Digital City Rotterdam

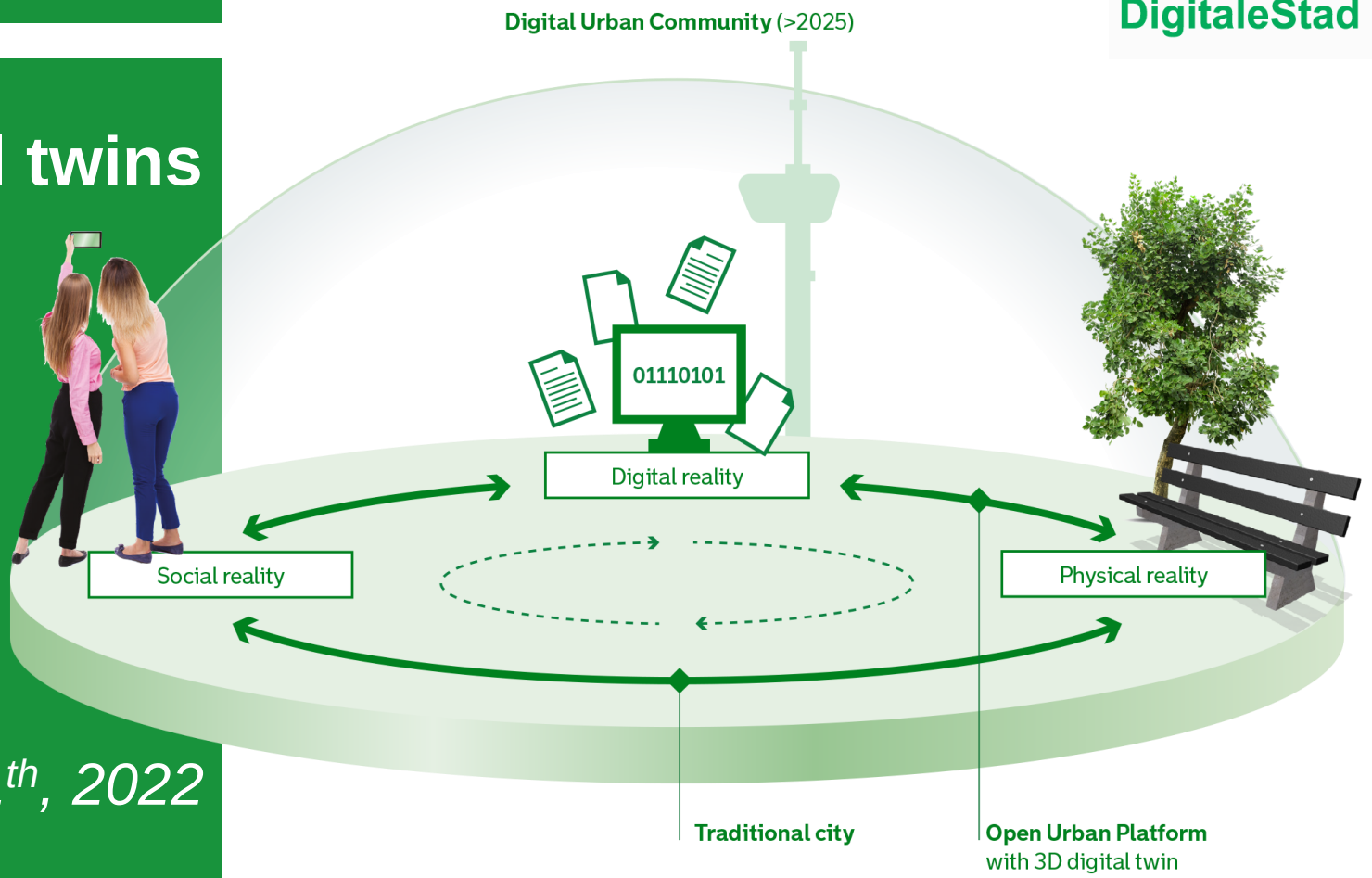
Gemeente Rotterdam

DigitaleStad

Local – urban – Digital twins

-

OASC CxC festival



january 11th, 2022

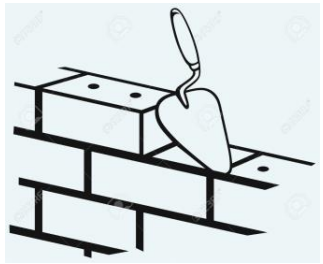
Roland van der Heijden
Program manager Digital City

City in transition – a new reality

Social reality

‘traditionel city’

Physical reality



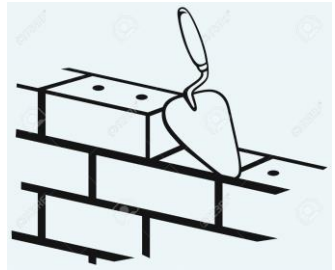
Digital reality

Digital reality

Social reality

Physical reality

Digital Urban Community (>2025)



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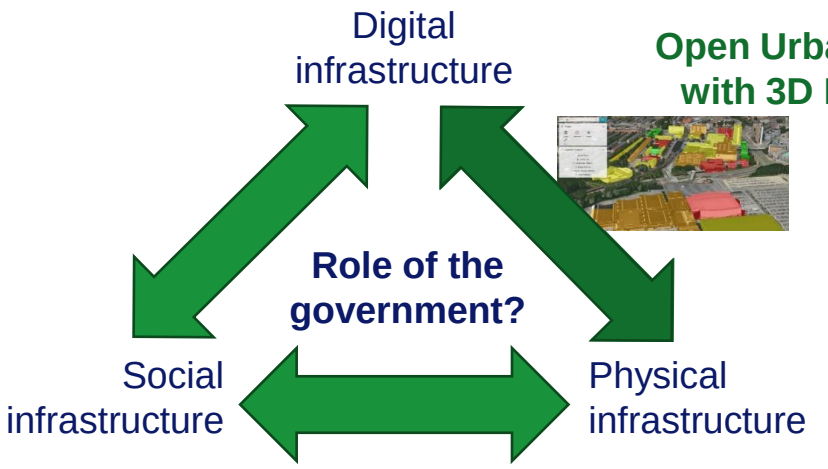
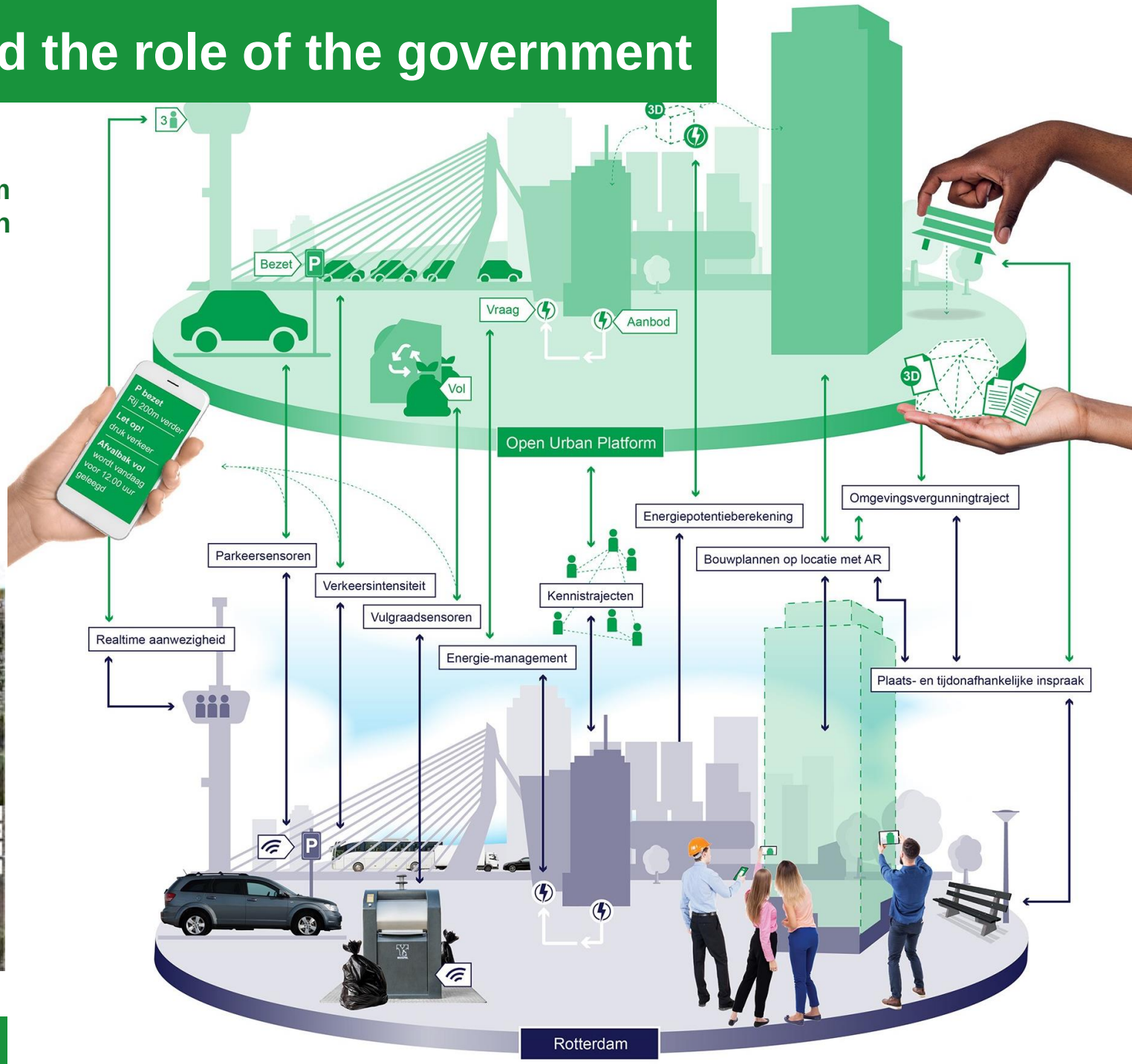
Open Urban Platform and the role of the government





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A ‘smart’ 3D model of the city …

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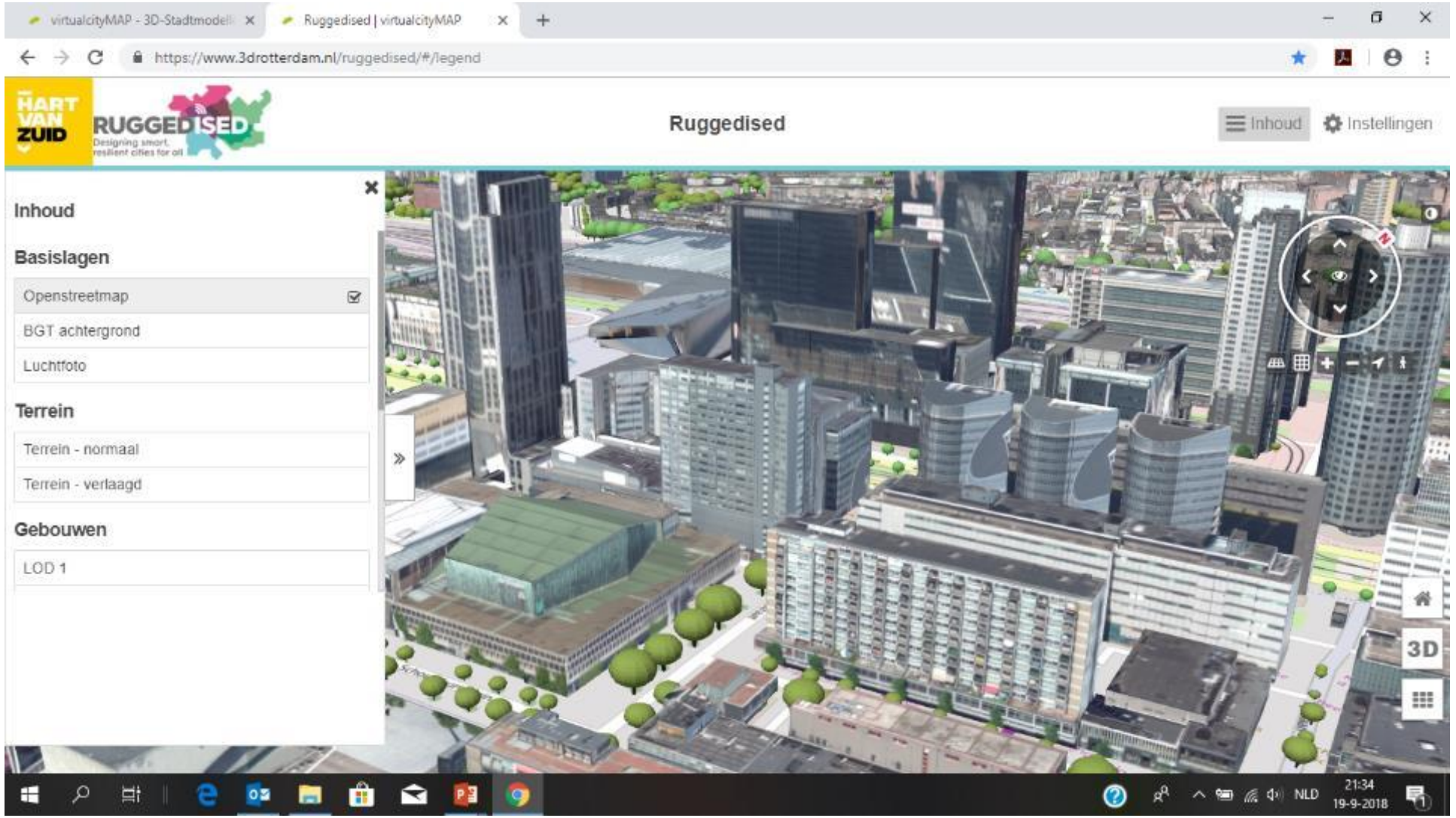
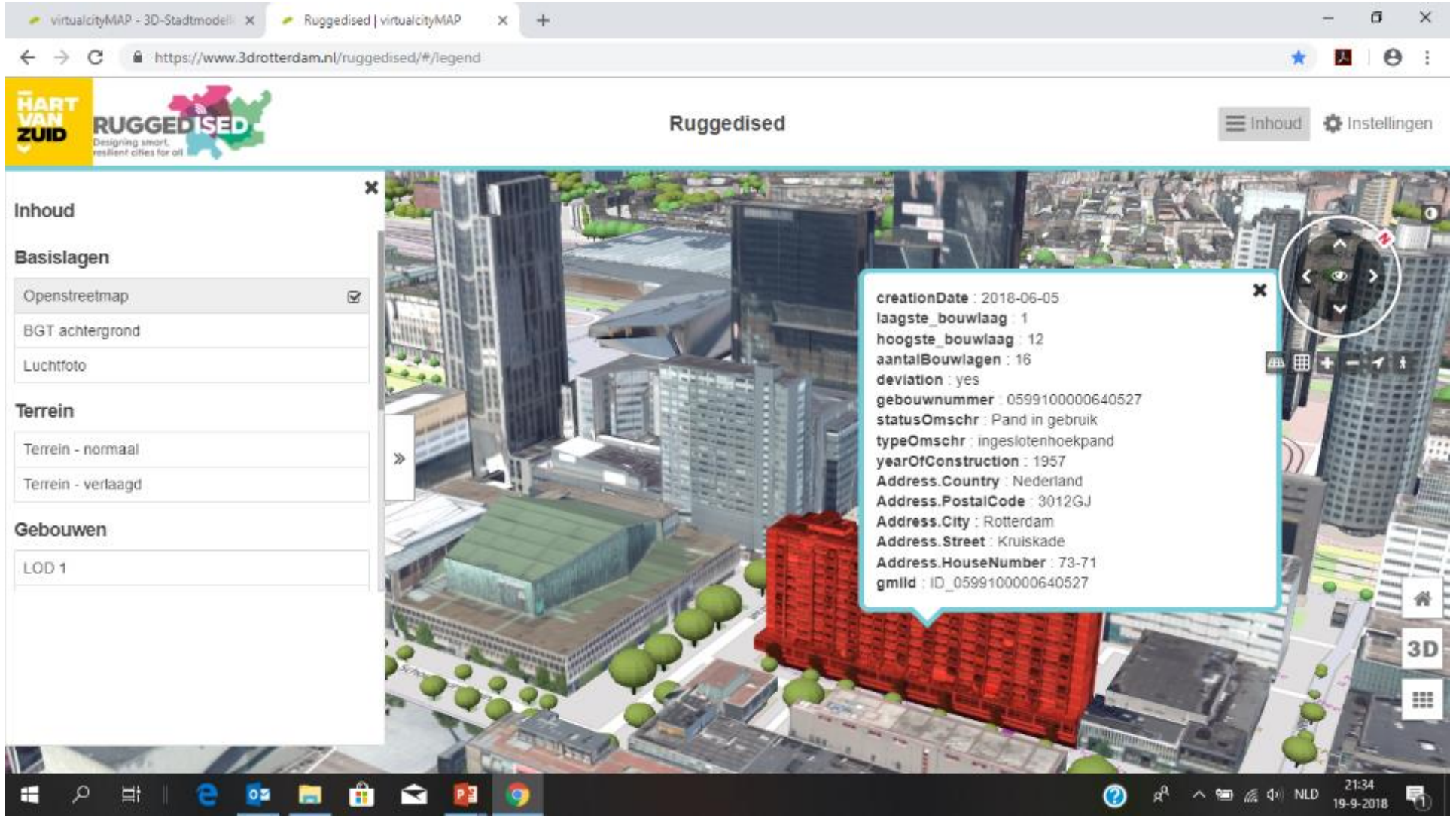


A ‘smart’ 3D model of the city …

DigitaleStad



… combined with realtime data …

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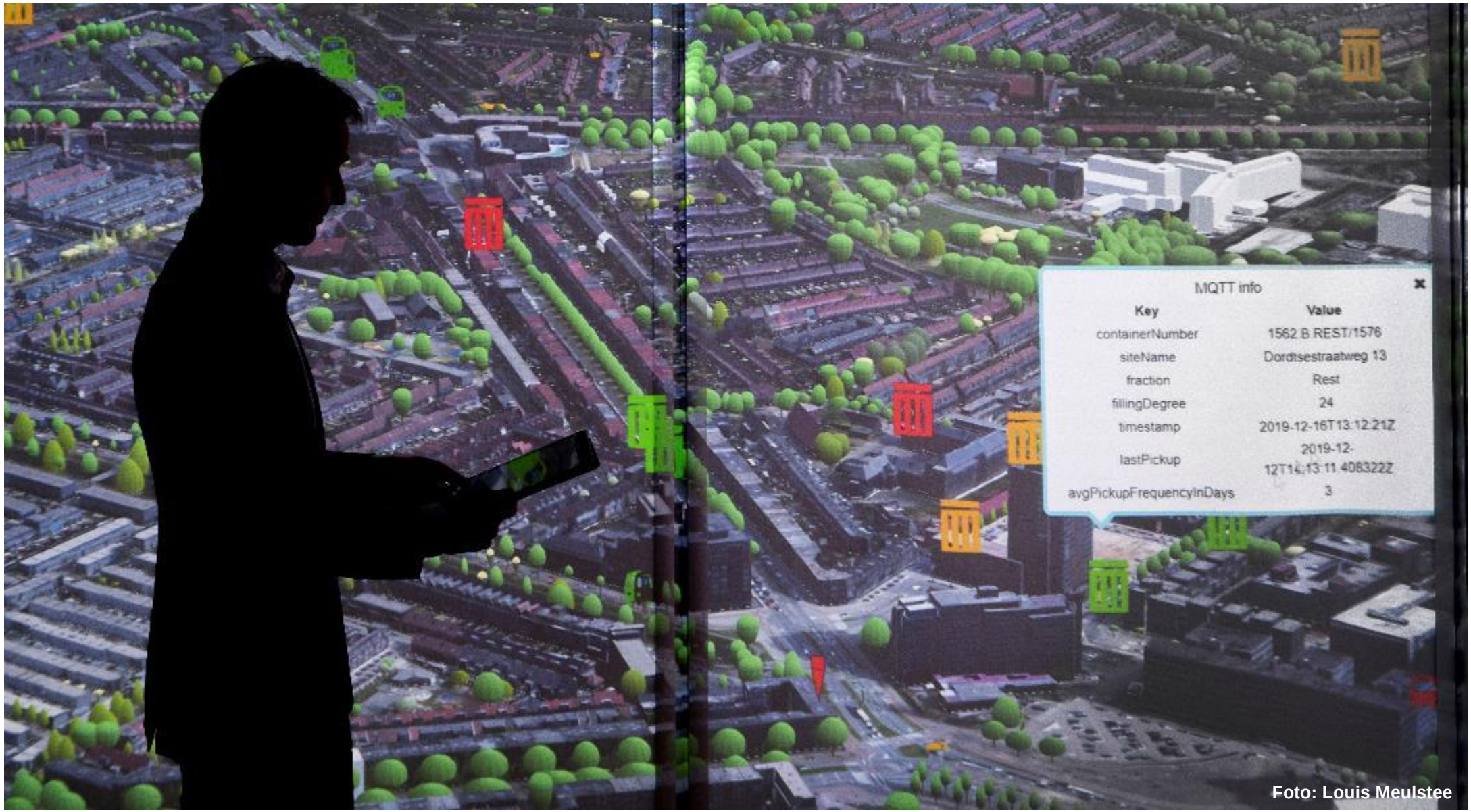

… forms a 3D Digital Twin of the city…

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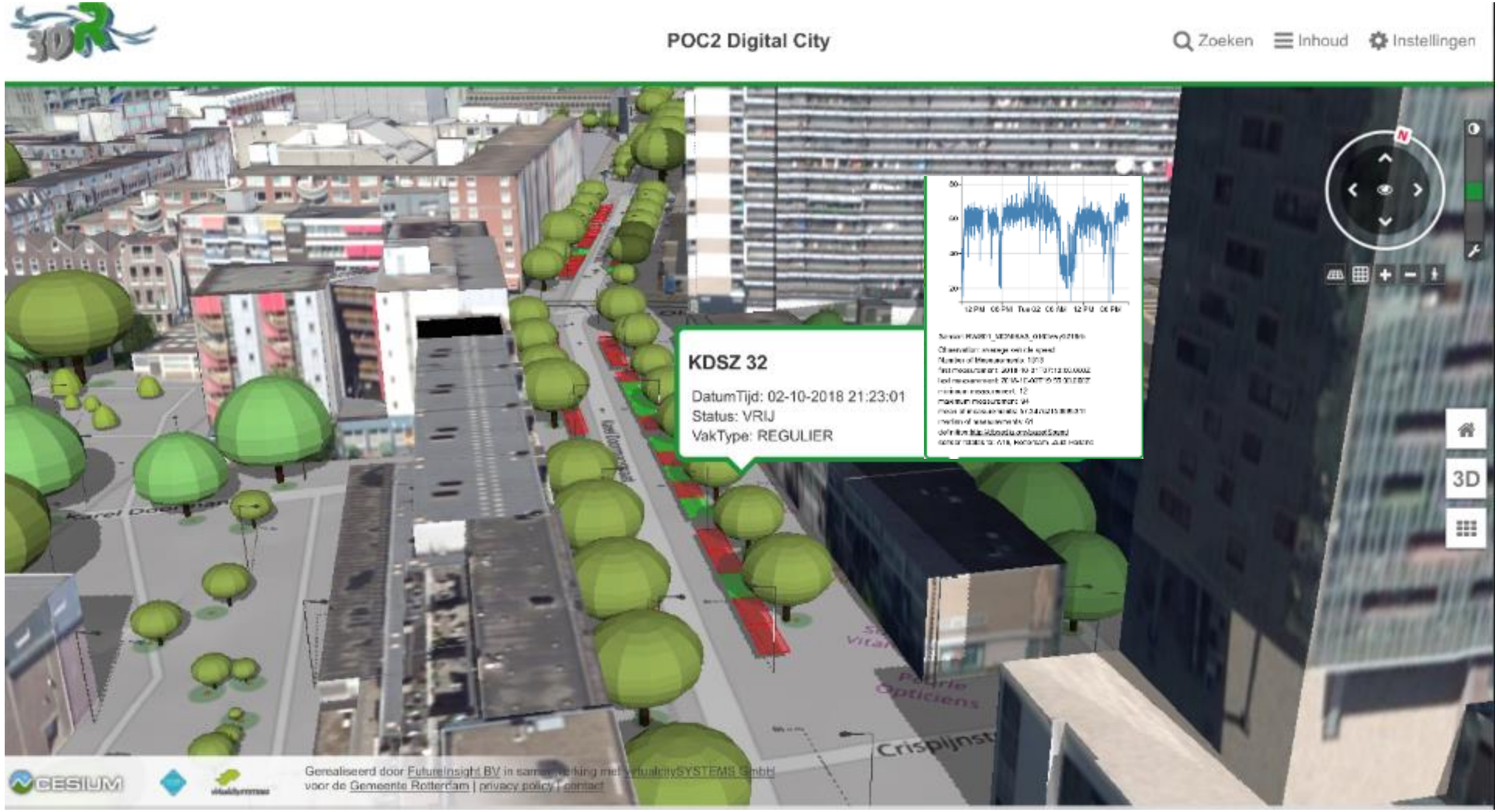
Describes the current physical reality of a city, based on realtime data (= digital ‘copy’ of the physical city)



Advantages using the Digital Twin concept

1. Gives ‘meaning’ to the OUP
2. Gives visualisation of current and historic state
3. Offers common and shareble image as startingpoint
4. Basis for numerous applications and services
5. Enhances the ecosystem way of thinking
6. Stimulates the use of generic, scalable and maintainable datasources
7. Consistent user experience
8. Offers new possibilities for citizens participation and empowerment
9. Stimulates economic innovation

…and therefore is a basis for new applications & services

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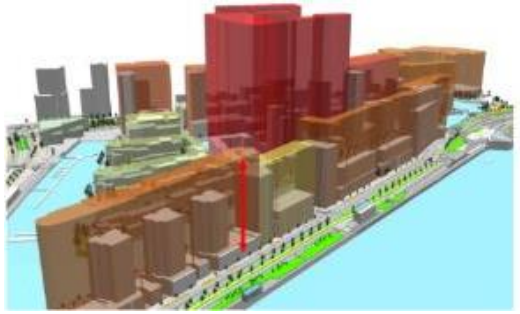
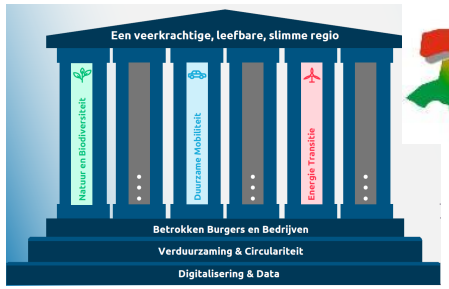
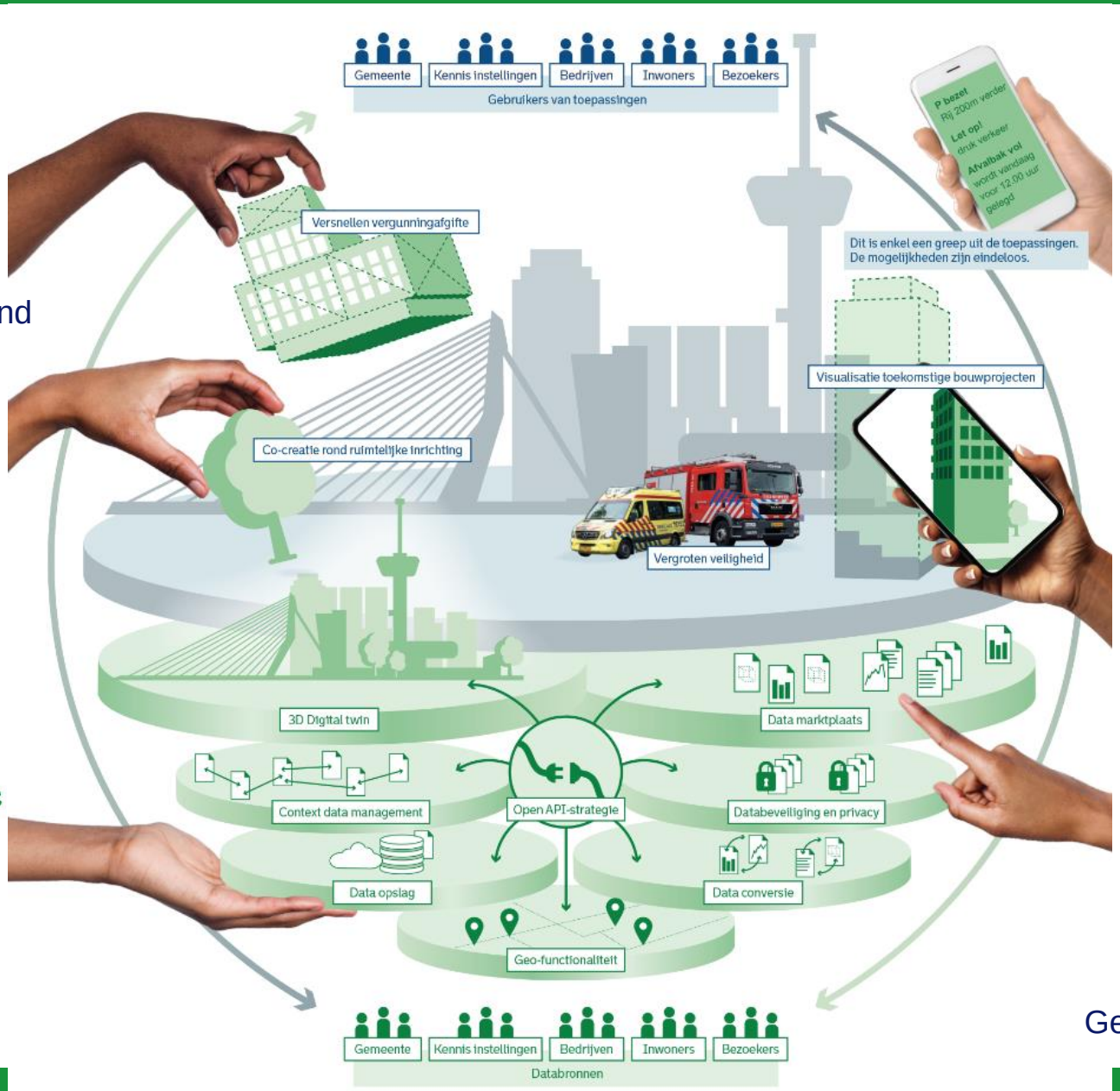


New Environmental and Planning Act:

- Accelleration of the permit process
- Co-creation in the digital city



Regional cooperation
'Borderless data landscape'



SAFE Rotterdam 3D

New buildingplans app

Digital Twin Sustainability &
Generic and maintainable data sources

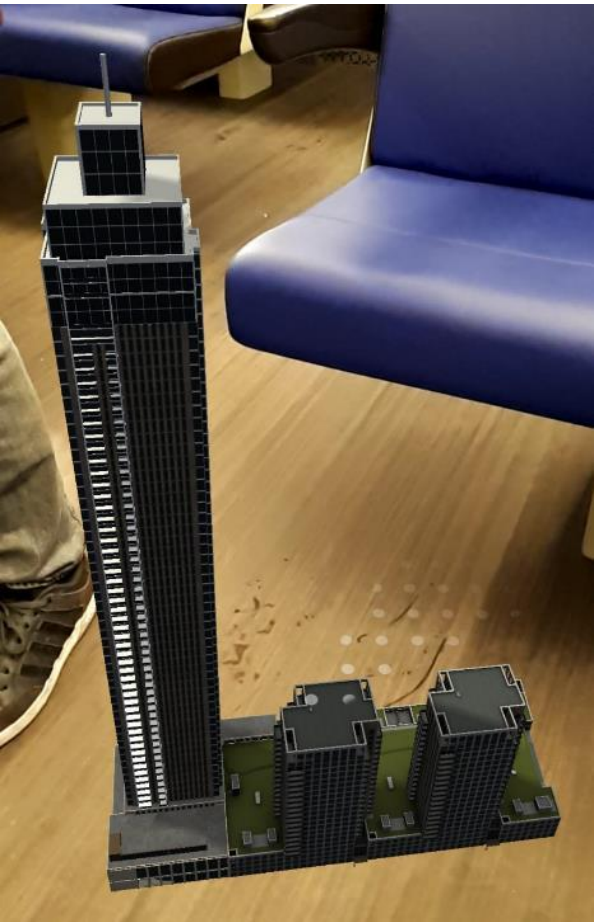
Thank you for your attention!

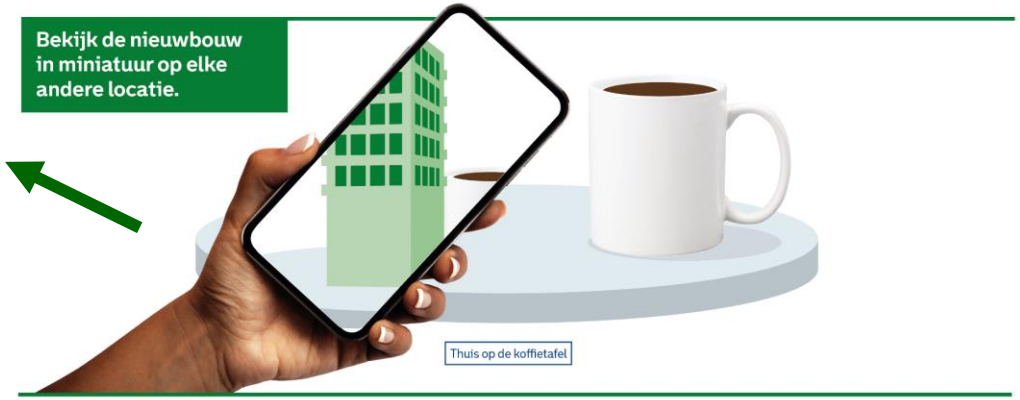
DigitaleStad

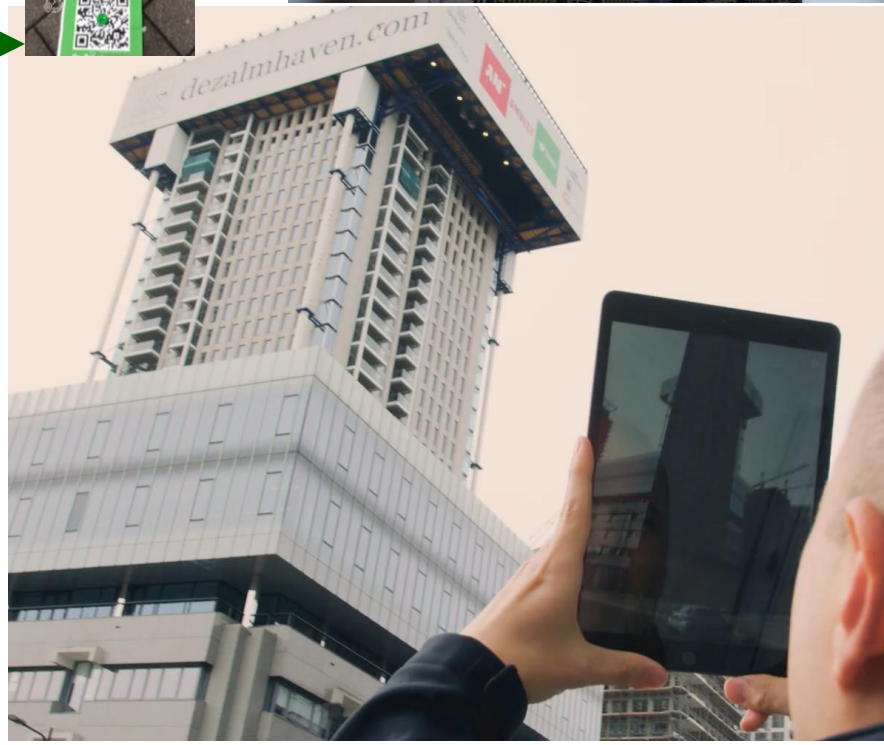
Contact: digitalestadBCO@rotterdam.nl

Gemeente Rotterdam

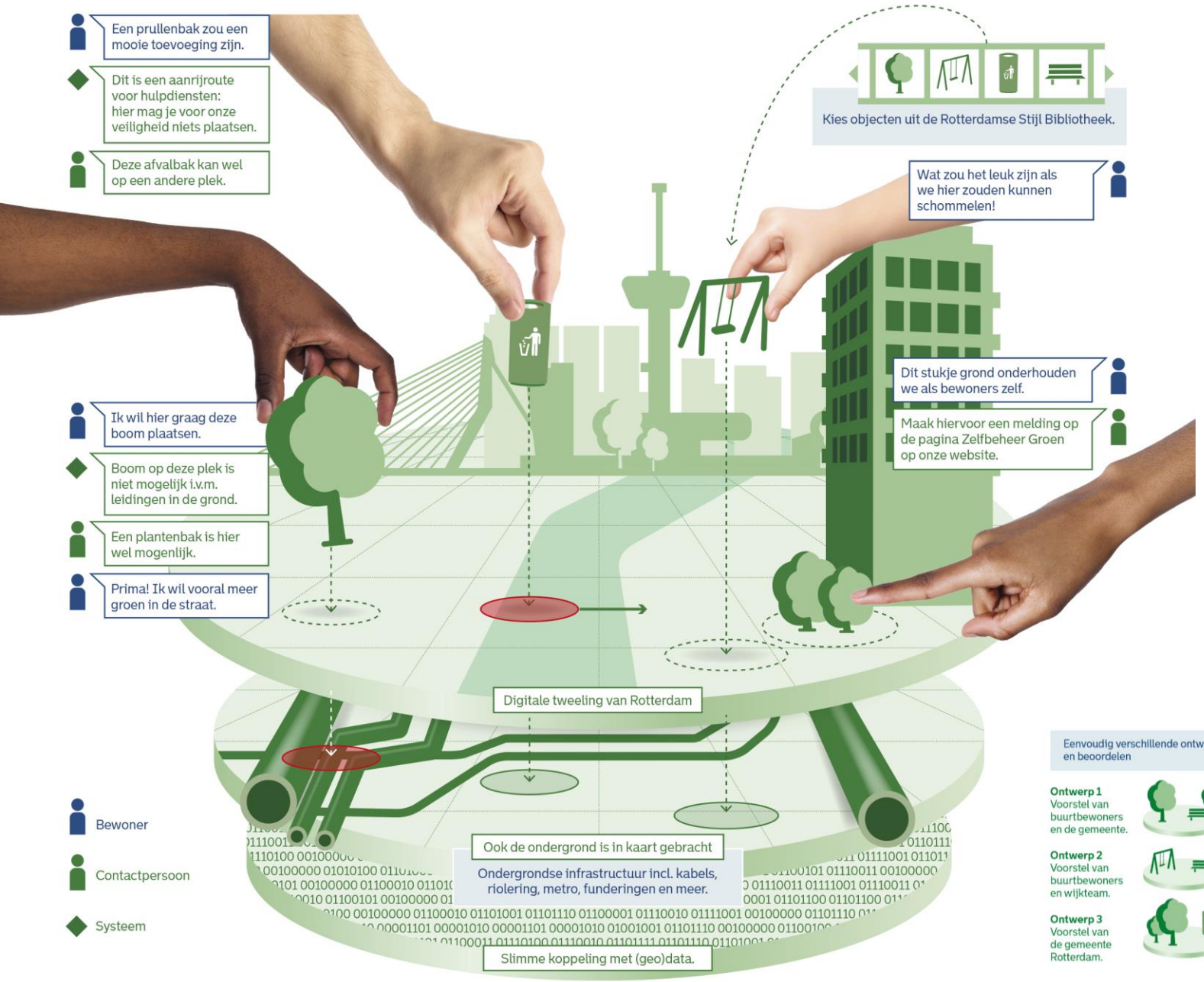
Visualisation new buildingplans with augmented reality



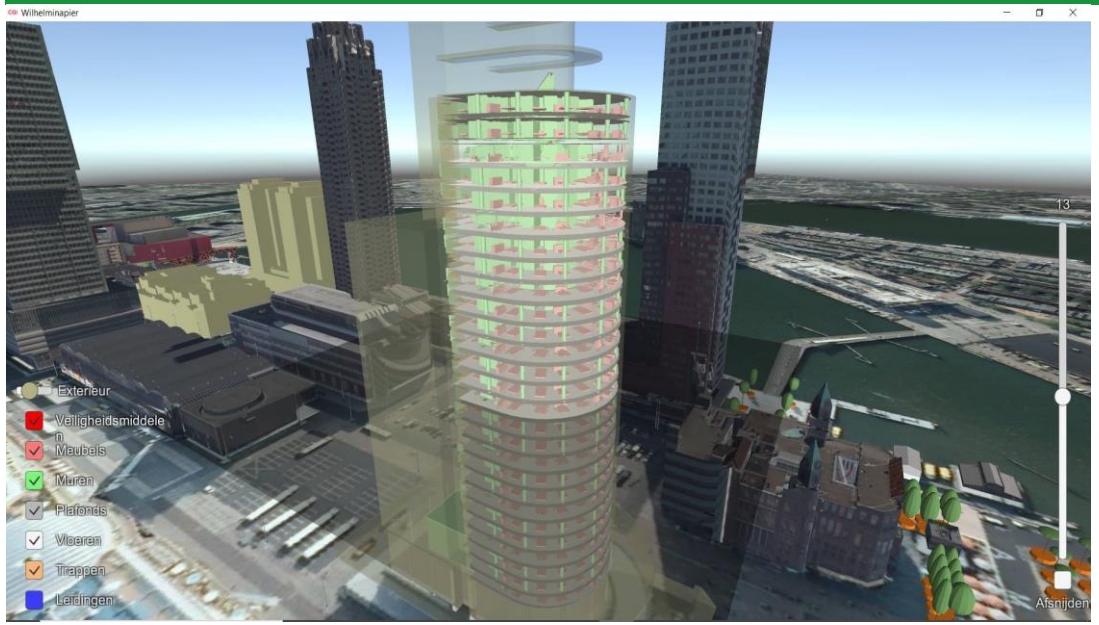


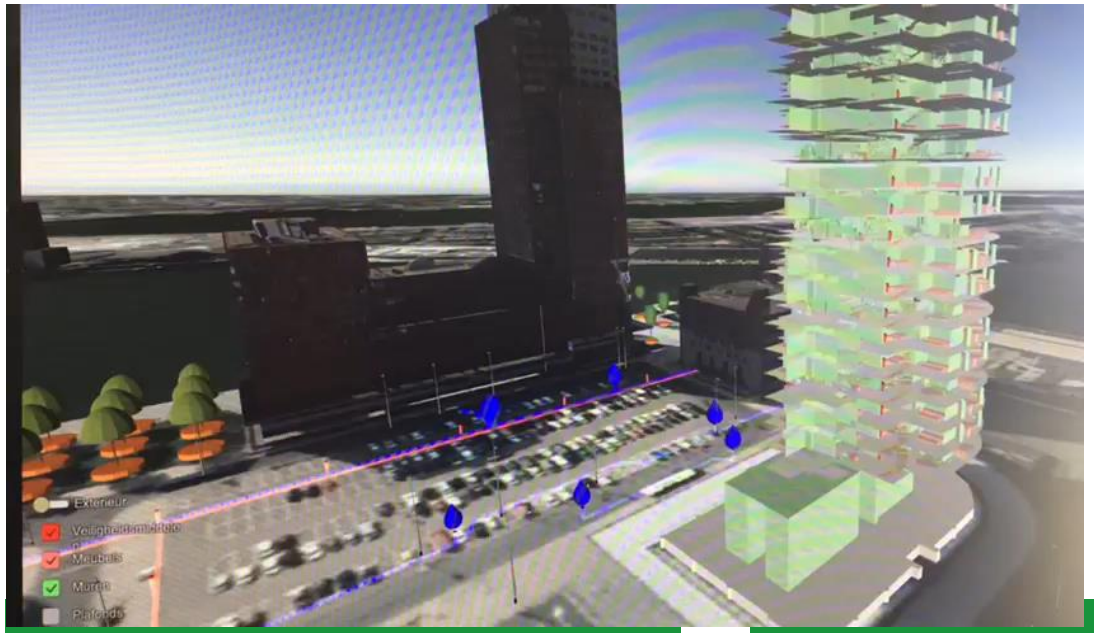


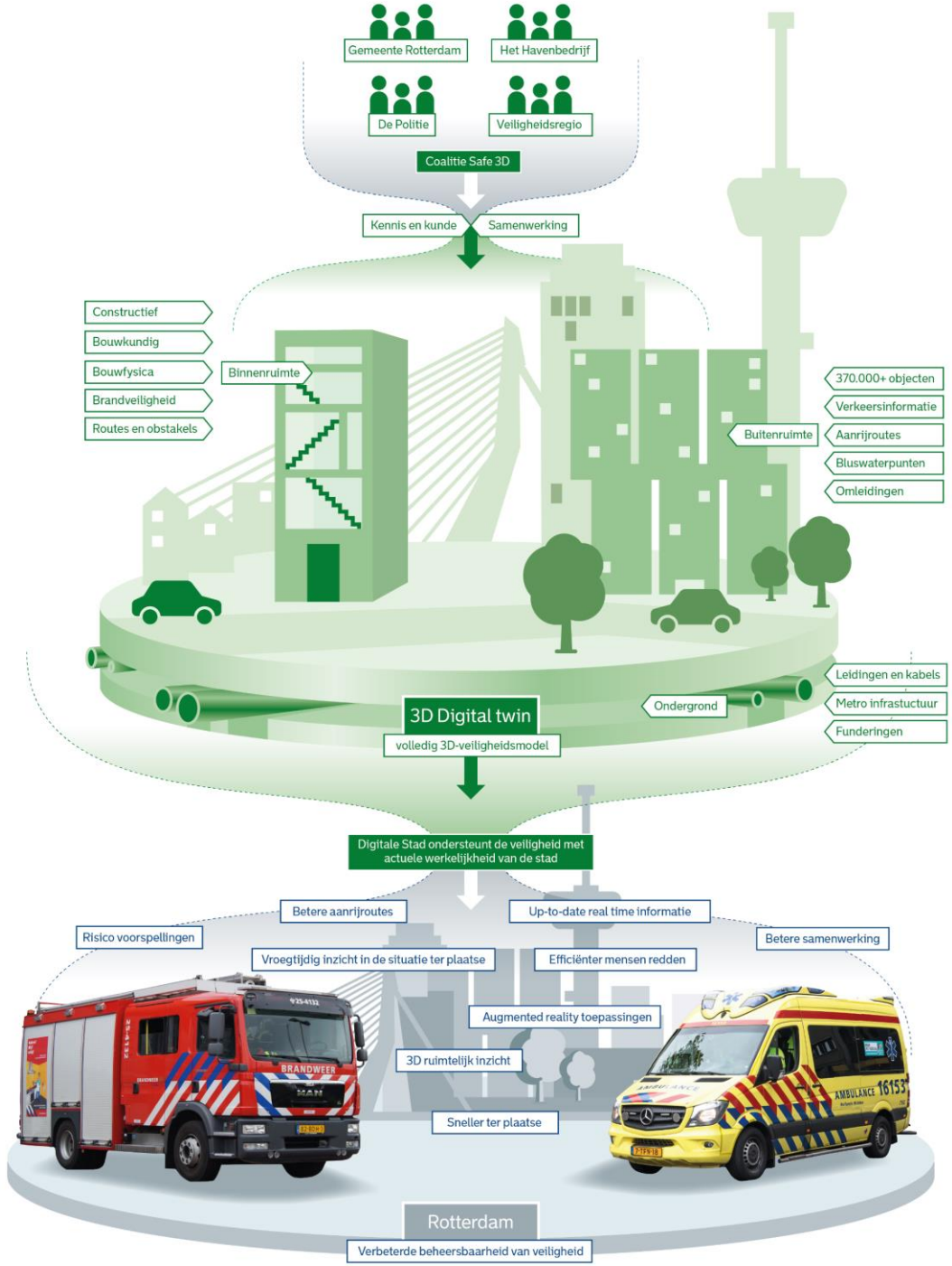
Time and place independent participation: Cocreation in the digital city



SAFE Rotterdam 3D







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Acceleration building permit process

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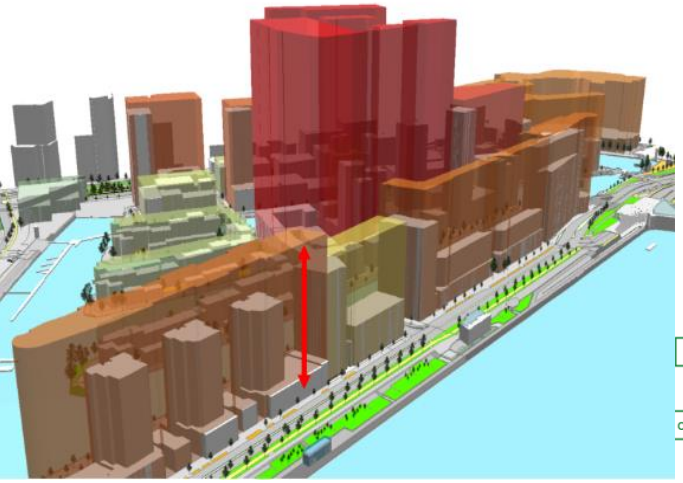
Meerwaarde 3D in het vergunningentraject



2. Detectie van conflicten tussen BIM, ondergrond en regelgeving

3. Aanpassingen en/of overleg

4. Passend ontwerp

1. Projectontwikkelaar plaatst 3D BIM in de door de gemeente digitaal beschikbaar gestelde 3D omgeving

Regional cooperation ‘Borderless data landscape’

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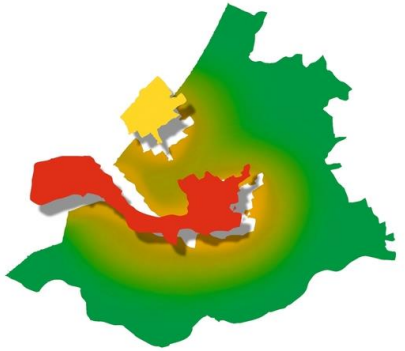
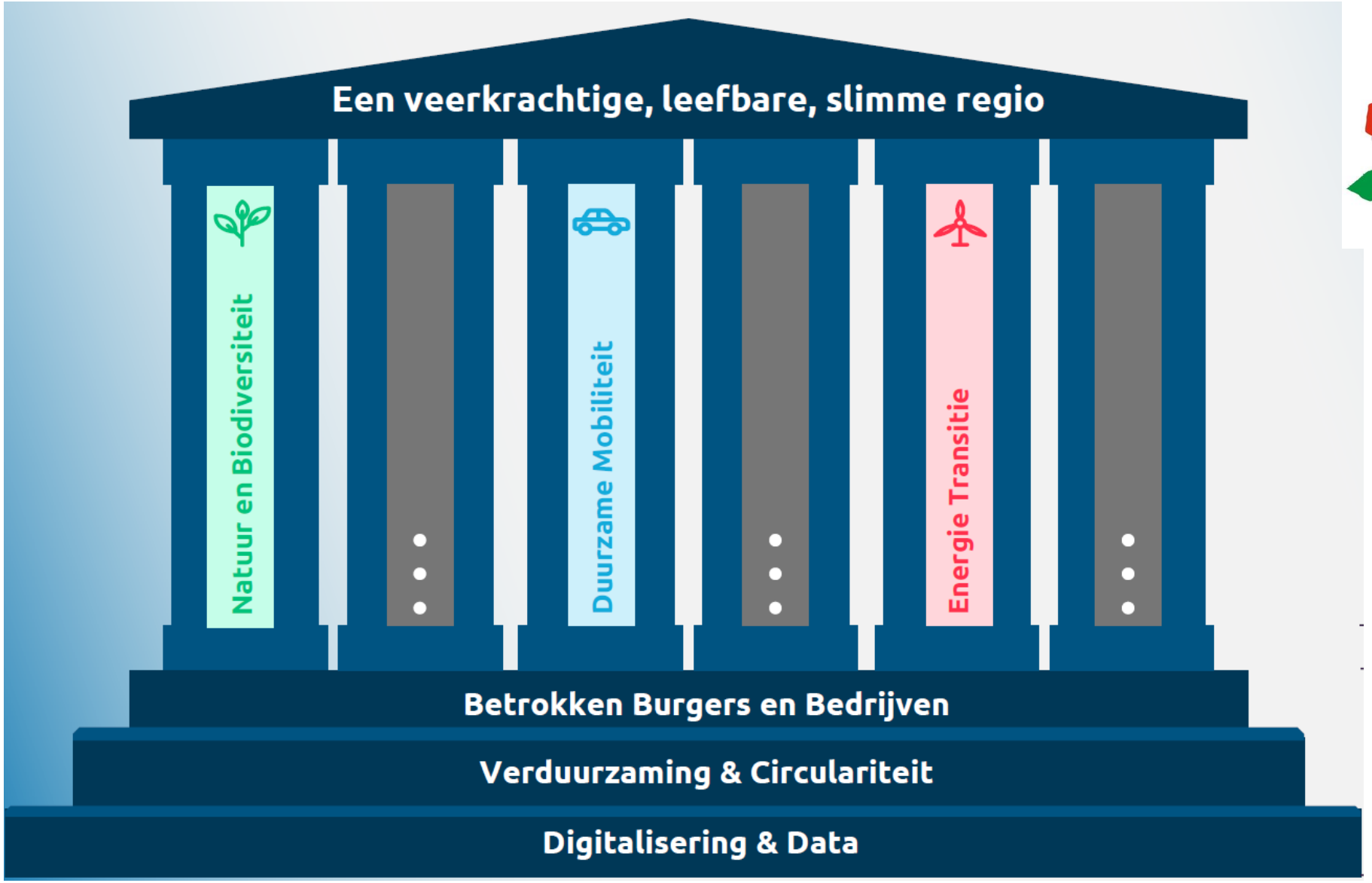
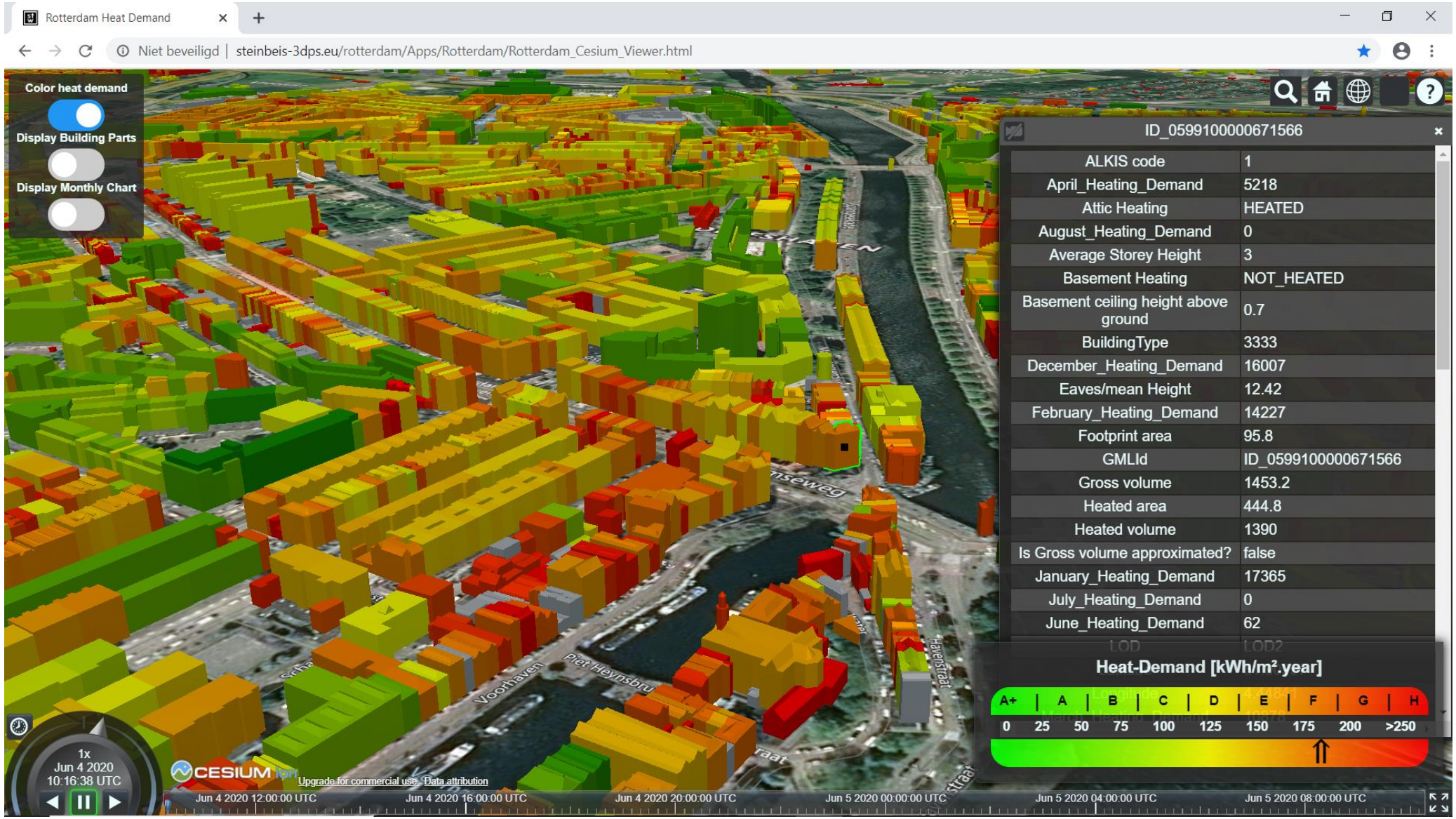




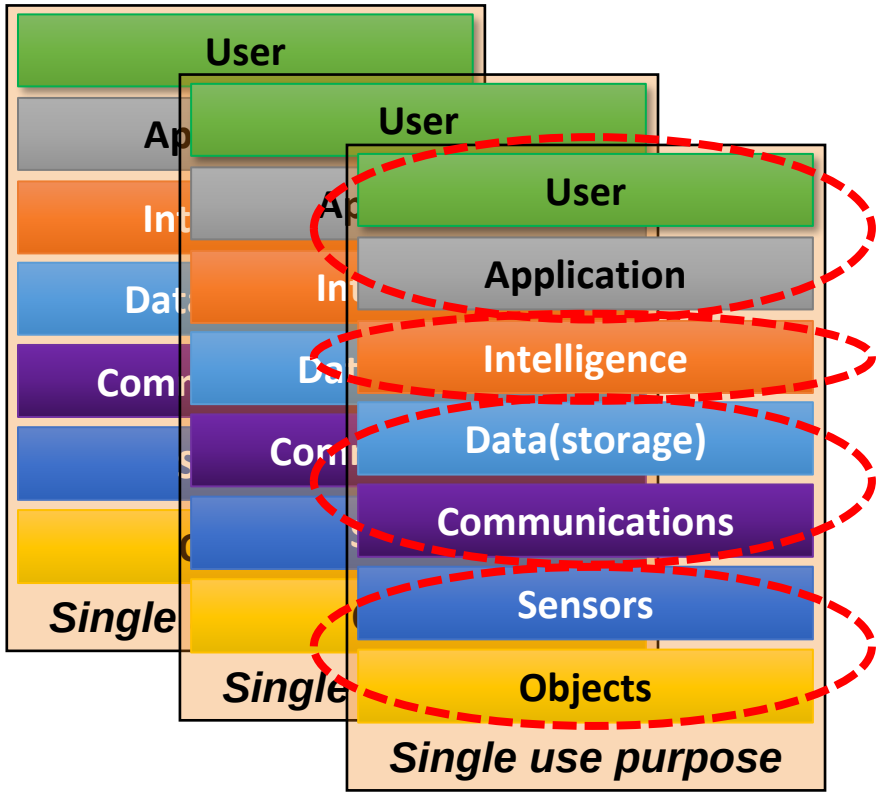
Generic scalable datasources: energy savings & solar potential

DigitaleStad



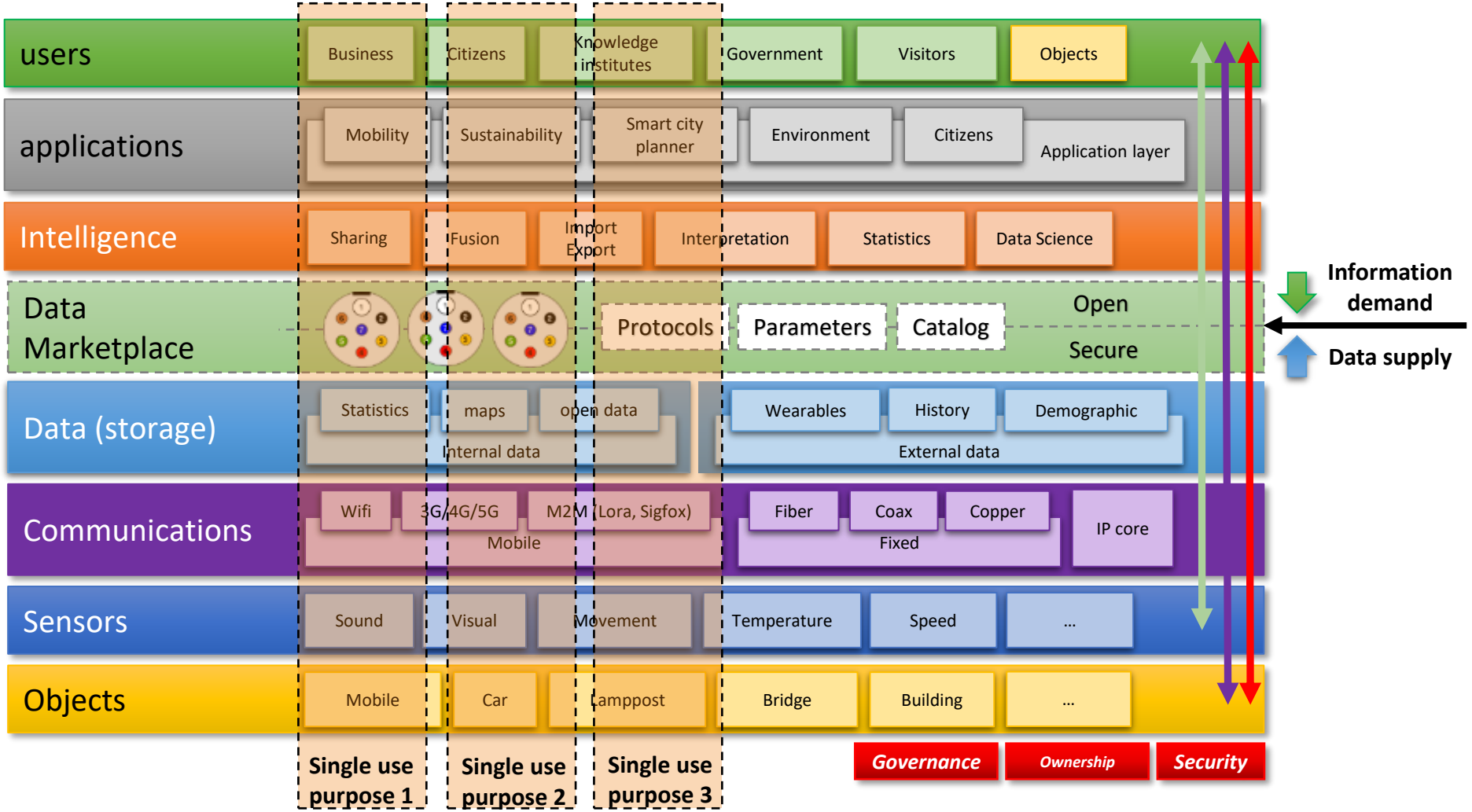
Demo omgeving

Current smart city developments



- ‘Silo’ developments
- Vendor lock-in
- No interaction/communication between applications
- Several infrastructures
- Exploding data management
- Suboptimal gains and higher (societal) costs
- No re use of data (except through connection with the ‘owner’)
- Data collection and development applications are connected to each other

Desired data architecture



Data architecture and Digital City program

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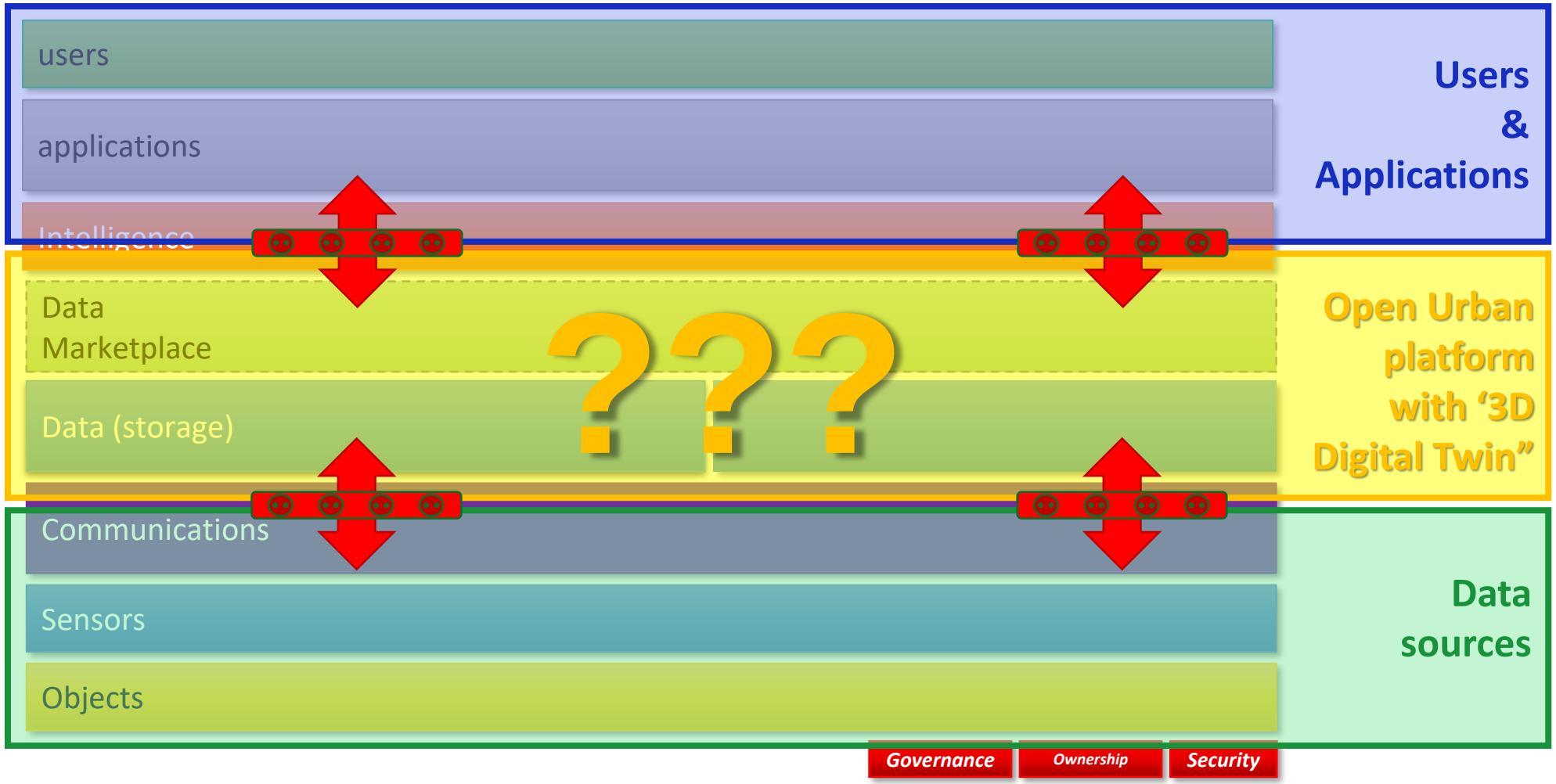
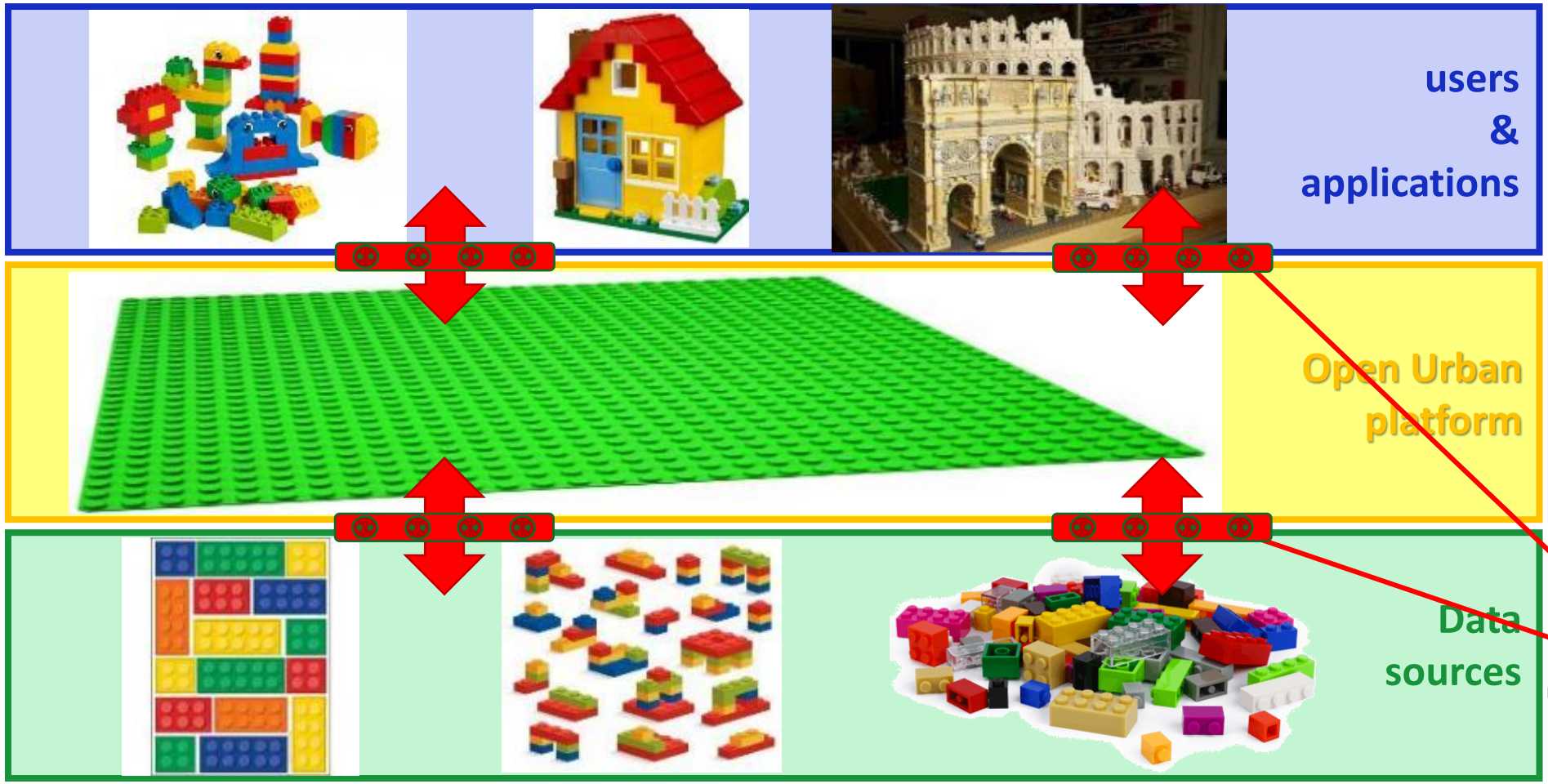
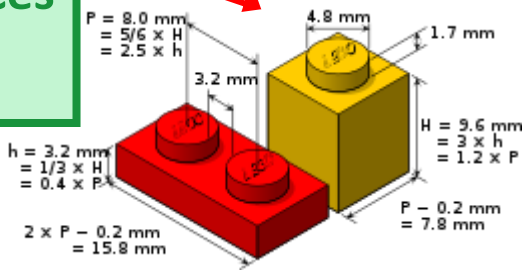


Open Urban Platform – design principles



Pivotal points of interoperability (PPI's; Espresso)



Open Urban Platform - design principles: MIM’s

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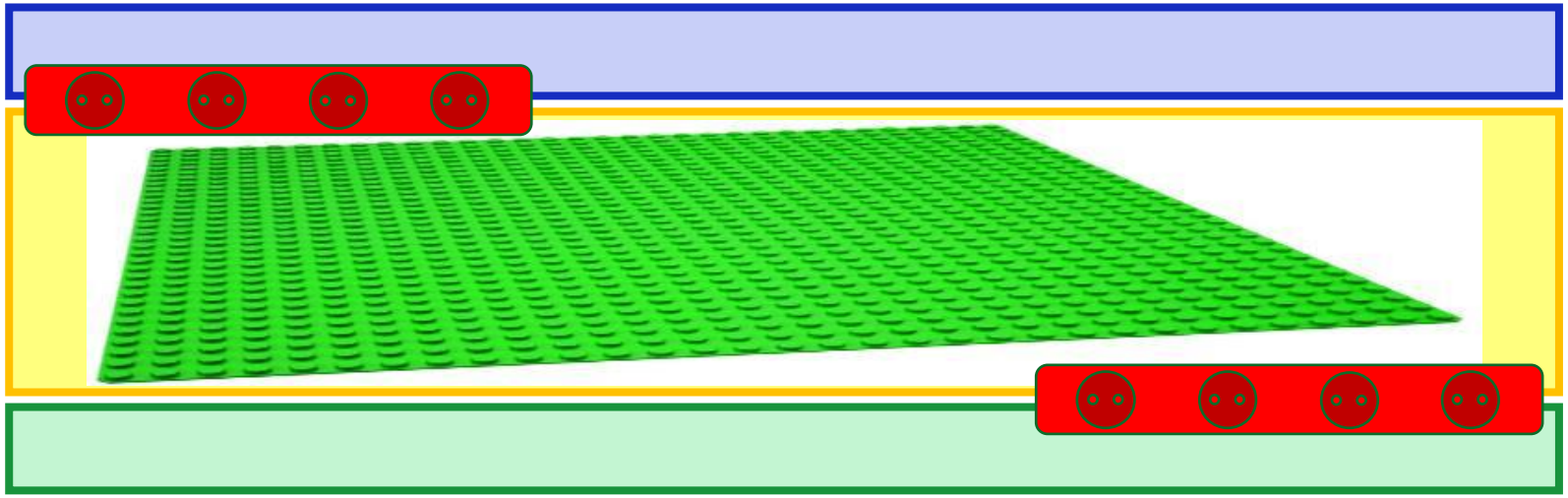

Minimal Interoperability Mechanisms (MIM’s):

1. PPI’s/open data standards/shared data models
2. Context information management
3. Privacy and security (IAM)
4. (Access to) Data storage
5. Geo functionality
6. Data conversion
7. Open API strategy
8. Data market place
9. 3D Digital Twin
10. (Governance structure & model)

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www.espresso-project.eu

www.oascities.org

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Urban Digital Ecosystem Rotterdam & Open Urban Platform

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Municipality

Knowledge institutes

Companies

Inhabitants

Visitors

...

Applications & Users

Applications and services layer

Data marketplace

3D Digital Twin

Open Urban Platform

Shared data models

Data hub

open API strategy – context information mngmnt - privacy and security - geo functionality - (access to) data storage - data conversion

Municipality

Knowledge institutes

Companies

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Visitors

...

Data sources

Ownership and governance of an Open Urban Platform

Private platforms

Public platforms

Microsoft

amazon

facebook

Google

airbnb

UBER

deliveroo

SIEMENS

HUAWEI

Open Urban Platform

?

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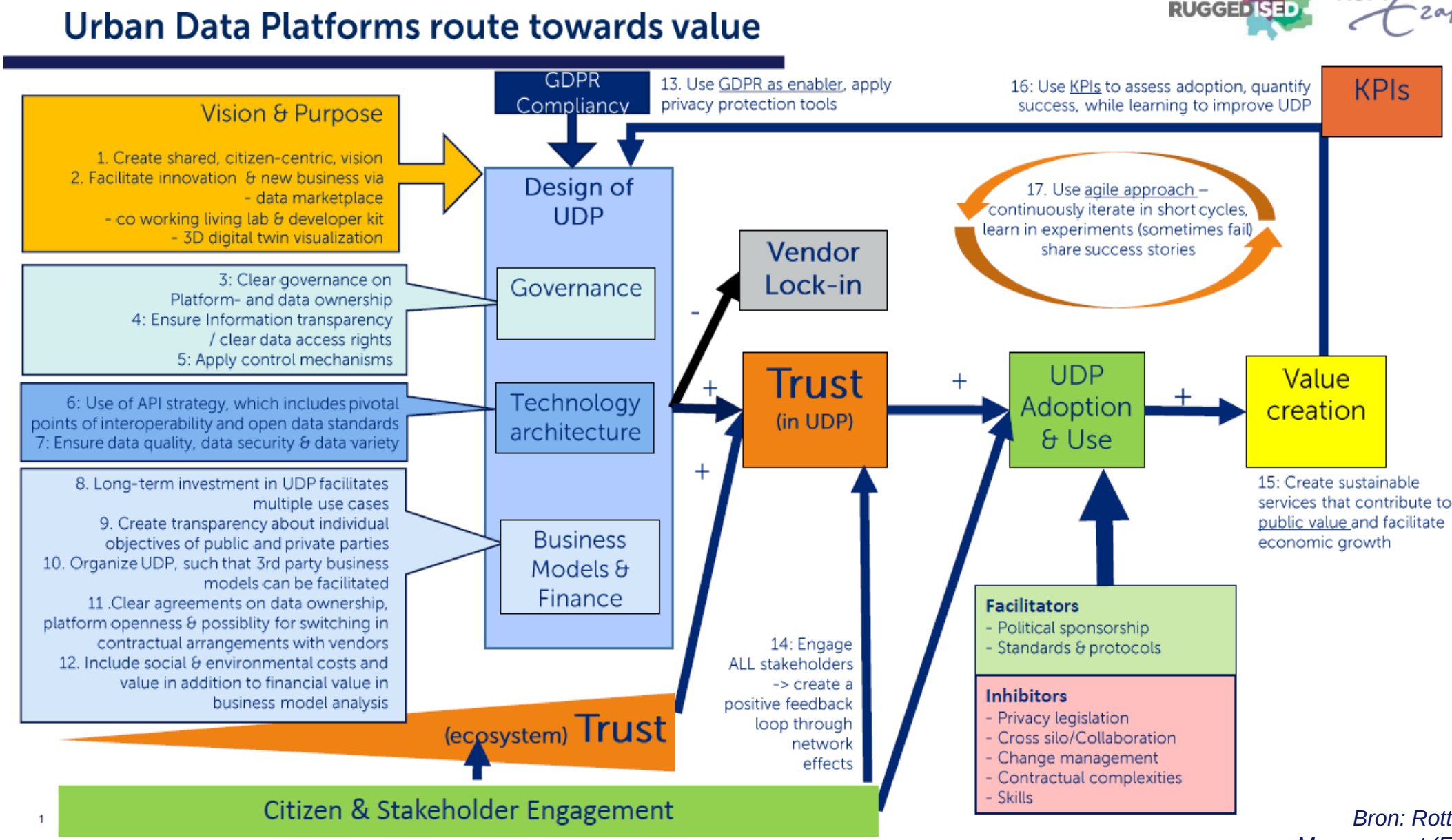
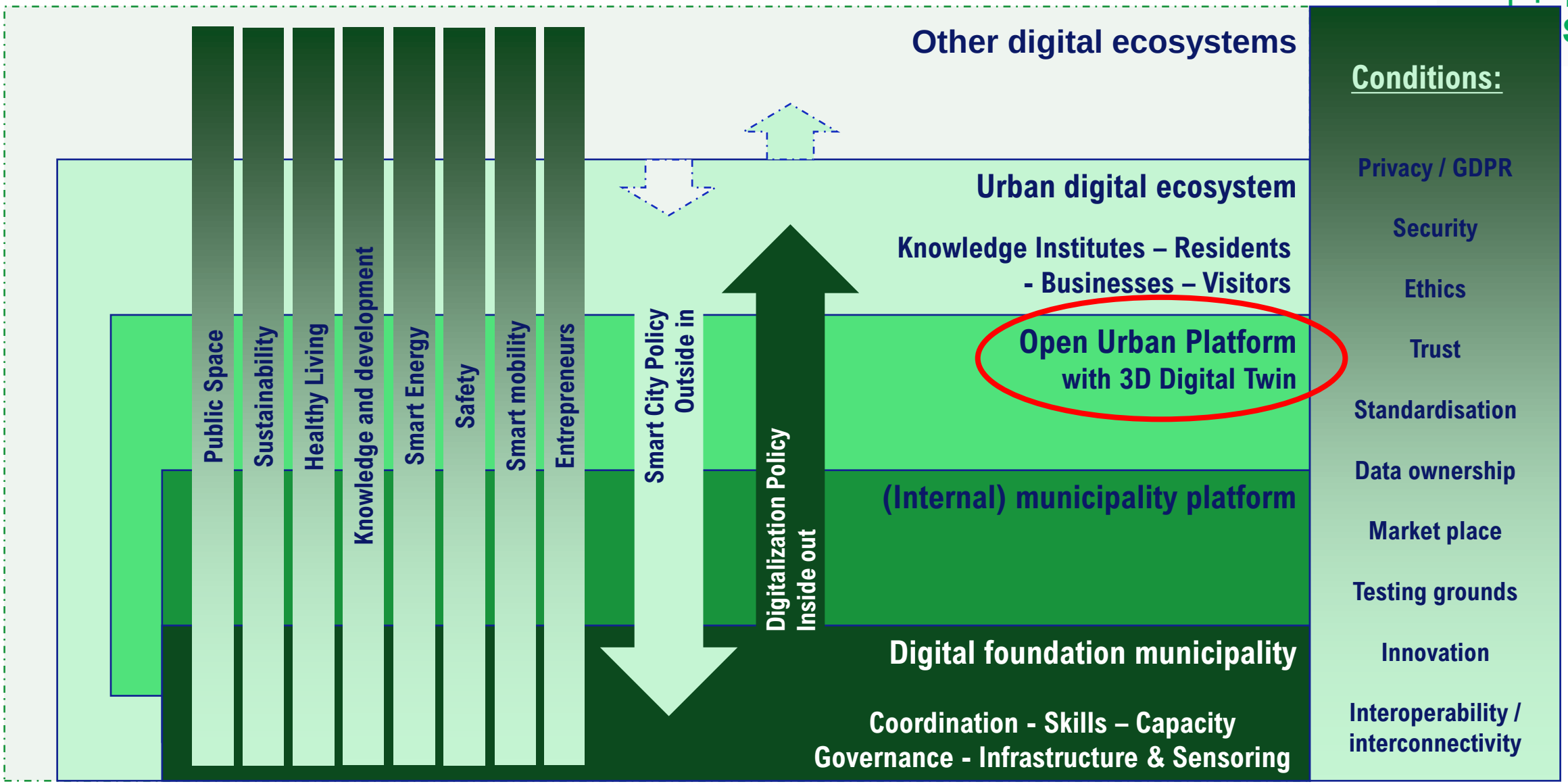
Kennistrajecten – waarde creatie en governance

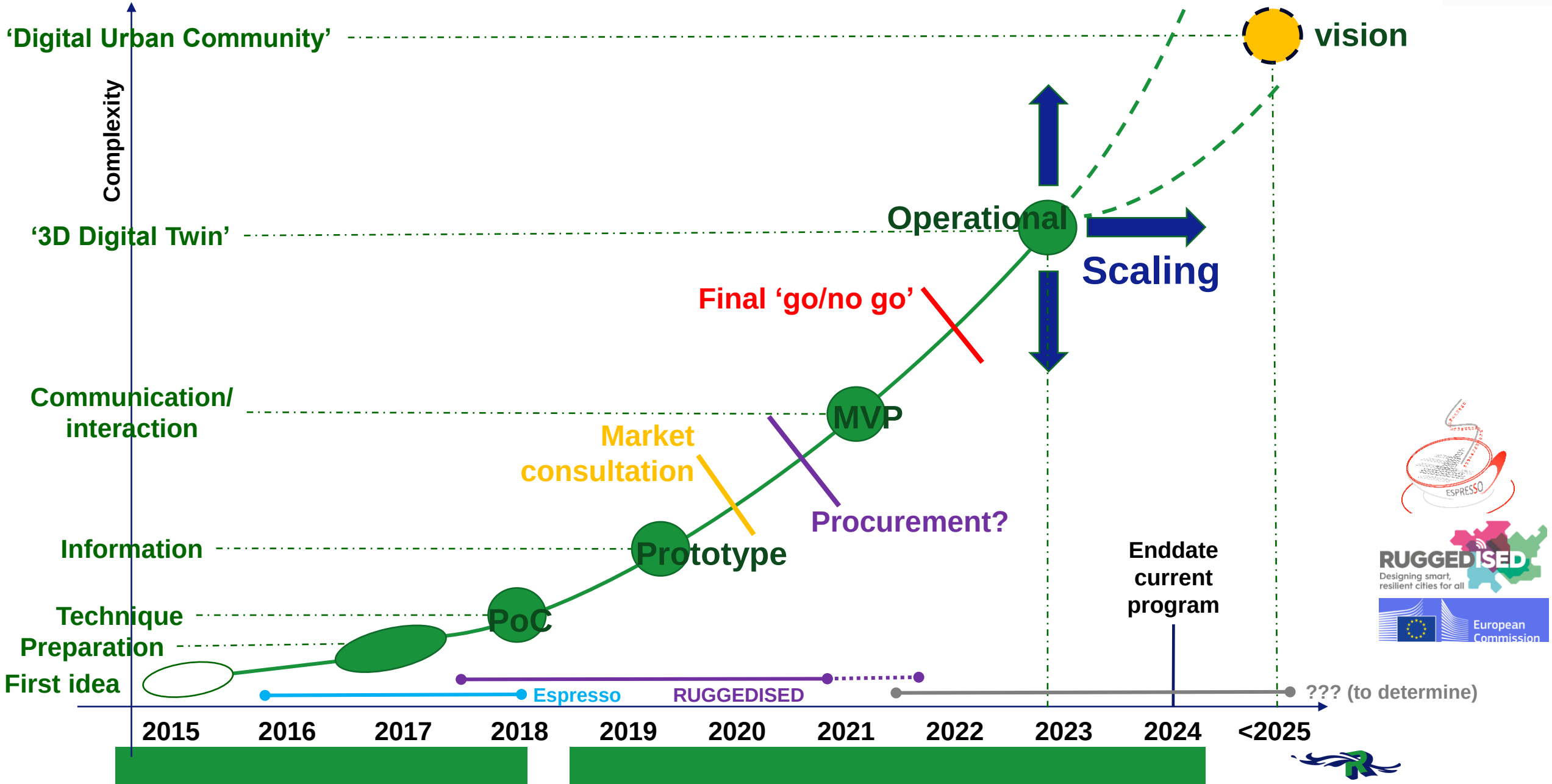


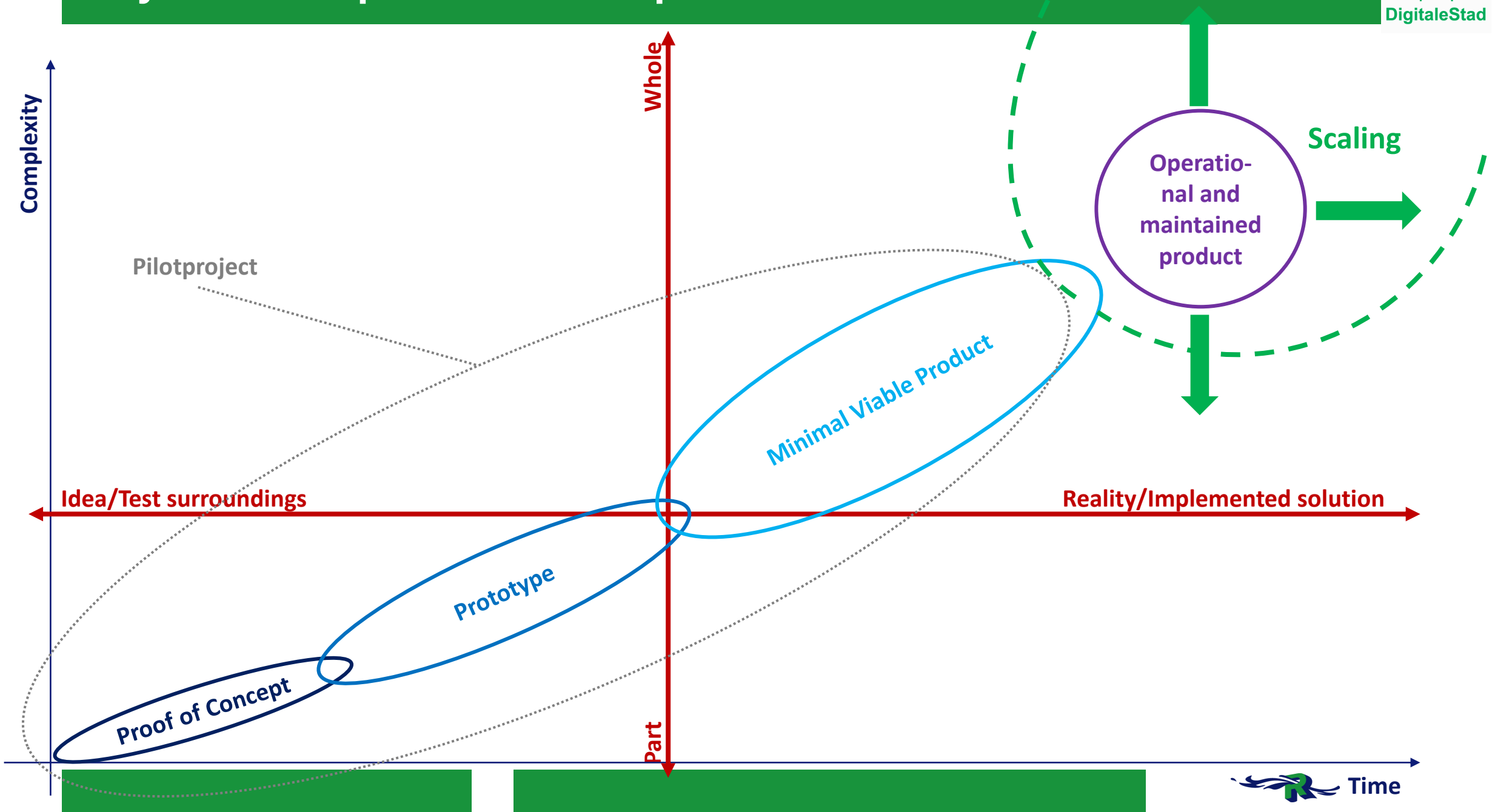
Bron: Rotterdam School of Management (EUR), Marcel van Oosterhout, Rotterdam, 2019

Urban digital ecosystem Rotterdam



Way of development: roadmap open urban platform



Way of development of the Open Urban Platform

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