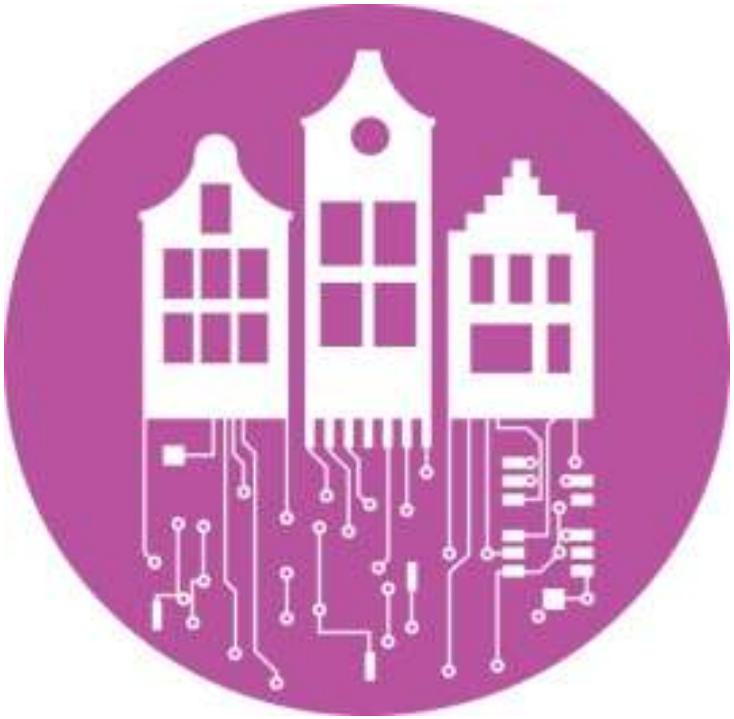
Smart Cities

A Spatial Planning and Design Approach



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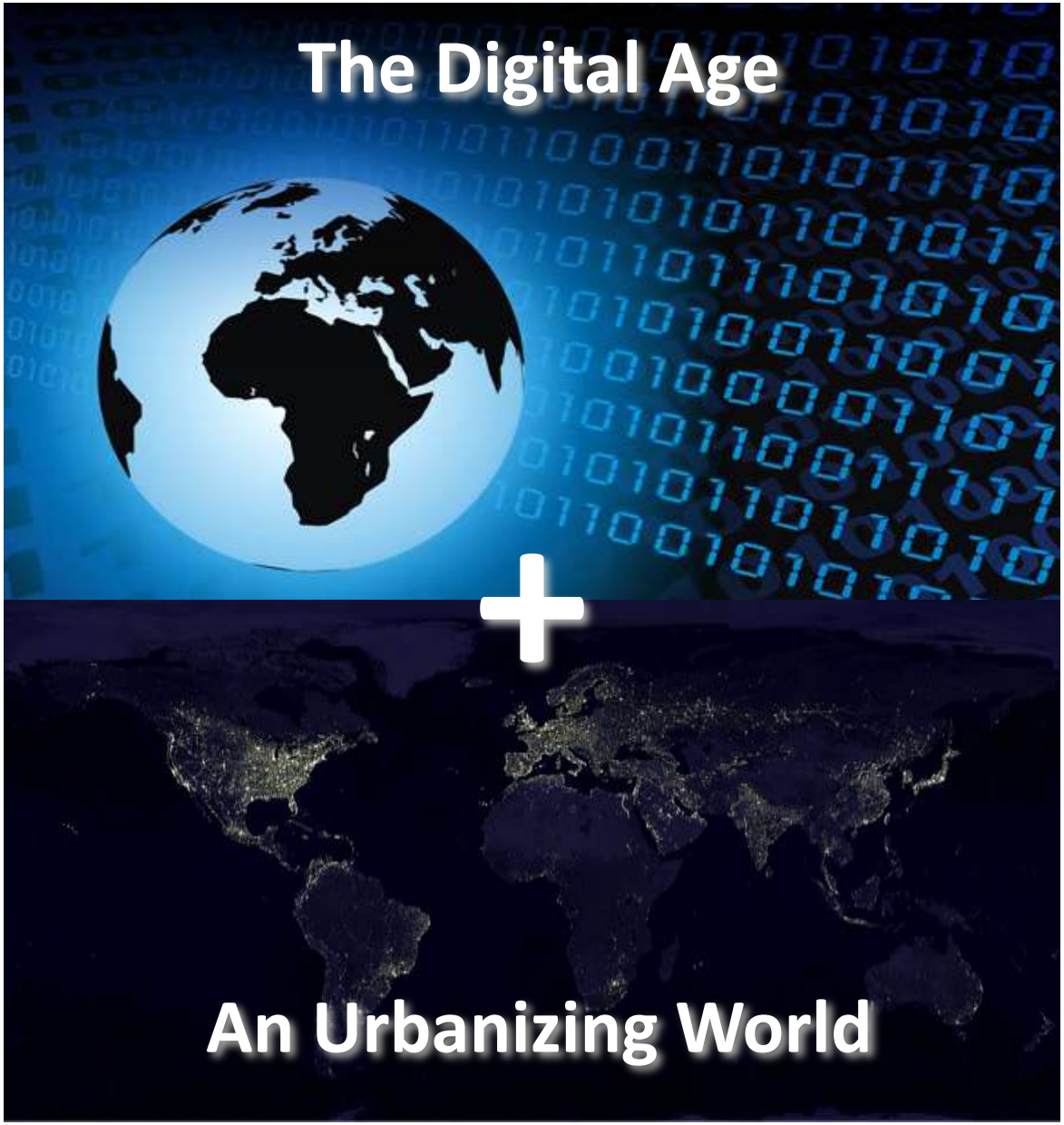
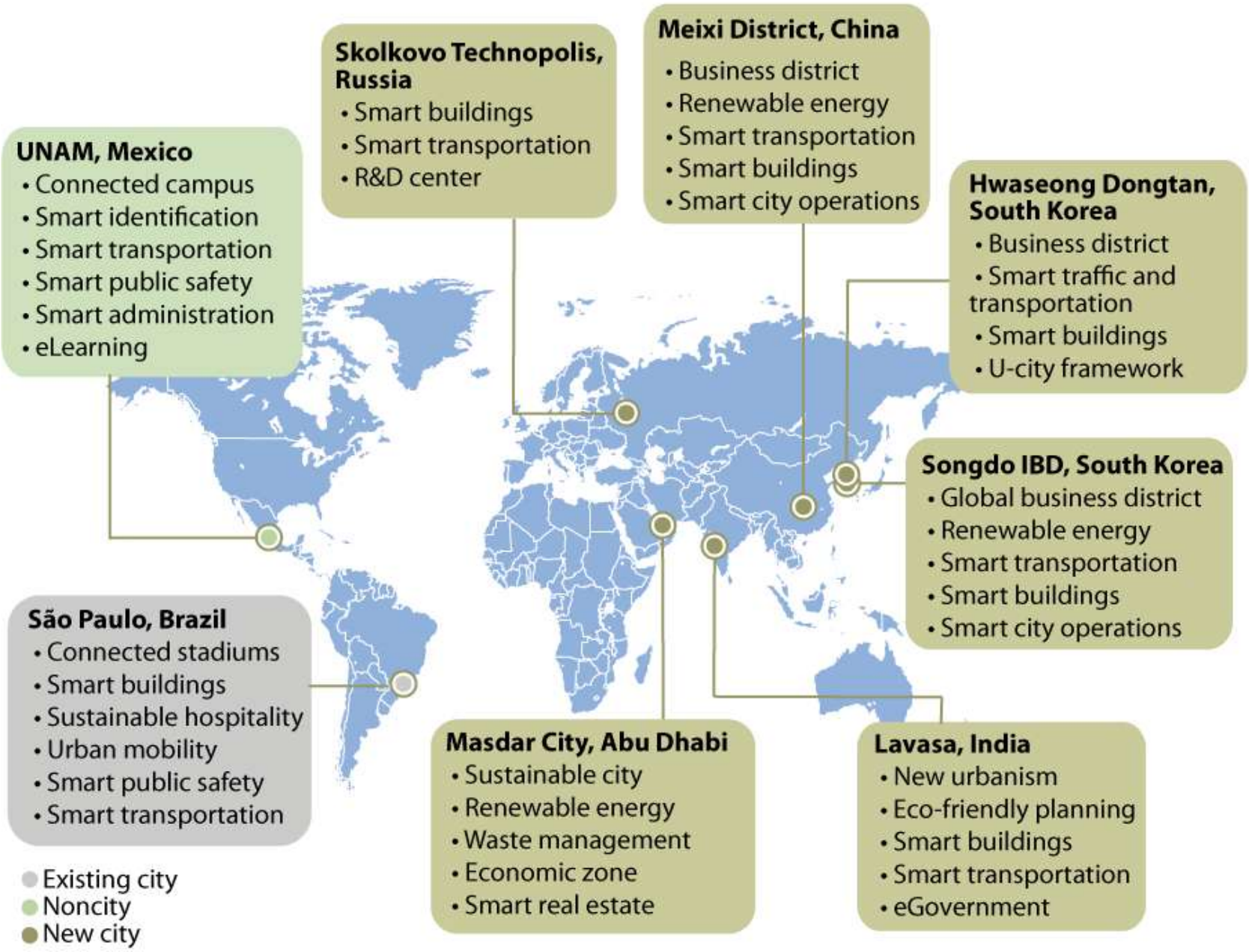

The Digital Age
+
An Urbanizing World


Skolkovo Technopolis, Russia
• Smart buildings
• Smart transportation
• R&D center
Meixi District, China
• Business district
• Renewable energy
• Smart transportation
• Smart buildings
• Smart city operations
UNAM, Mexico
• Connected campus
• Smart identification
• Smart transportation
• Smart public safety
• Smart administration
• eLearning
Hwaseong Dongtan, South Korea
• Business district
• Smart traffic and transportation
• Smart buildings
• U-city framework
Songdo IBD, South Korea
• Global business district
• Renewable energy
• Smart transportation
• Smart buildings
• Smart city operations
São Paulo, Brazil
• Connected stadiums
• Smart buildings
• Sustainable hospitality
• Urban mobility
• Smart public safety
• Smart transportation
Masdar City, Abu Dhabi
• Sustainable city
• Renewable energy
• Waste management
• Economic zone
• Smart real estate
Lavasa, India
• New urbanism
• Eco-friendly planning
• Smart buildings
• Smart transportation
• eGovernment
Existing city
Noncity
New city

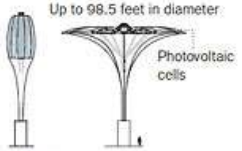
Masdar

A Sustainable City in the Desert

Promoters of Masdar, a city under construction near Abu Dhabi, say that it will be the world's first carbon-neutral city. It will be home to a research institute focused on renewable energy and sustainability, and eventually, if all goes as planned, to various clean-technology companies, and to a projected 45,000 residents and another 45,000 commuters.

Complete this fall Under construction

Neighborhoods will have distinct buildings and design elements. Masdar Plaza, for example, will have 54 sunshades that open and close automatically at dawn and dusk.

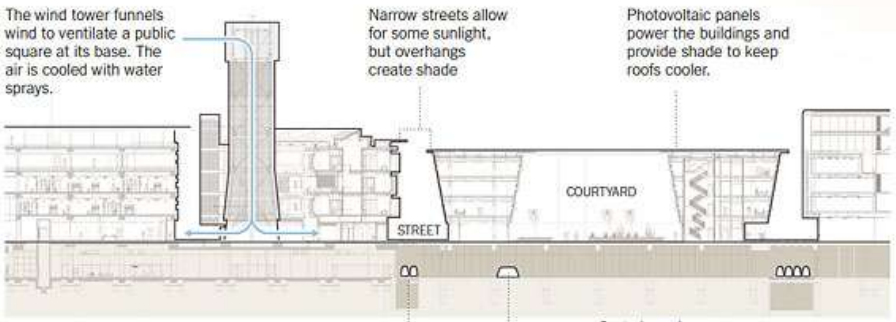


Streets are laid out at angles that optimize shading. Long, narrow parks catch and cool the prevailing winds, and assist in ventilating the city.

Phase 1 MASDAR INSTITUTE
The area being completed this fall has some design features common to the entire project.

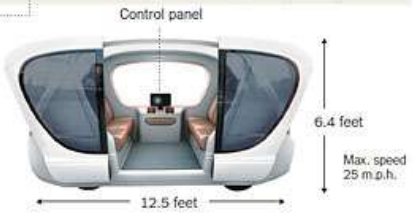
The city is surrounded by recreation areas, power generation facilities, parking garages and food production areas.

A light rail line will pass through the center of Masdar, linking it to downtown Abu Dhabi and providing transport within the new city.



Automated cars with room for four adults.

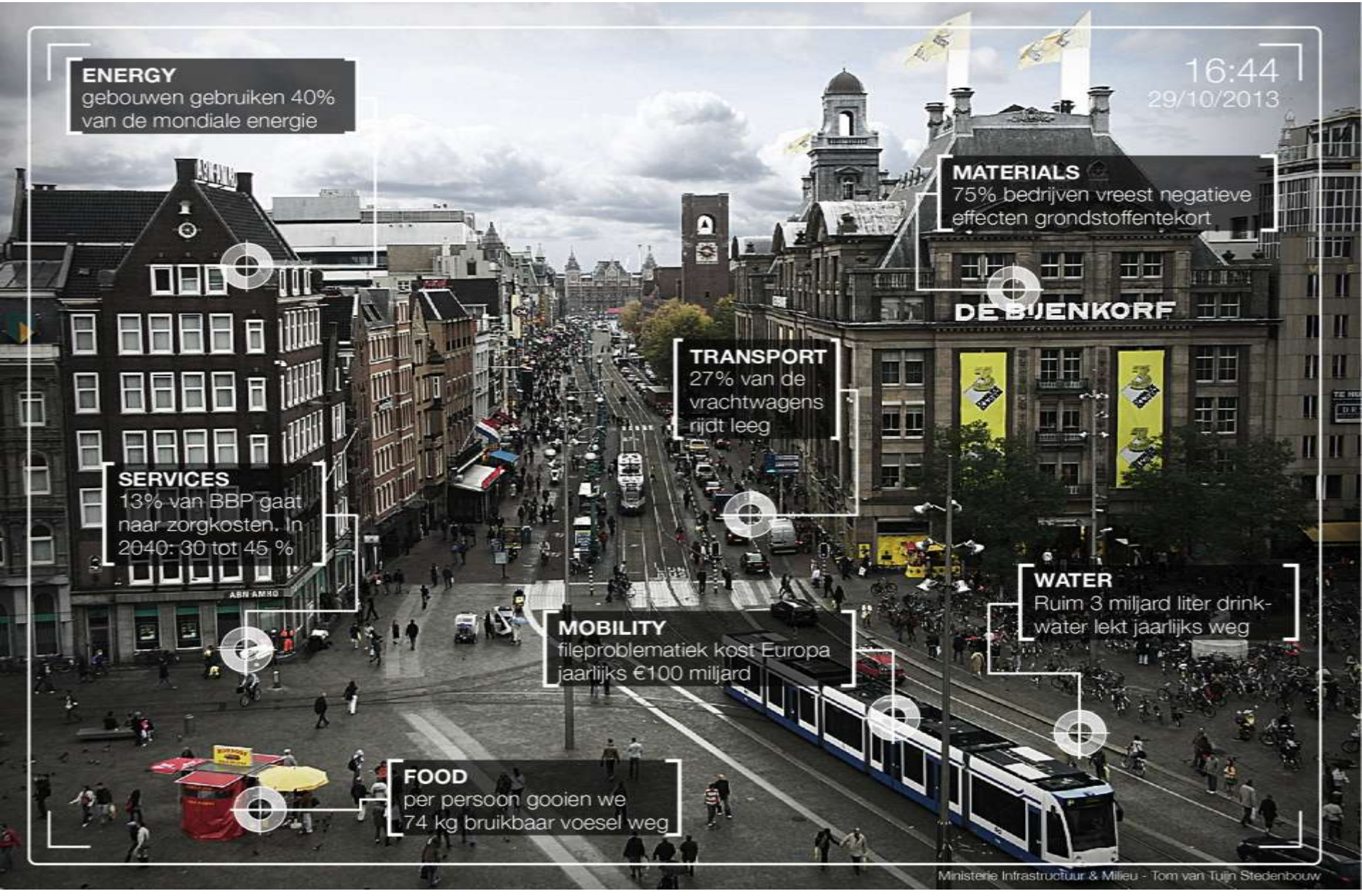
Automated transportation
Masdar will be using an automated system of electric vehicles, including passenger cars and freight trucks. The city's ground level was elevated 23 feet, and the vehicles will operate underneath.



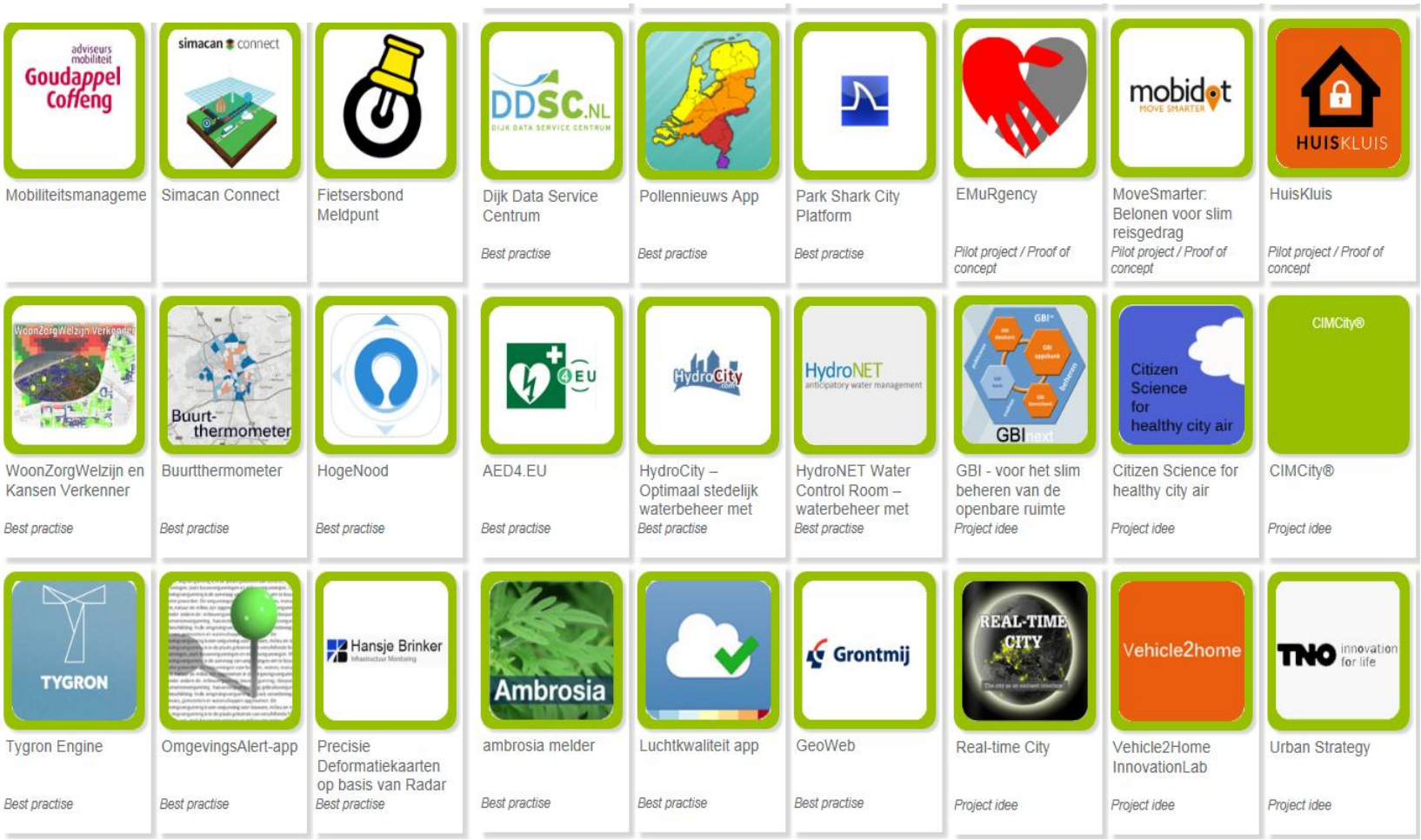
Masdar Headquarters
Photovoltaic panels on Masdar Headquarters, the city's biggest office building, are expected to produce more energy than the building consumes. It is scheduled to be finished in 2013.

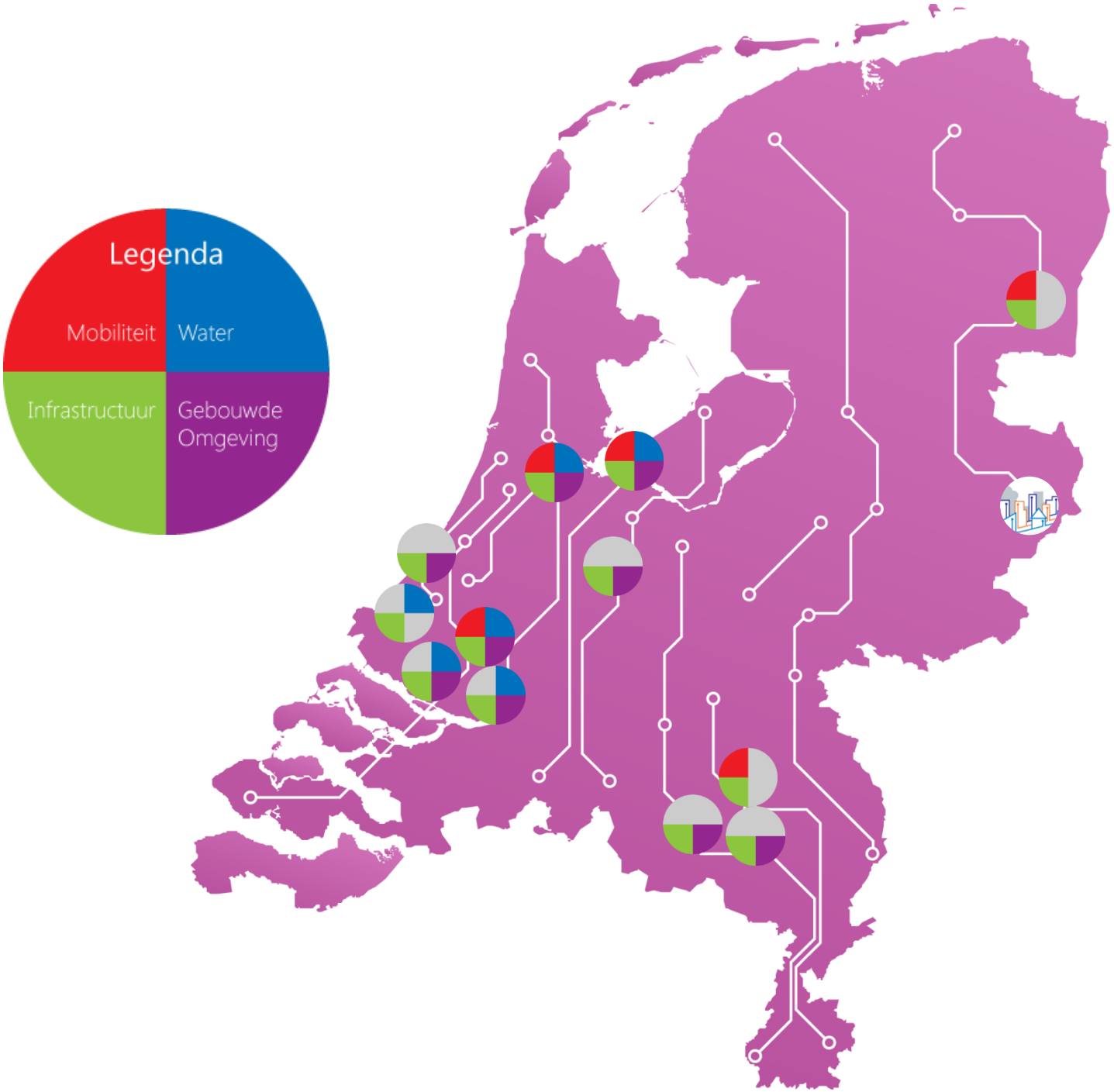
Wind cones will provide natural ventilation and soft daylight to the building's interior.

Making existing cities more efficient

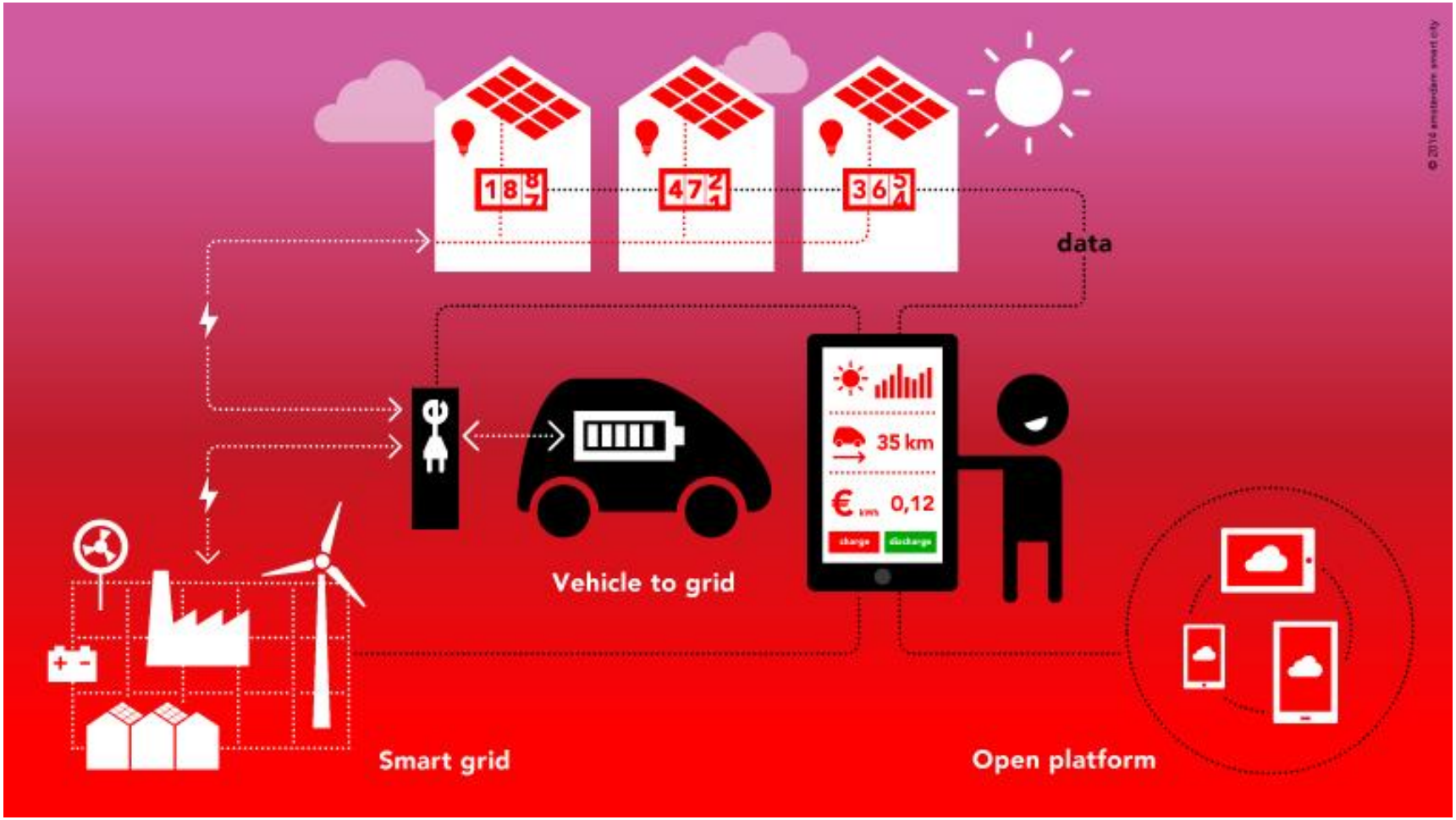


Smart City Apps NL



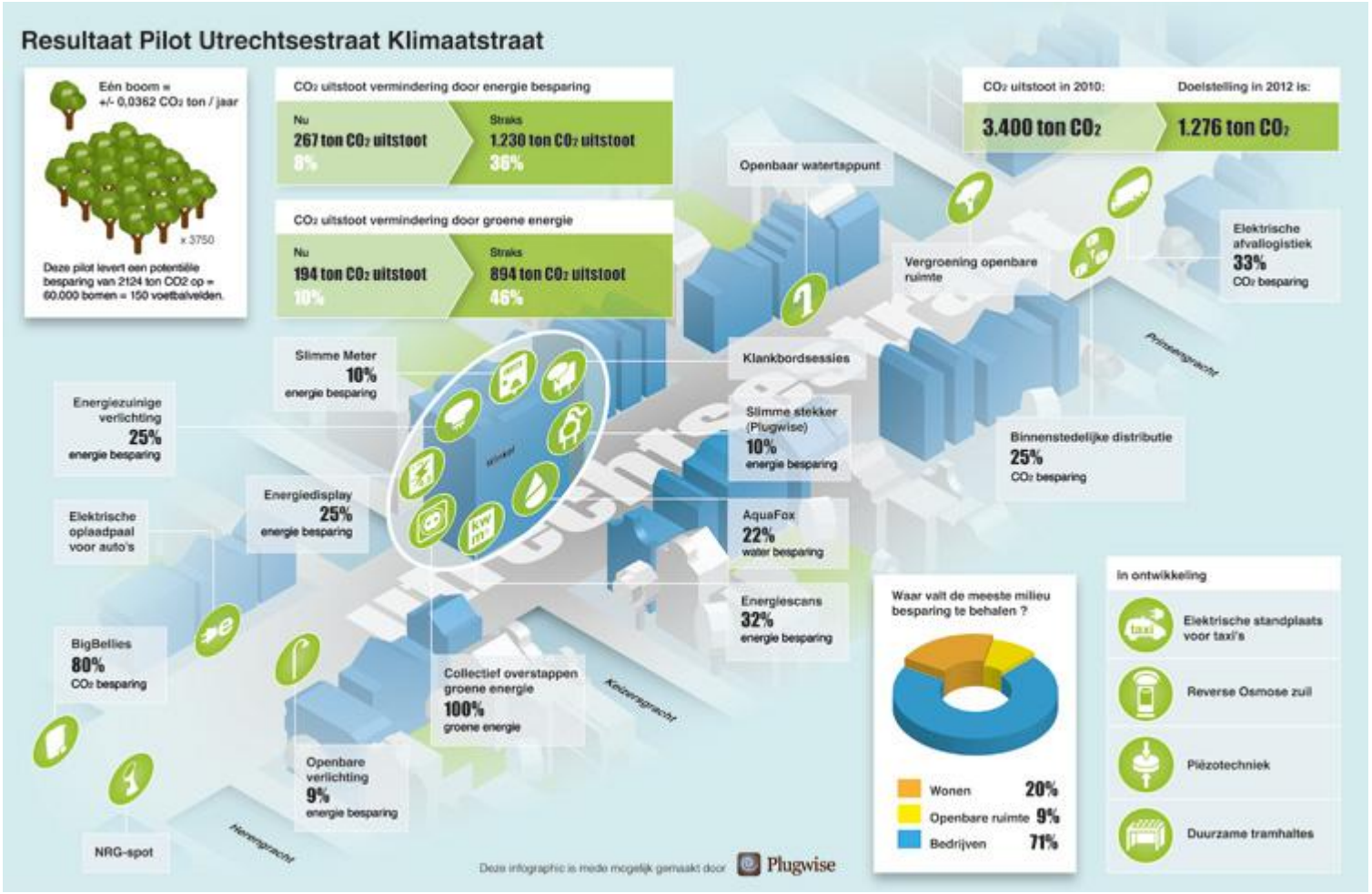

Legenda
Mobiliteit
Water
Infrastructuur
Gebouwde Omgeving

Vehicle 2 Grid



Klimaatstraat

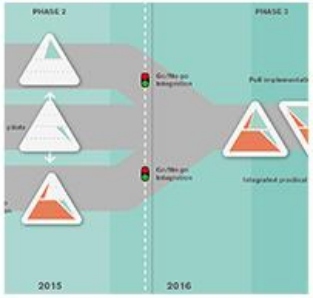
amsterdam smart city



Ministry for Infrastructure & the Environment

De **Praktijkproef Amsterdam** is een grootschalige proef om files in de regio Amsterdam te verminderen. Het gaat om een test die gebruik maakt van innovatieve technieken in de auto en op de weg.

Over de praktijkproef



Meedoen aan de praktijkproef

Gemeente Amsterdam
Provincie Noord-Holland
Rijkswaterstaat Ministerie van Infrastructuur en Milieu
Stadsregio Amsterdam

Goals / Position directorate Spatial Development

- **Mobilize stakeholders**
  - to connect stakeholders, to create Living Labs
  - to start Communities of Practice (COP's)
- **Create the best conditions**
  - Open Data, Big Data
  - connectivity fysical and digital infrastructures
  - to adapt laws and regulations
- **Know the physical effects**
  - strategic vision of smart urbanization

Innovative

Components

Smart Grids

Open Data

Innovative
Components
Smart Grids
Open Data

Energetic Society
Alliances,
Governance,
credit cooperations
etc.

Goals ambitions
sustainable, social / economically vital, livable, healthy, etc.

Innovative
Components
Smart Grids
Open Data

Energetic Society
Alliances,
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credit cooperations
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Components
Smart Grids
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Alliances,
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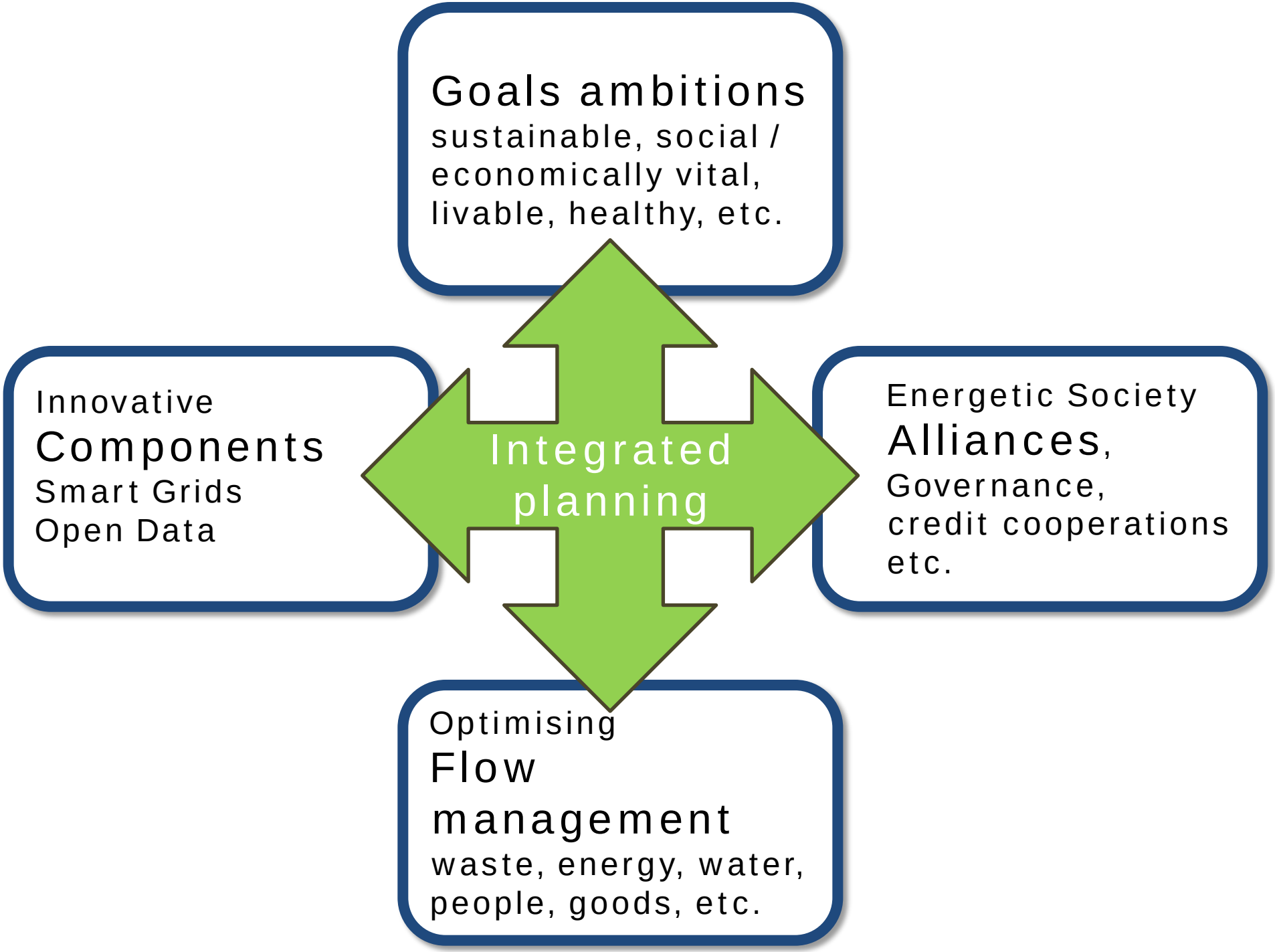
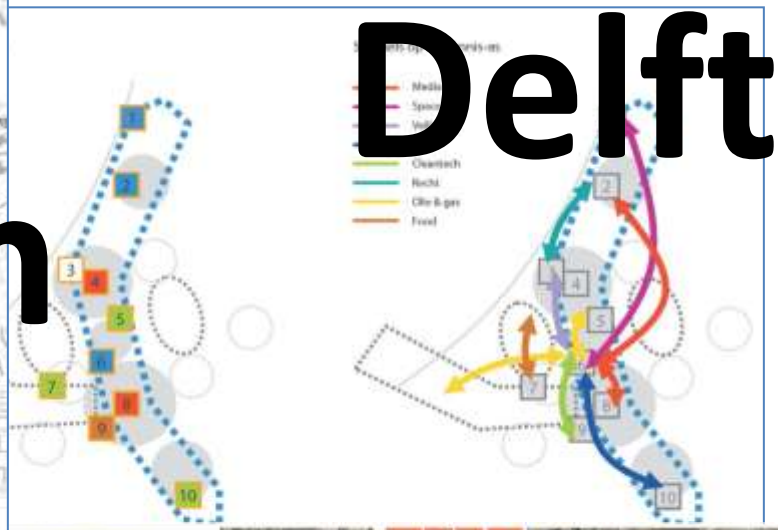
credit cooperations
etc.

Optimising
Flow
management
waste, energy, water, people, goods, etc.


Goals ambitions
sustainable, social / economically vital, livable, healthy, etc.
Innovative
Components
Smart Grids
Open Data
Integrated planning
Energetic Society
Alliances,
Governance,
credit cooperations
etc.
Optimising
Flow management
waste, energy, water, people, goods, etc.

Amsterdam

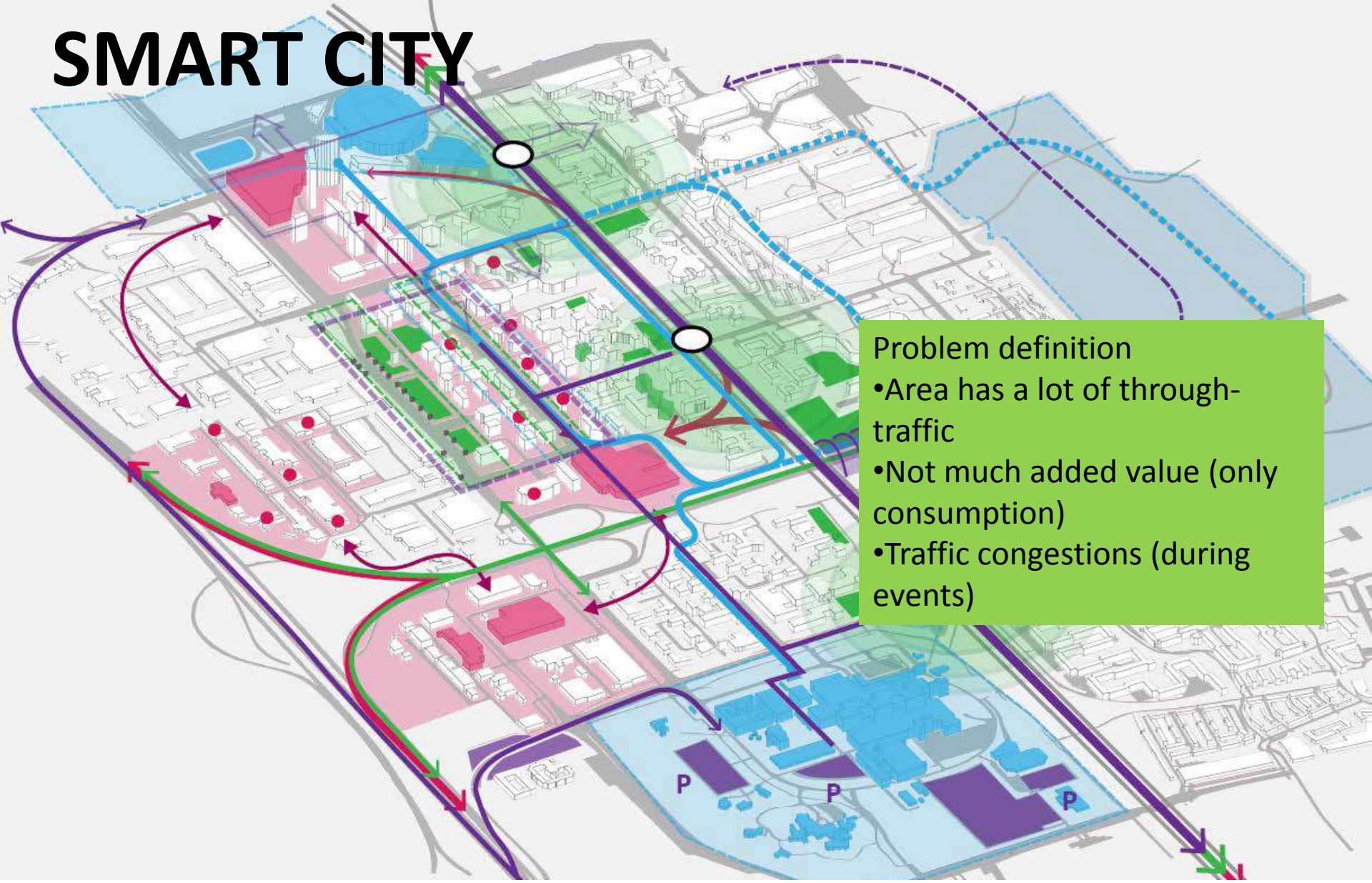
Delft



Eindhoven

Assen

SMART CITY

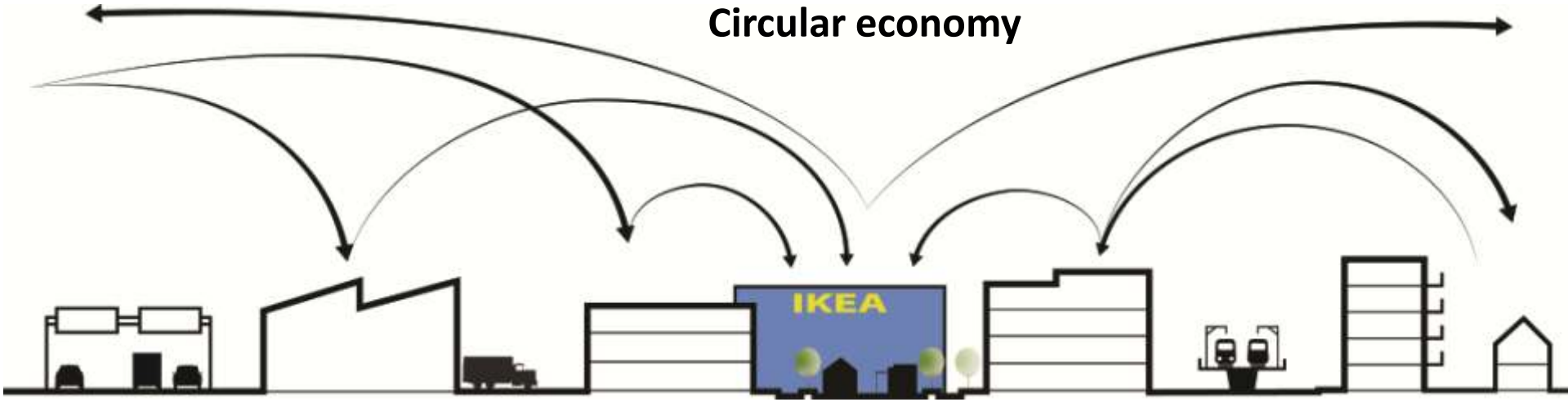


Problem definition
- Area has a lot of through-traffic
- Not much added value (only consumption)
- Traffic congestions (during events)

Optimalisation through mapping demand and supply and flows

Solution: creating a local value chain | Home&living district

Local metabolism
Circular economy



A2/A9	DISTRIBUTIE	UPCYCLING	SHOPPING	DESIGN	OV	HR
Utrecht	packaging	2e hands	winkels	prototyping	trein	lokale ondernemers
Eindhoven	data centra	kringloopwinkels	pop-up stores	3d printing	metro	werknemers
Schiphol	logistiek	werkplaatsen	galleries	fablabs	bus	studenten HES / ROC
Almere	stadslogistiek	repaircafe's	marketing	customizing	pickup points	



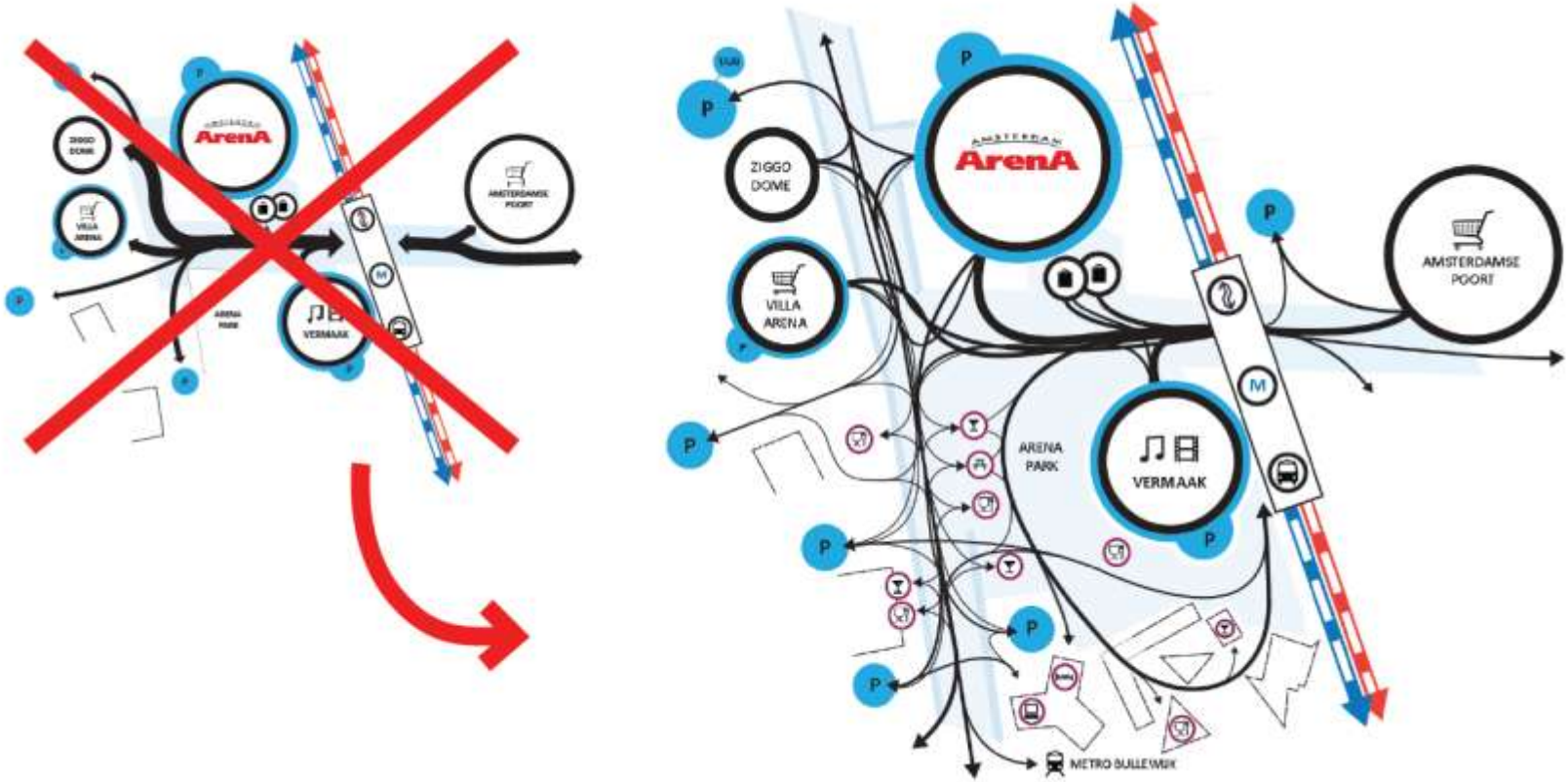


Smart mobility: components of location based smart solutions

- Robust infrastructure (with buffering capacity)
- Flexible supply (both of mobility and other services), that can adjust to changes in the demand side
- Smart programming of activities in space and time (spread the demand for mobility)
- Real-time flowmanagement using apps and sensing

Trias mobilica

1. ‘Peak shaving’ by creating buffer capacity in het network



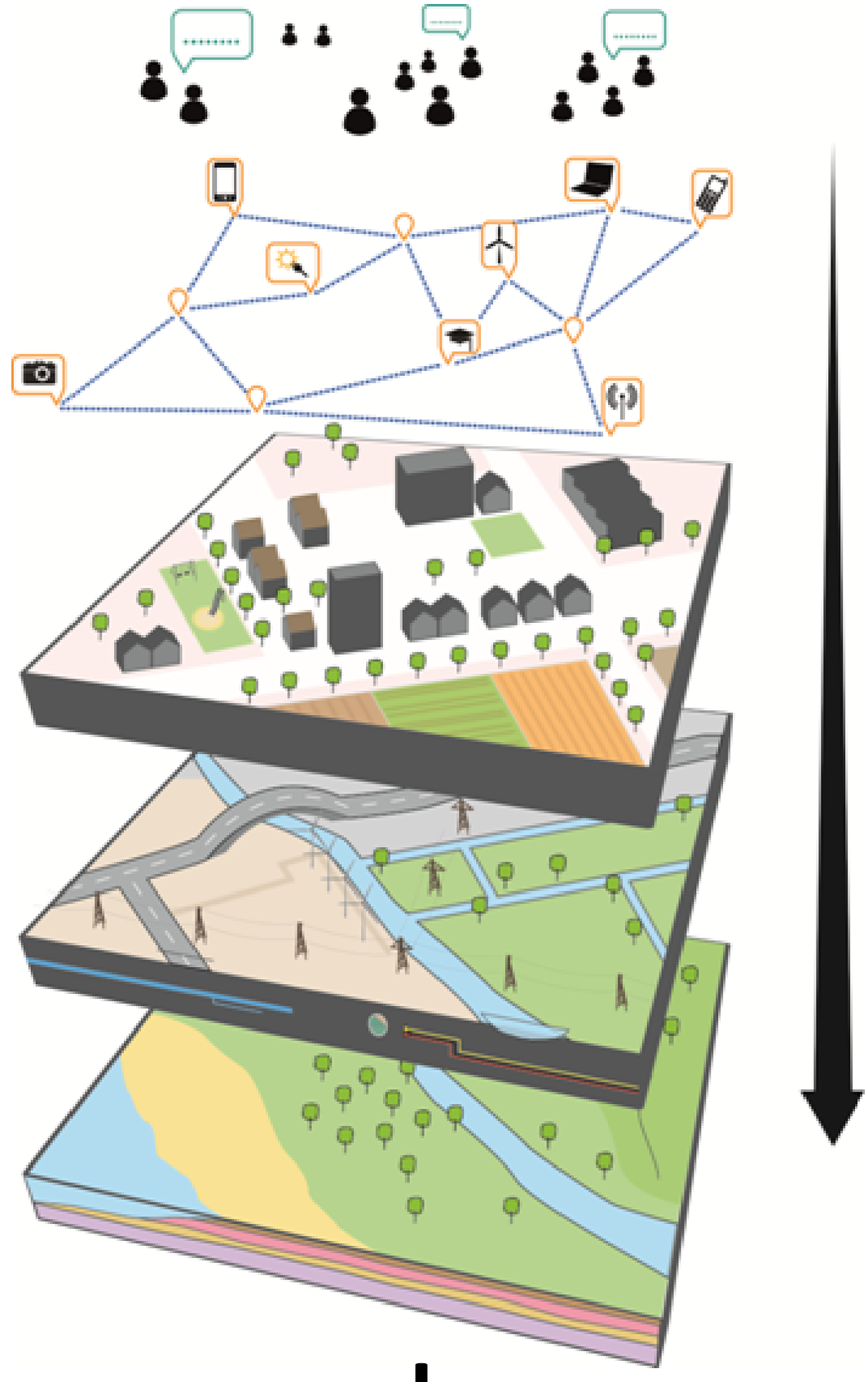
2. Changing demand for mobility with apps




3. Sustainable mobility: electrification

The Importance of Spatial Planning and Design

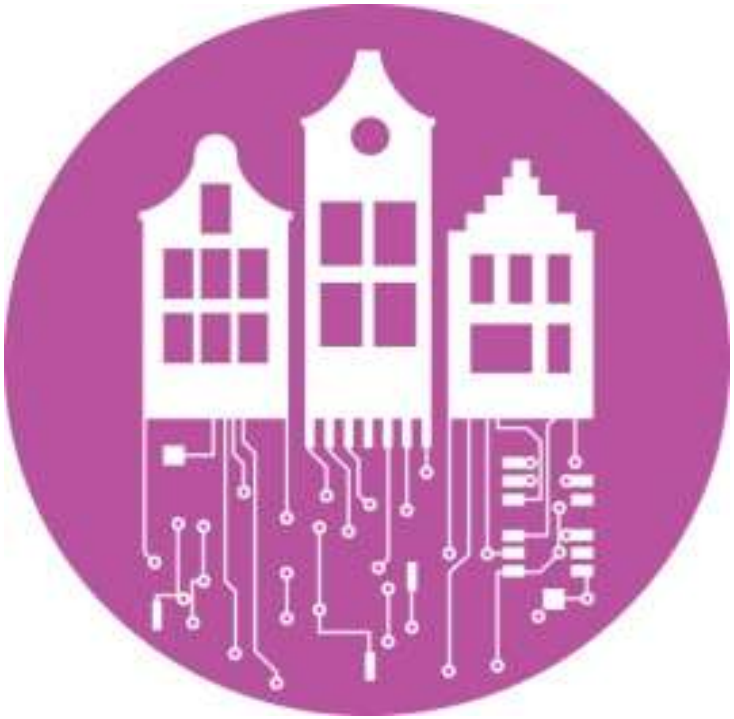
- Innovation between the silos, through a locationbased, comprehensive approach
- Smart Cities = smart technology + smart citizens + smart governance
- Design needed as interface between technology and user experience
- Location based approach needed to implement technology, to relate to local needs and stakeholders



Smart Cities – a new layer

Smart Cities

A Spatial Planning and Design Approach



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