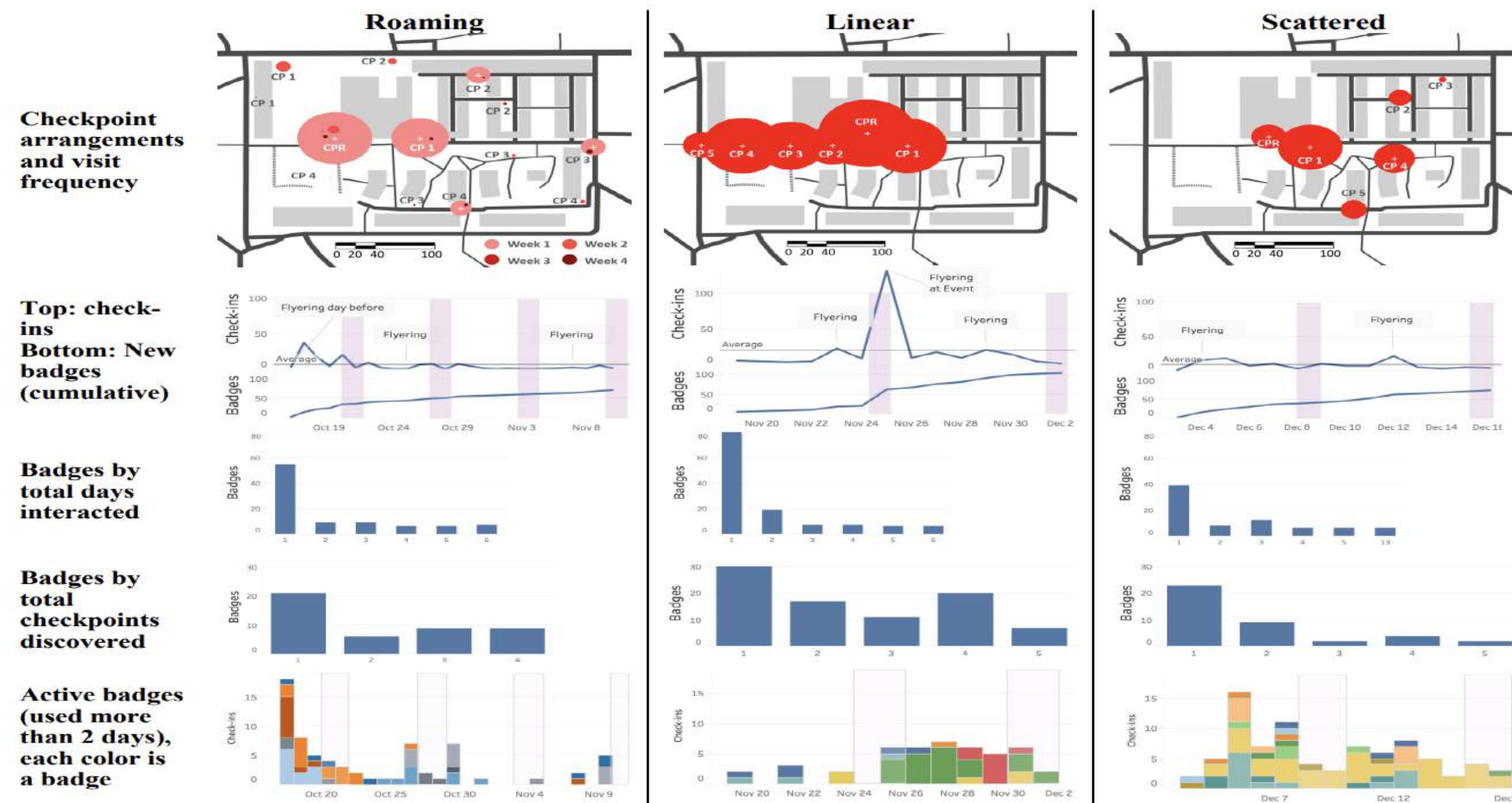
[1] Jose Duarte, Easy Dataviz; Pau García, Domestic Data Streamers



# 8. Test early and evaluate with a mixed-method

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- The #1 challenge is stopping and engaging passers-by — impossible to test in a lab
- Contextual factors have a big impact on urban/civic interaction design
- Interviews alone, or logging data alone, will not tell the complete story

[1] Coenen, J. et al. 2019. How the Arrangement of Content and Location Impact the Use of Multiple Distributed Public Displays. In Proceedings of DIS '19.

# Hyper local citizen engagement



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PhD • Independent Civic Tech  
Partnerships & Growth Lead  
[paul@citizendialogkit.com](mailto:paul@citizendialogkit.com) | <http://citizendialogkit.com>

