

Disaster Risk Management in Smart Cities

Koos Wieriks

Chairman Governing Board of IGRAC

(International Groundwater Resources Assessment Centre)



In-country Training Workshop on Smart Cities for
Building Inclusive, Resilient, and Sustainable Cities and Communities
10 November 2022, Bali, Indonesia

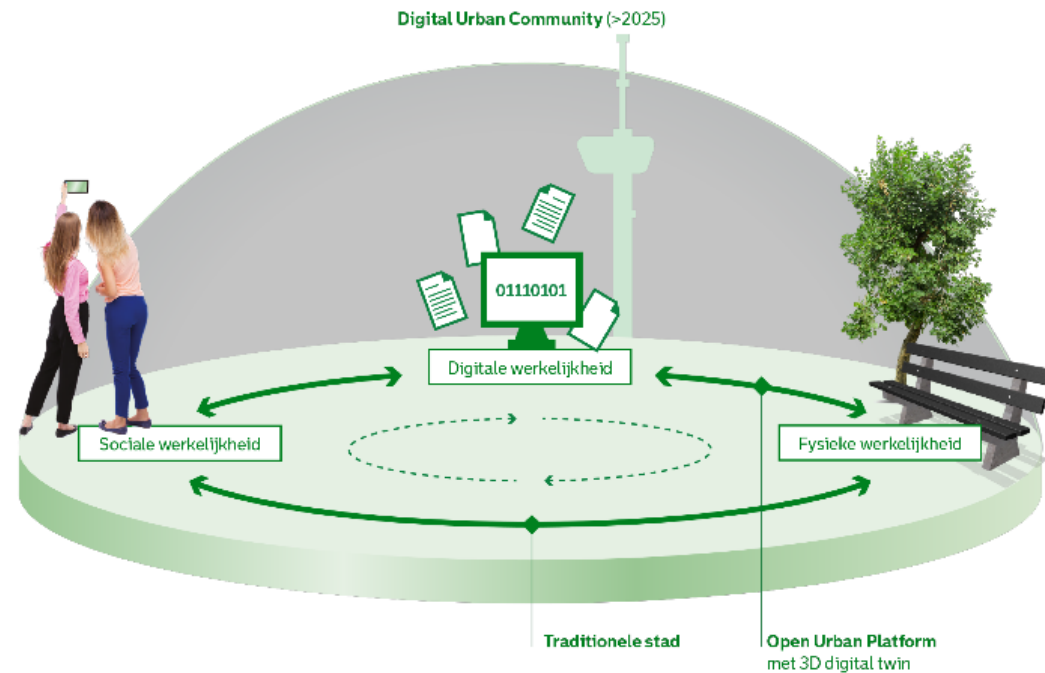
City Concepts

- Smart Cities
- Resilient Cities
- Climate proof Cities
- Liveable Cities
- Green Cities , Forrest Cities
- Intelligent Cities
- Sustainable Cities



Objective

- Sustainable development
- Social, for the people
- Economic,



Disaster Risk

- Flood (sea, rivers, extreme rainfall)
- Drought
- Heat
- Earthquake, tsunami
- Landslide
- Pollution (accidental, systematic)

Causes of disasters

- Natural
- Man made
- Climate induced



Flood in Noordereiland



Water quality



Excess stormwater on the street



Dike subsidence



Inundated cellars

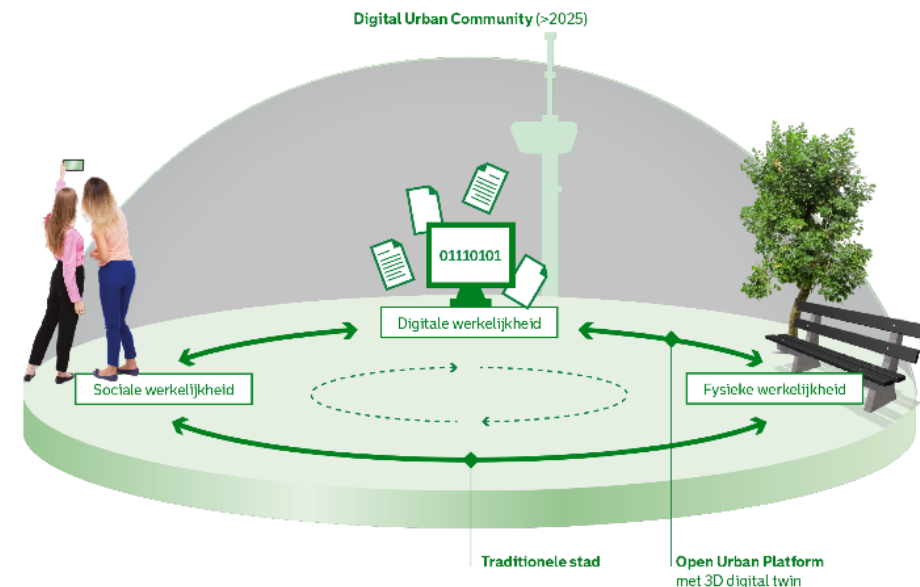


Heat and bridges

Solutions

- Common sense (prevention, location, zero discharge)
- Infrastructure
- Technology
- Nature based

- ❖ HOW RESILIENT IS OUR **VITAL INFRASTRUCTURE**?
- ❖ WHAT **CASCADE EFFECTS** COULD OCCUR?
- ❖ DO WE NEED **NEW BUILDING CODES**?
- ❖ SHOULD WE INCLUDE NEED FOR **SHELTERS**?
- ❖ HOW TO INCLUDE **OTHER TRANSITIONS**?
- ❖ HOW TO DEAL WITH INCREASING **UNCERTAINTIES**?



Accelerators

- Data, knowledge
- Capacity building
- Management, institutions
- Innovation
- Finance



**SDG 6 GLOBAL
ACCELERATION
FRAMEWORK**

Smart concepts

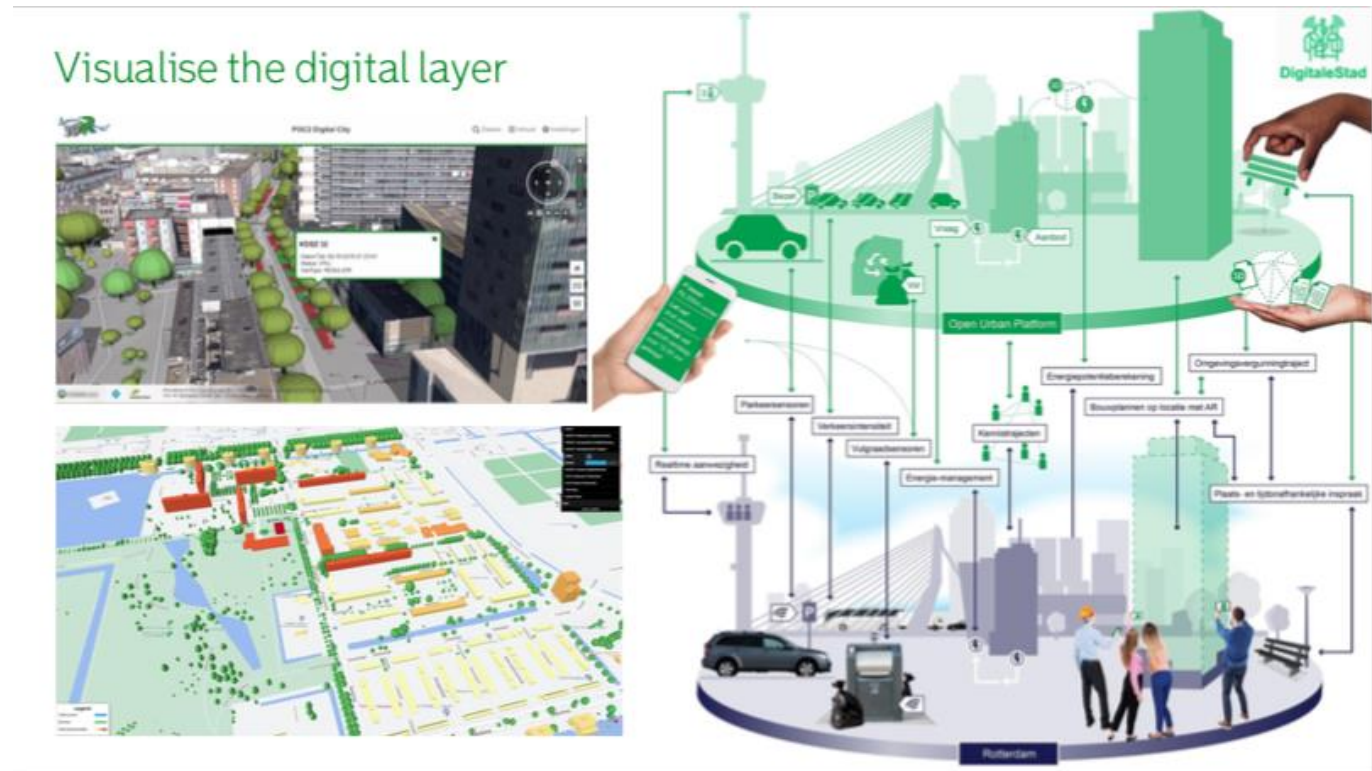
Communication, stakeholder involvement

Early warning

Social media

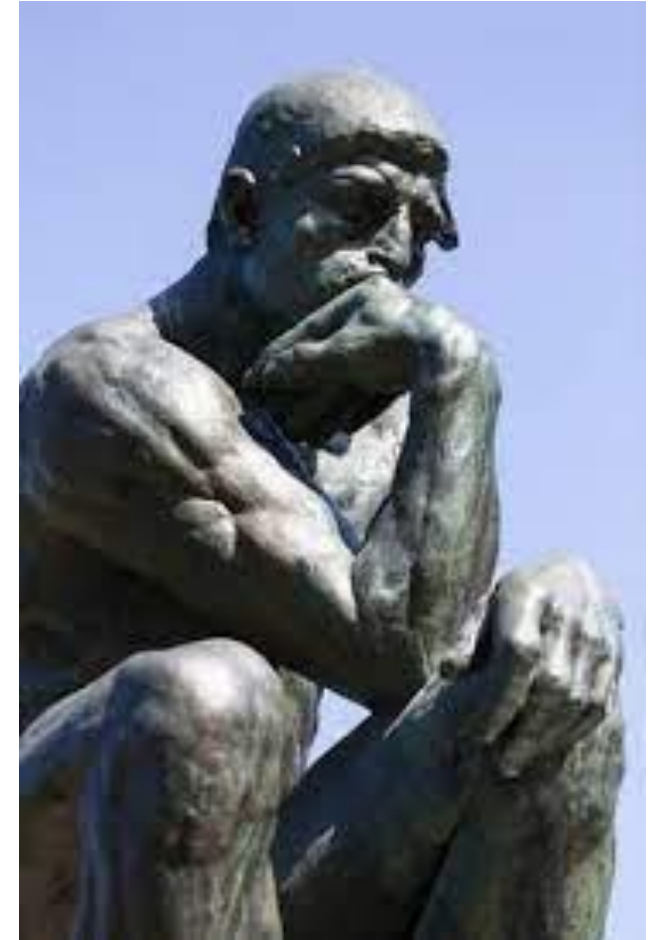
Apps, gadgets

Design tables



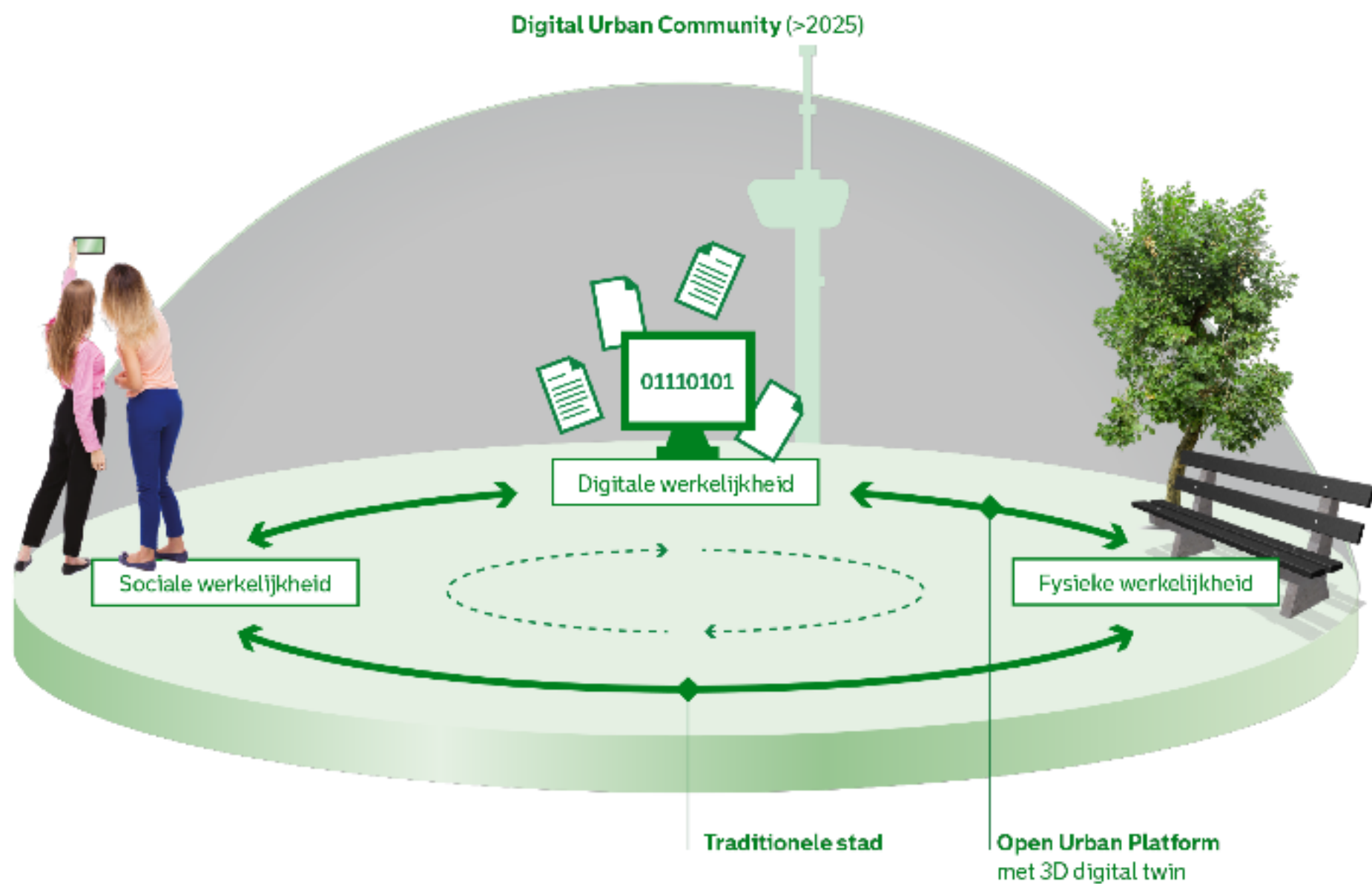
Lessons

- Think !
- Address people, economy, nature
- Invest in future development, not damage repair
- Look ahead
- Prevention pays
- Nature based solution are effective
- Use technology for information, communication
- Involve all stakeholders



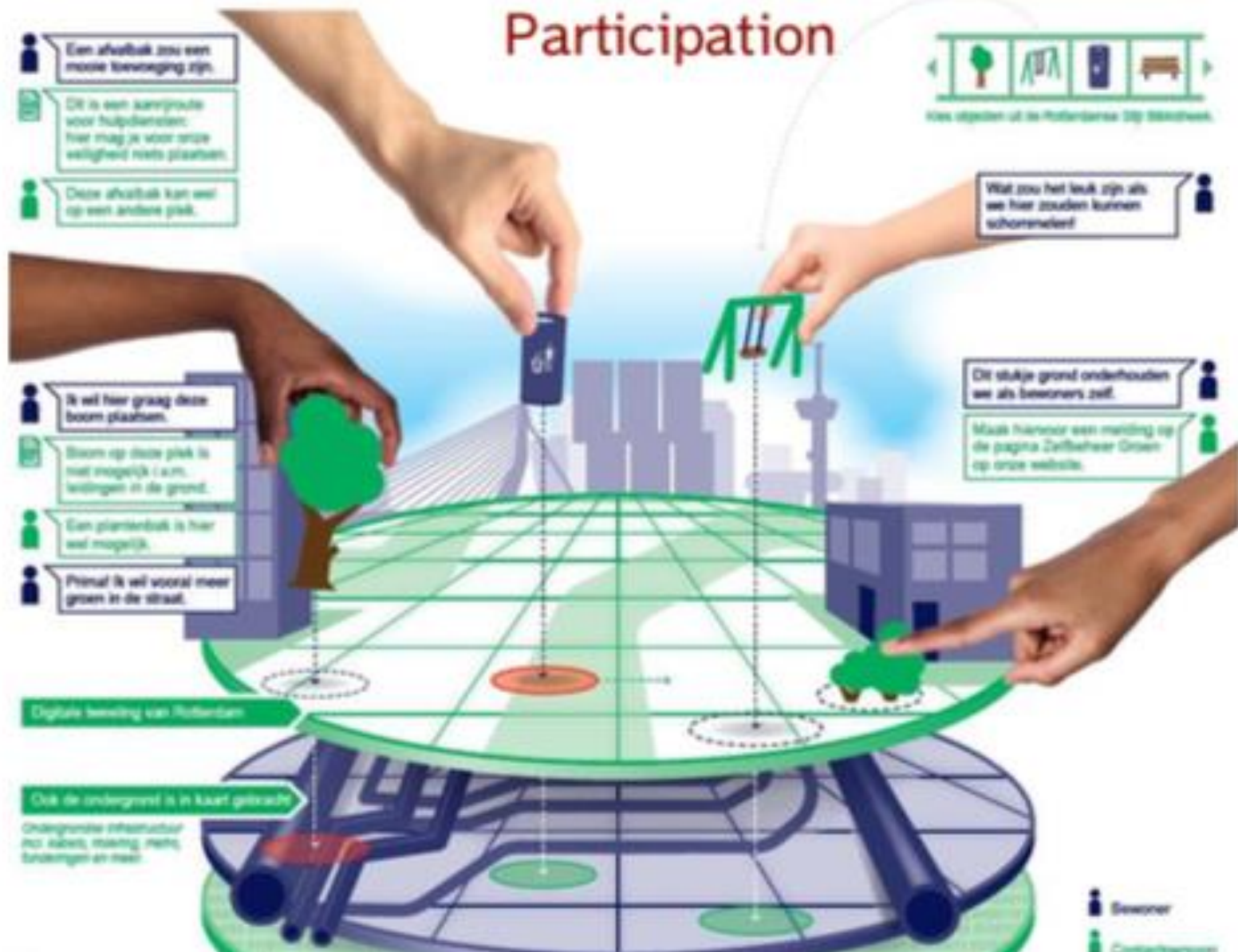
This is the beginning ...

- We must learn how the city is used in the digital era
- What are the requirements for this increasingly digitalizing city
- How can we facilitate good things and prevent bad things happening
- What is our role as a local government and what is up to the market
- How can we deal with the ethical discussions of sensors, data and algorithms



Co-creation in the digital city: time- and place independent participation

Participation



Commercieel verschikende ontwerpen maken en beoordelen	Direct invloed is kosten en budget
<p>Ontwerp 1 Voorstel van buurtbewoners en de gemeente.</p> <p>1000 10</p>	€ 15k
<p>Ontwerp 2 Voorstel van buurtbewoners en wijkteam.</p> <p>1500 5</p>	€ 20k
<p>Ontwerp 3 Voorstel van de gemeente Rotterdam.</p> <p>140 75</p>	€ 10k

Waarom kan de stad en participatie in een digitale werkdag?

GR
 VR
 AR
 Er zijn meerdere doel en private mogelijkheden.

Bewoners kunnen online brainstormen over de inhoud van hun omgeving.

Gemeente en bewoners kunnen makkelijk samenwerken, uitwisselen en kennis delen.

- 1. Een interactief wereldwijde stappenplan voor de lokale omgeving**
- 1. Digitaal concept plan**
Plannen zijn sneller te beoordelen door zowel de bewoners als de gemeente.
 - 2. Toelichting en aanpak**
Dit gebeurt over de telefoon en via vergaderingen en benodigde vergoedingen.
 - 3. Uitvoering**
Dit wordt uitgevoerd door gebruik van een systeem door alle betrokkenen.

Bewoner
 Gemeente



Technology is an "enabler",
not the purpose

- With thanks to the City of Rotterdam and Deltares
 - Contact: koos.wieriks@gmail.com