

BAM Smart City



Energy Now 2019 – www.bam.com/smartercity - smartercity@bam.com
T.A.J. van Goch, PDEng. MSc.

BAM Smart City



Energie &
Smart Grids

HOW?

Afronding

Energy Now 2019 – www.bam.com/smartercity - smartercity@bam.com
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BAM - 'Building the present, creating the future'

Turnover
7,2B

Employees
20156

Countries
40 met 5 Thuismarkten



BAM - 'Building the present, creating the future'



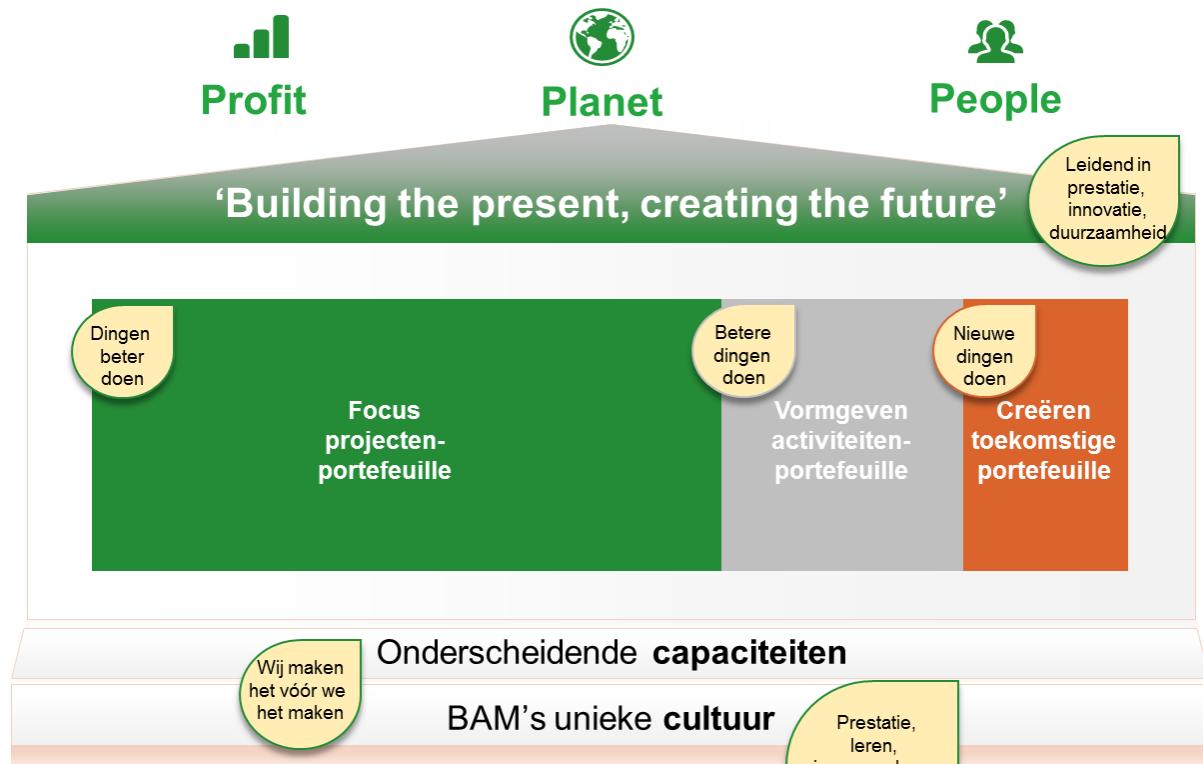
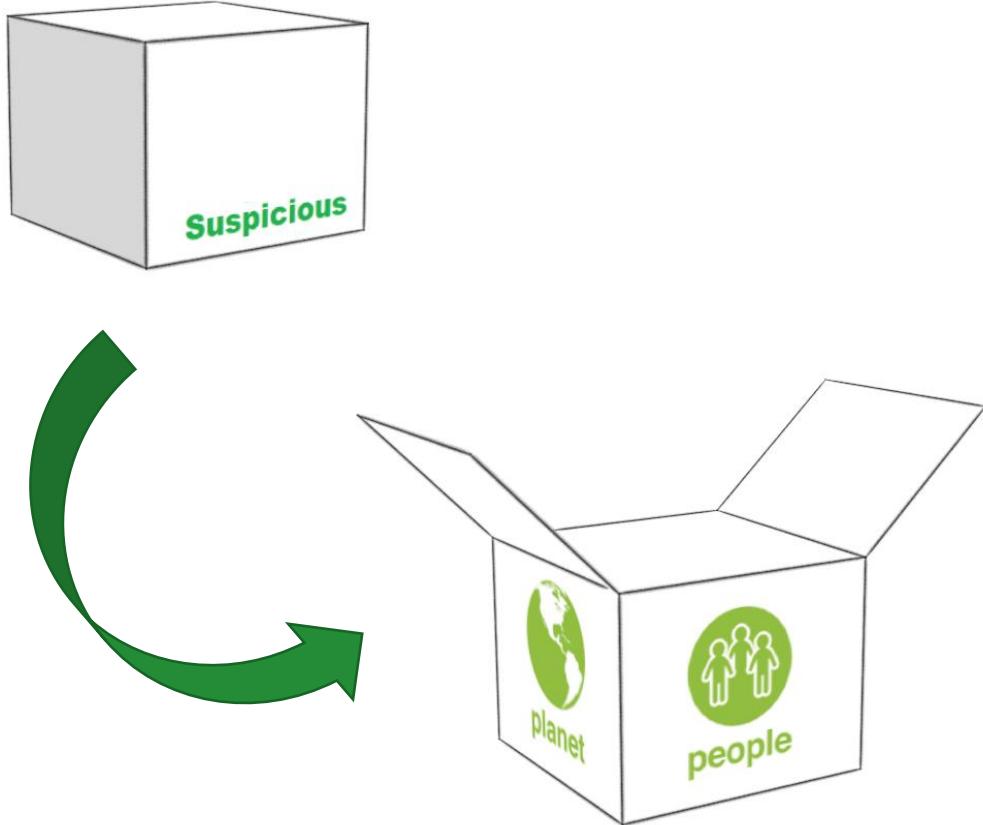
BAM - 'Building the present, creating the future'

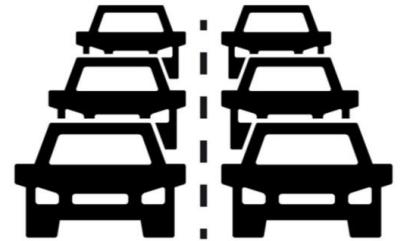


BAM - 'Building the present, creating the future'



BAM - 'Building the present, creating the future'





**Mobility
Resources
Energy
Climate
Health**

BAM Smart Solutions

NOM Dwellings & Smart Grids
REnnovates

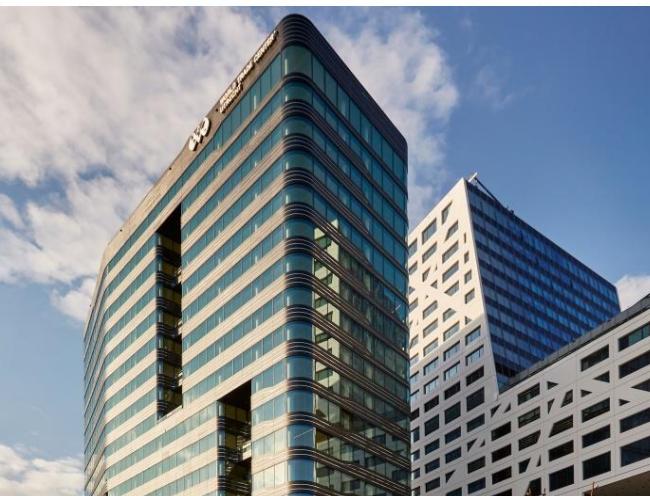


BAM Smart Solutions

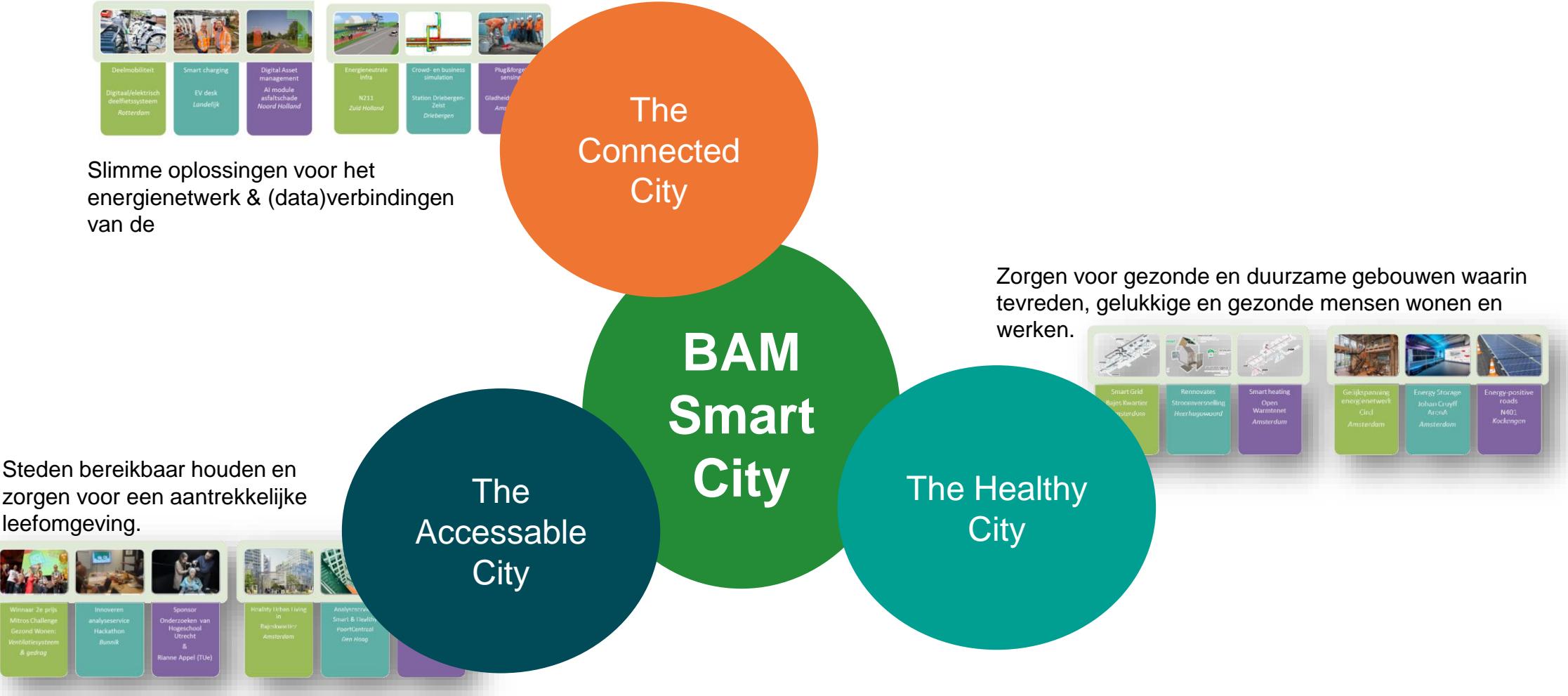


Smart EV's
Gobike

BAM Smart Solutions



Healthy Buildings & (Pro)Active Control
Mitros, BBRIT+1, WELL





What is a Smart City?



*“An environment that **proactively** adjusts to user needs, that **connects** people with the surroundings, and in which actors cooperate in a **dynamic ecosystem** in order to **provide a healthy, comfortable, sustainable and affordable built environment.**”*

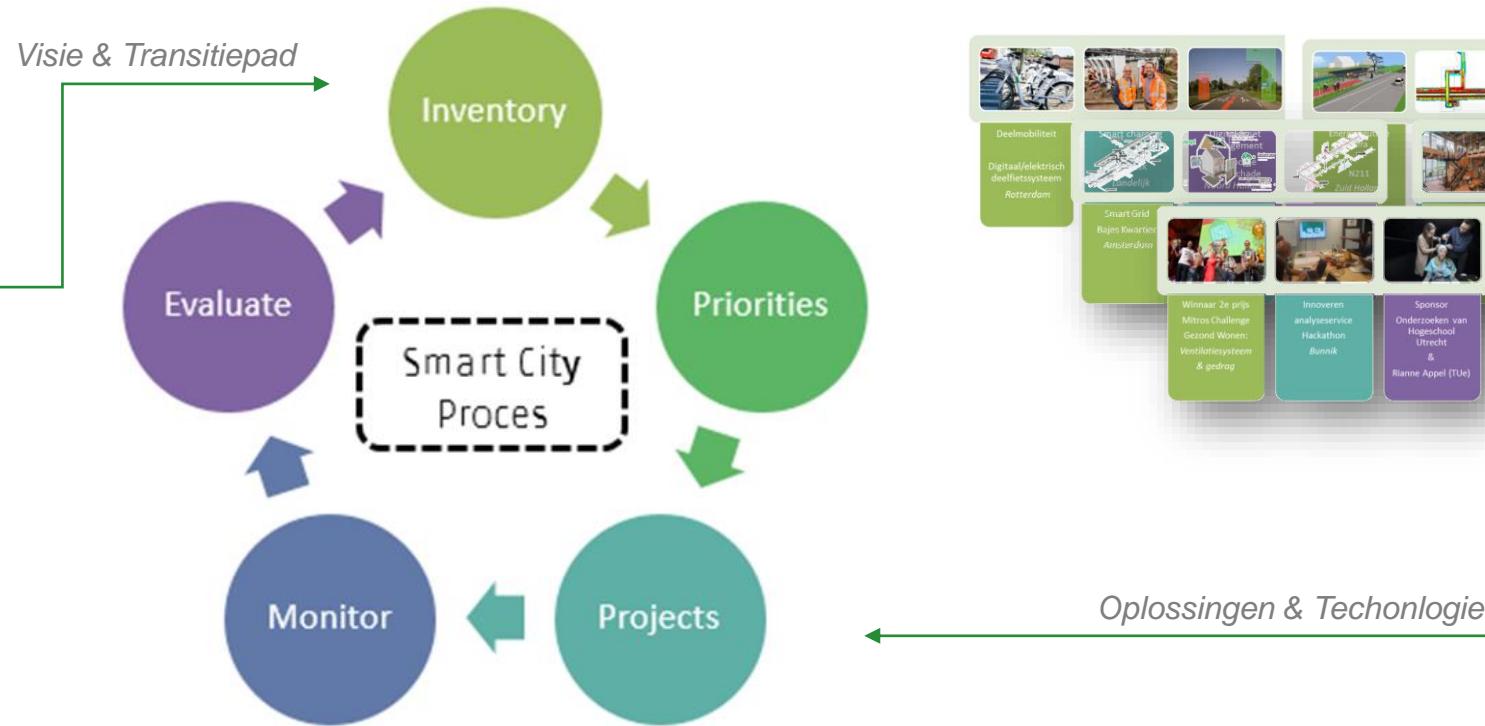


Long term
Priorities
Organize
Resilience

A Smart City is like Rome; many ways lead up to it, and it is not built in one day



"Omgeving die zich proactief aanpast aan de gebruikers waarin mensen met elkaar en met de omgeving in verbinding staan en waarin verschillende actoren dynamisch samenwerken in een ecosysteem ten bate van een gezonde, comfortabel, duurzame en betaalbare gebouwde omgeving".



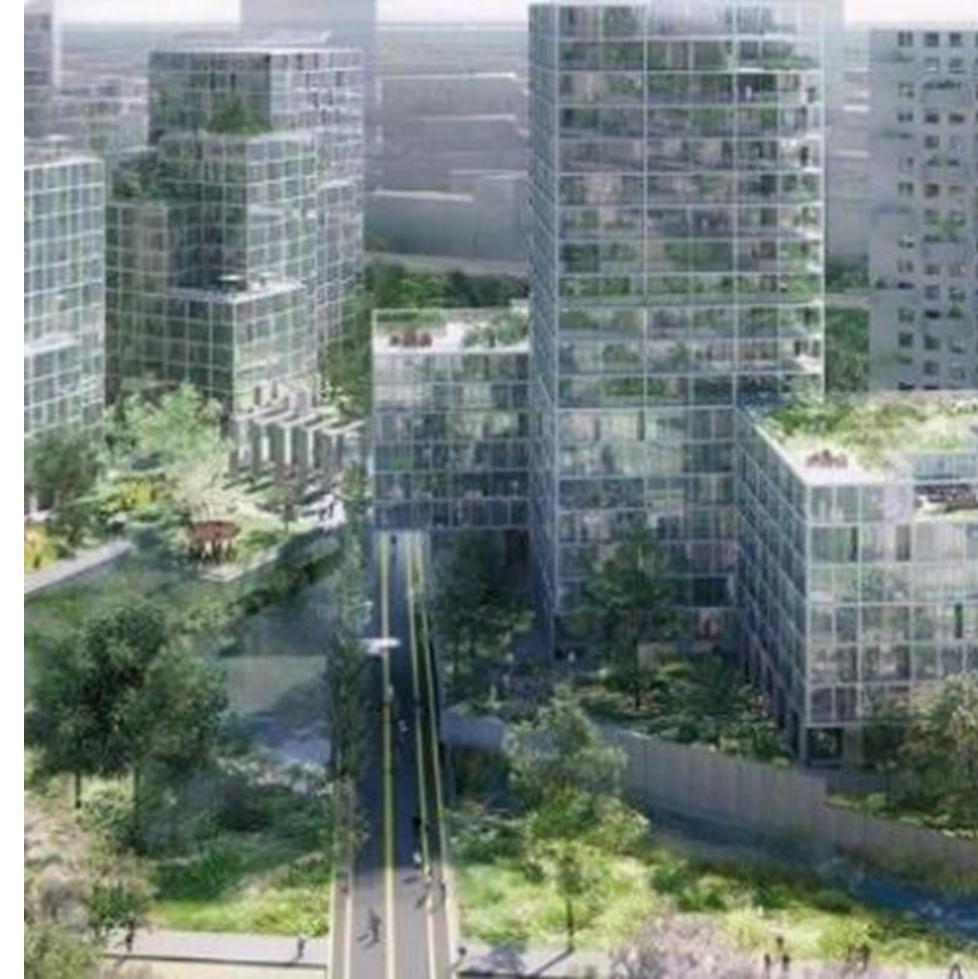
Mobiliteit hub
Energie Neutral
Tiny Forest & Water buffering
(analoge)Community

Schoenmaker Plantage Delft

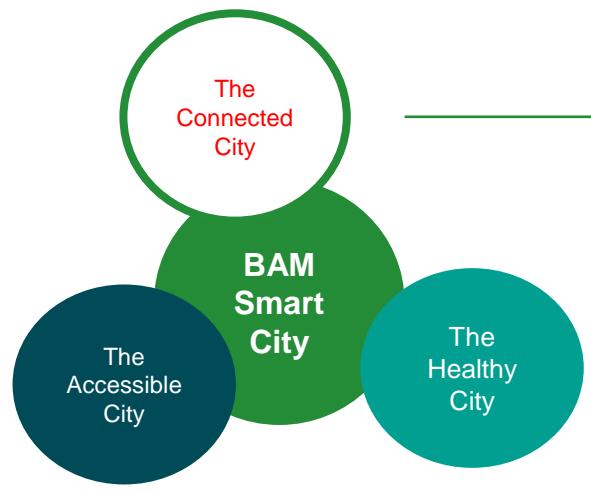


Circulair
Health
Mobility (E)hub
Platforms
Living Lab

Bijlmer Bajes



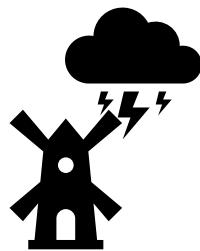
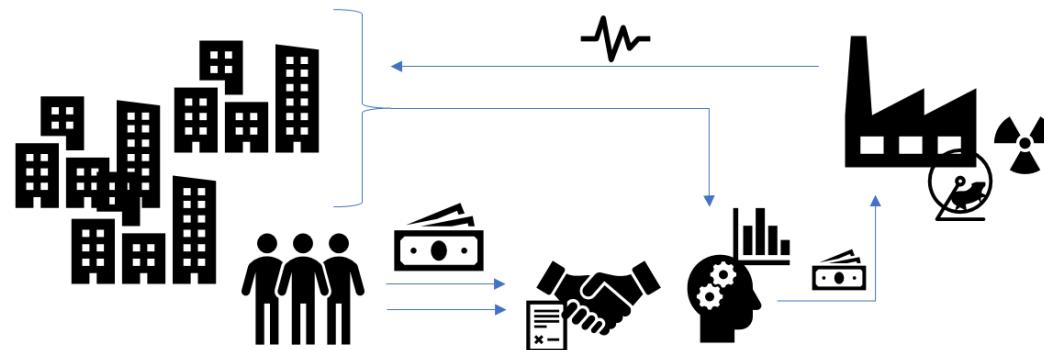
**The Smart City is not the future
It is today**



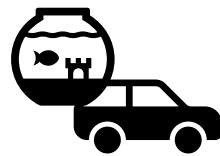
Smart solutions for the energynetwork & (data)connections of the city & her users

The Smart Energy Landscape as foundation for the Smart City

Central production
Central control
One-Way
Commodity



Adding renewable energy production
Decentralization, addition of intermittent small-scale sources.



Increase in demand for electricity
Increase in demand for electricity, limited storage availability and mixing of carriers

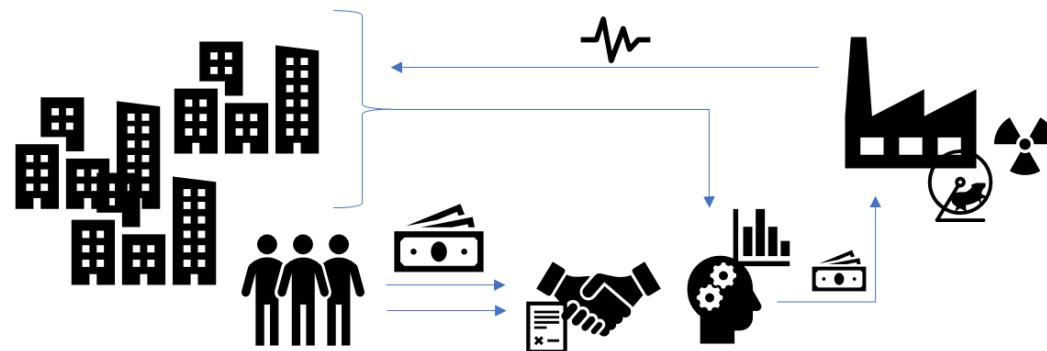


Sharing Economy
Energy without marginal costs, demand for CO₂ Neutrality and insight in origin

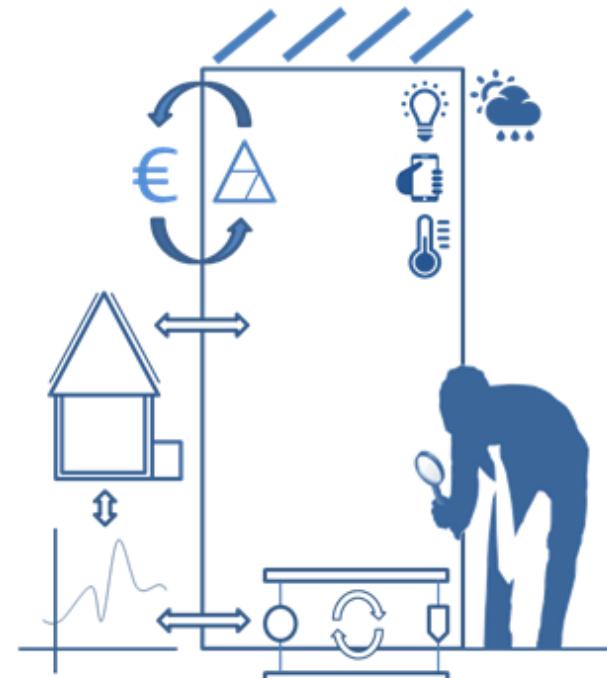


Congestion
Imbalance
Costs
Value
Seasonal storage
Flexibility

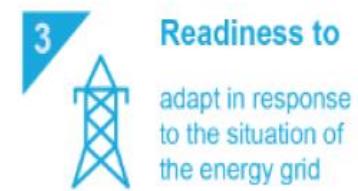
Central production
Central control
One-Way
Commodity

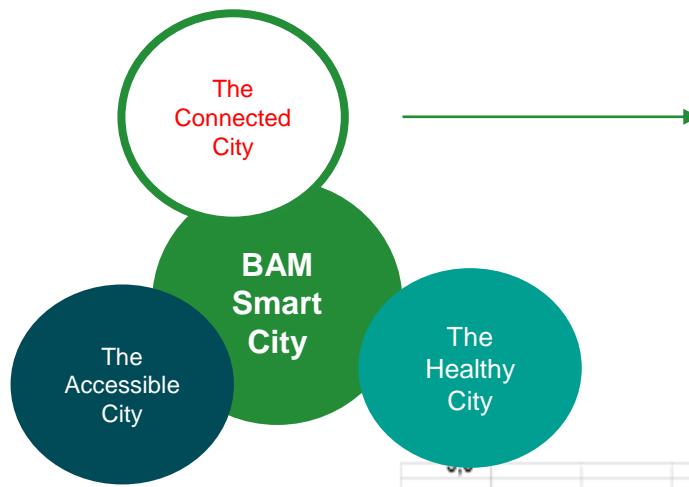


From selling energy to optimizing comfort and effective use

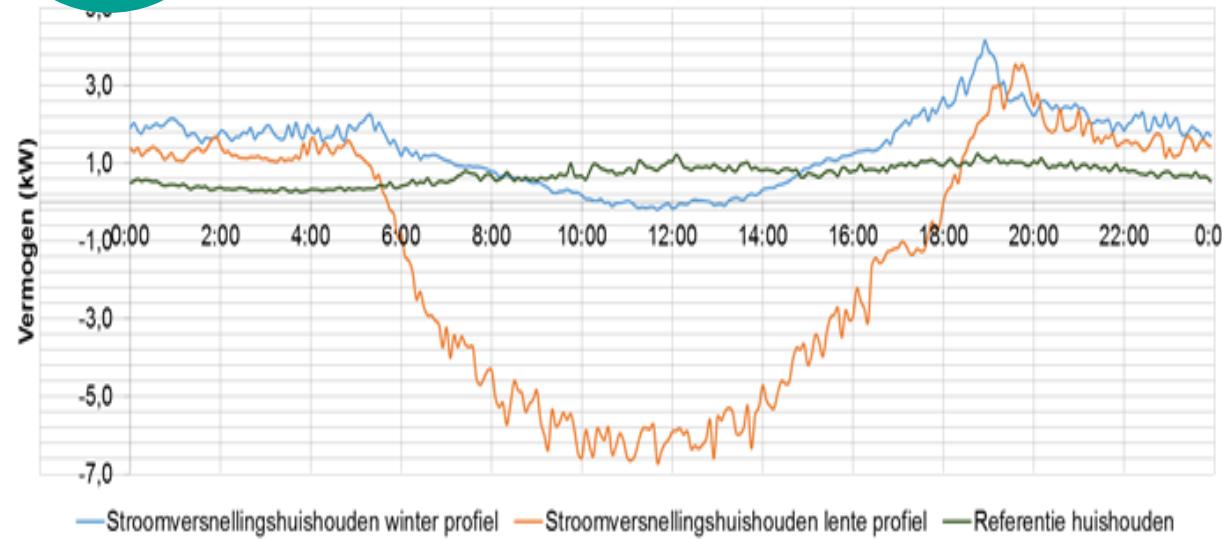


From central control to the adjustment of the demand to the available resource





Slimme oplossingen voor het energienetwerk & (data)verbindingen van de stad & haar inwoners

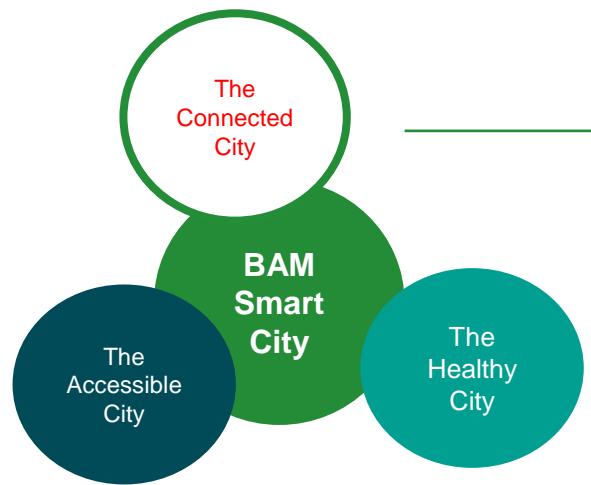


“We want our buildings to be part of the solution, not part of the problem”

The Smart Energy Landscape



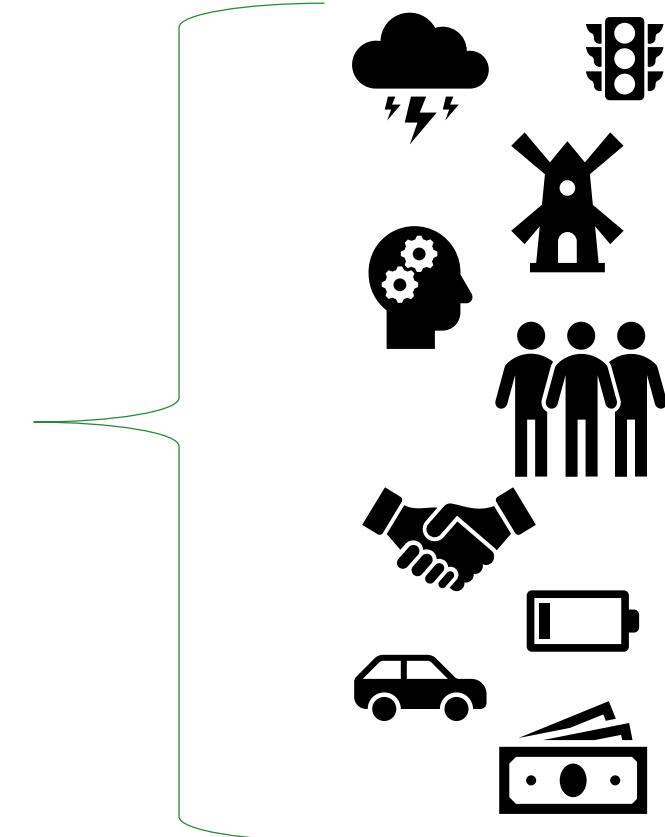
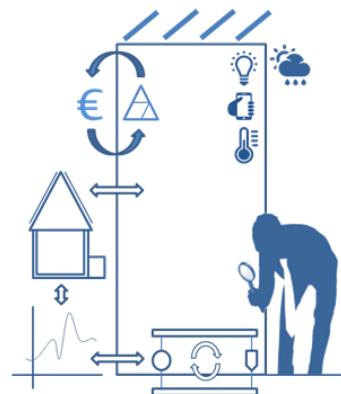
Bi-directional flow of information
Bi-directional flow of energy



Smart solutions for the energynetwork & (data)connections of the city & her users

The Smart Energy Landscape

Necessity – but also facilitating healthy, sustainable, accessible etc. city. Now and in the future! Energy is just the enabler.

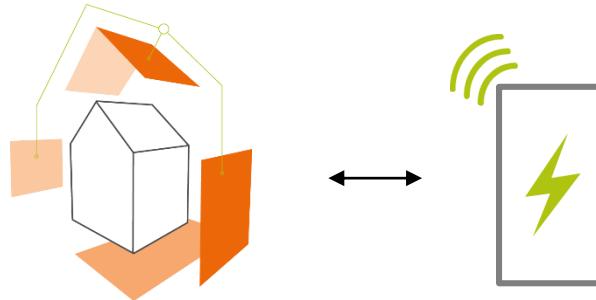


Bi-directional flow of information
Bi-directional flow of energy

REnnovates: from social house to Smart Neighbourhood



REnnovates: from social house to Smart Neighbourhood

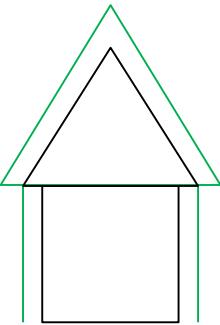


8-9kWp PV per dwelling
1-2kW heatpump

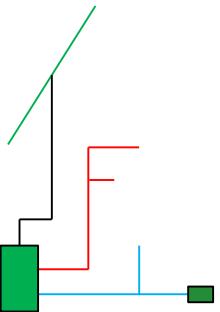
Necessity –

- High costs for infrastructure
- What will happen in policy and regulation change?
- Risk for performance guarantee
- Feasibility of transition

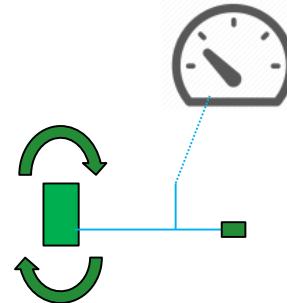
REnnovates: from social house to Smart Neighbourhood



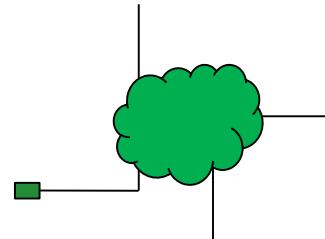
Save energy through insulating the building using a modular, pre-fabricated system



Minimize consumption by using **efficient** installations in the pre-fabricated Energy Module

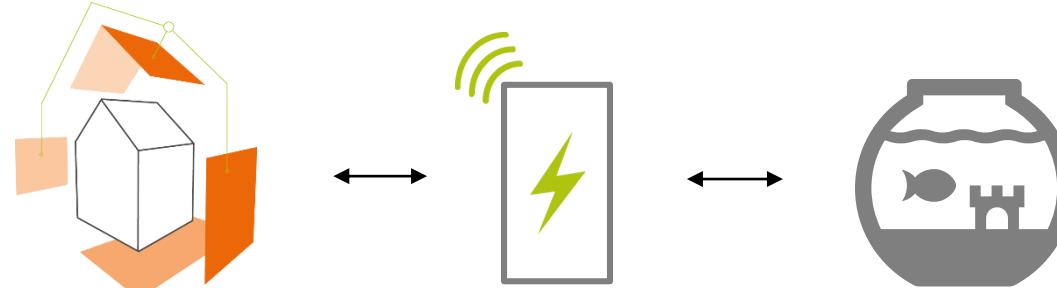


Optimize local energy consumption and production and enable flexibility value cases



Orchestrate neighbourhood interaction to support the infrastructure and community

REnnovates: from social house to Smart Neighbourhood

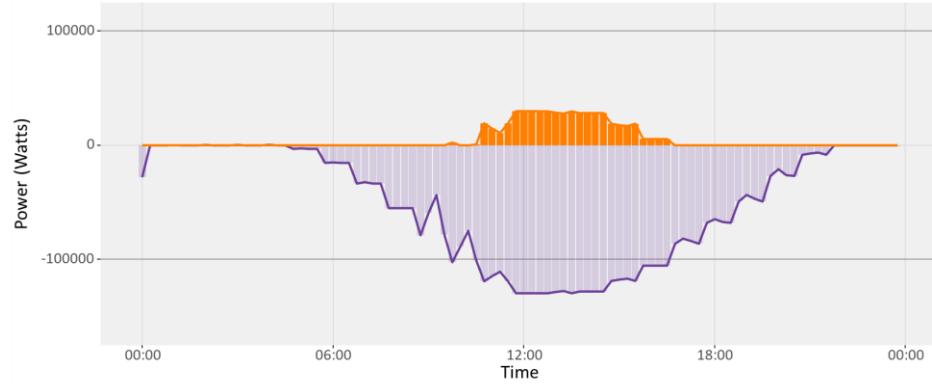


240 woningen
10 woning batterijen
200kW wijkbatterij

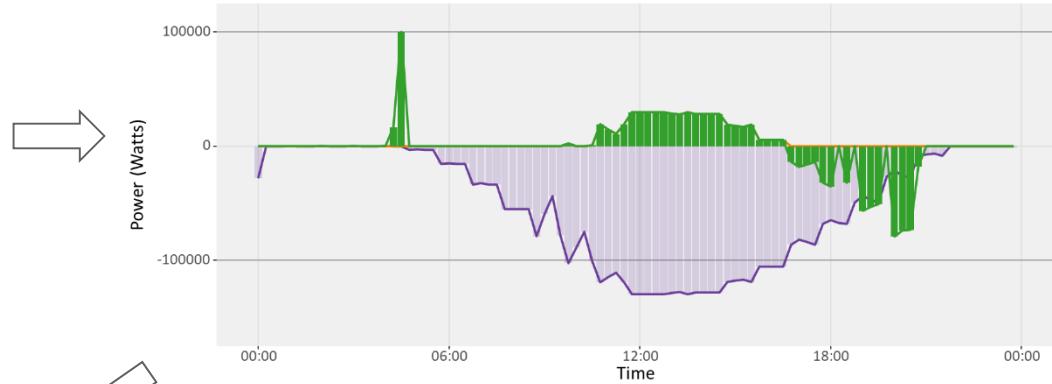


REnnovates: from social house to Smart Neighbourhood – District Optimization

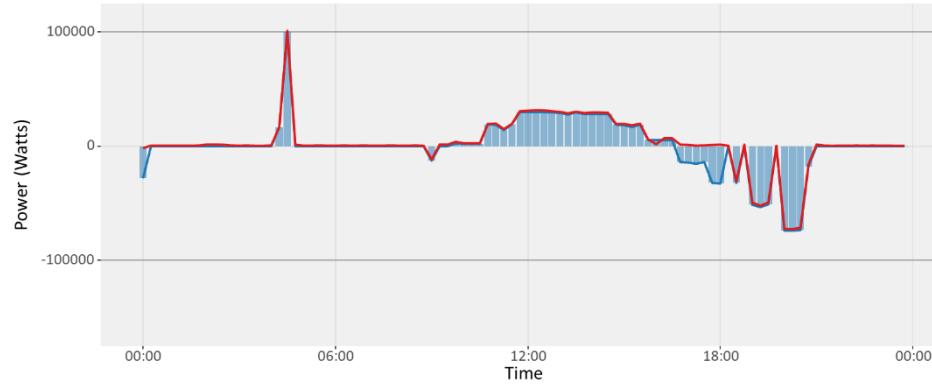
Request



Offer



Realization

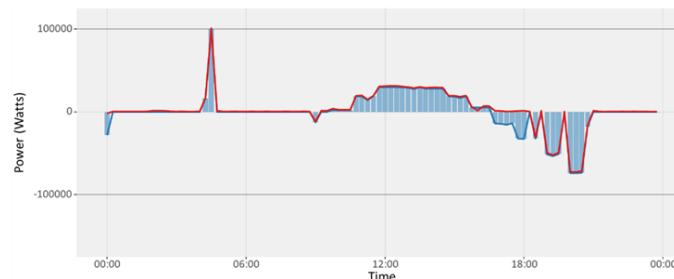
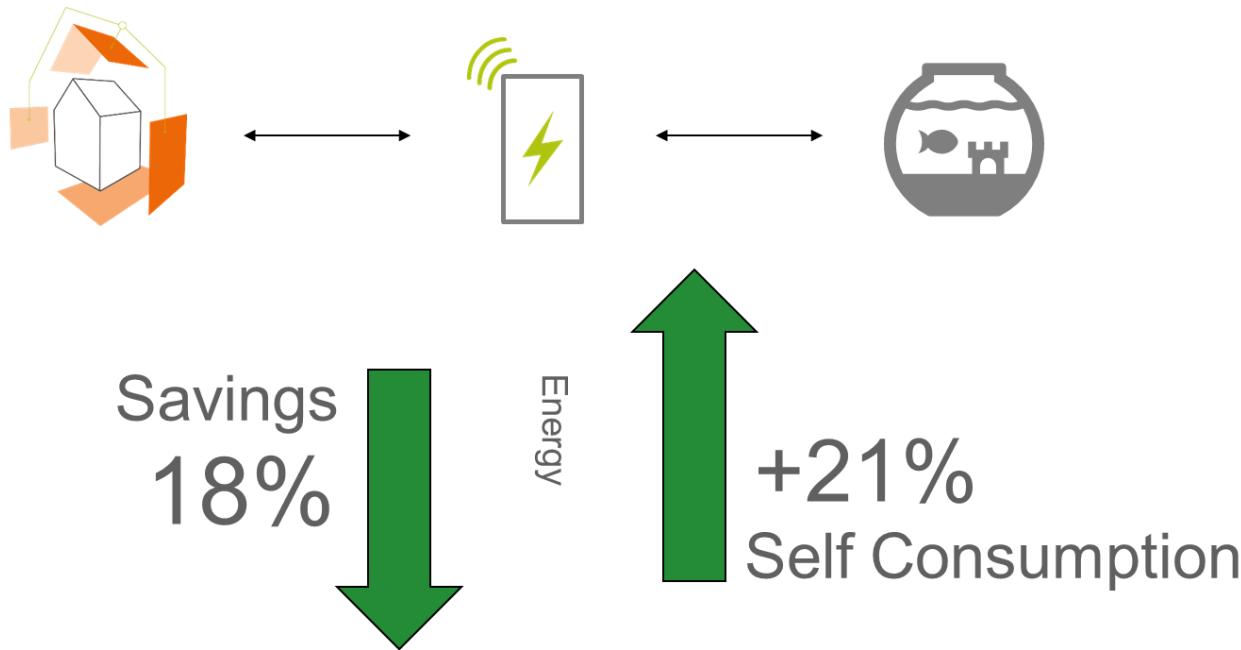
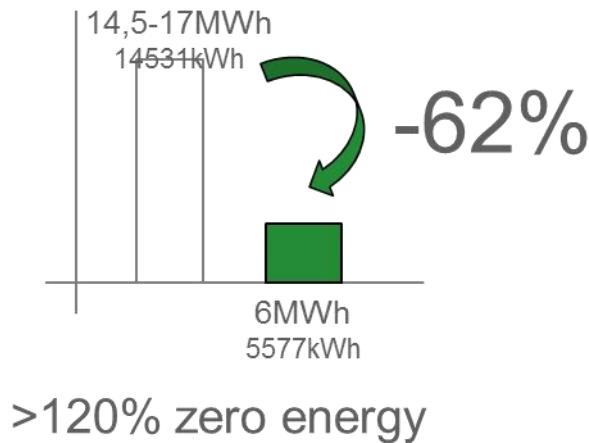


Local Optimization

Reduction of peaks for the DSO

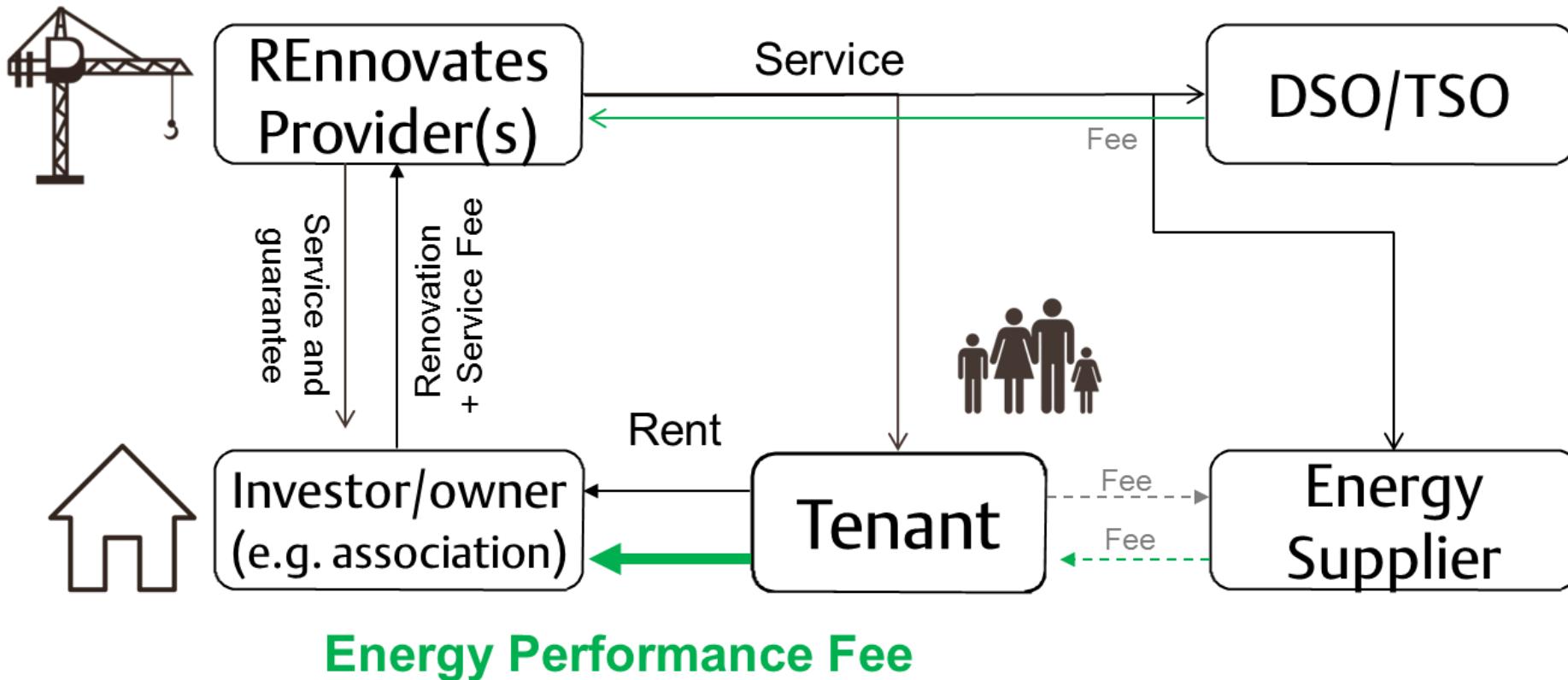
Next step: Energy Community

REnnovates: from social house to Smart Neighbourhood – District Optimization

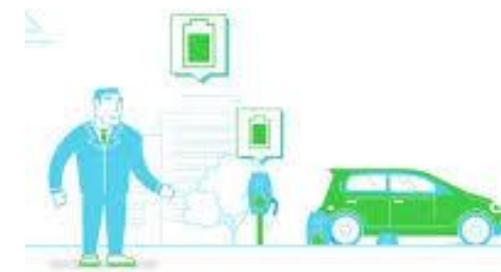
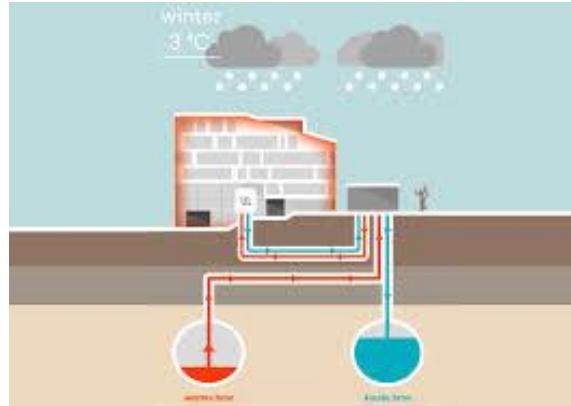


88%
Of requested flexibility is provided

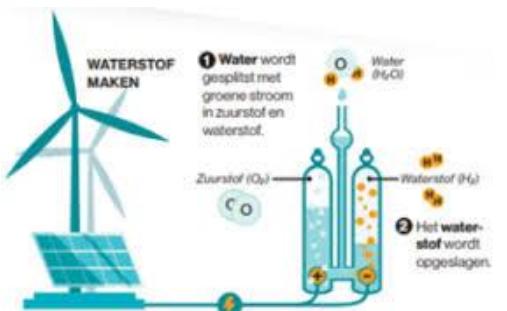
REnnovates: from social house to Smart Neighbourhood – Business Model



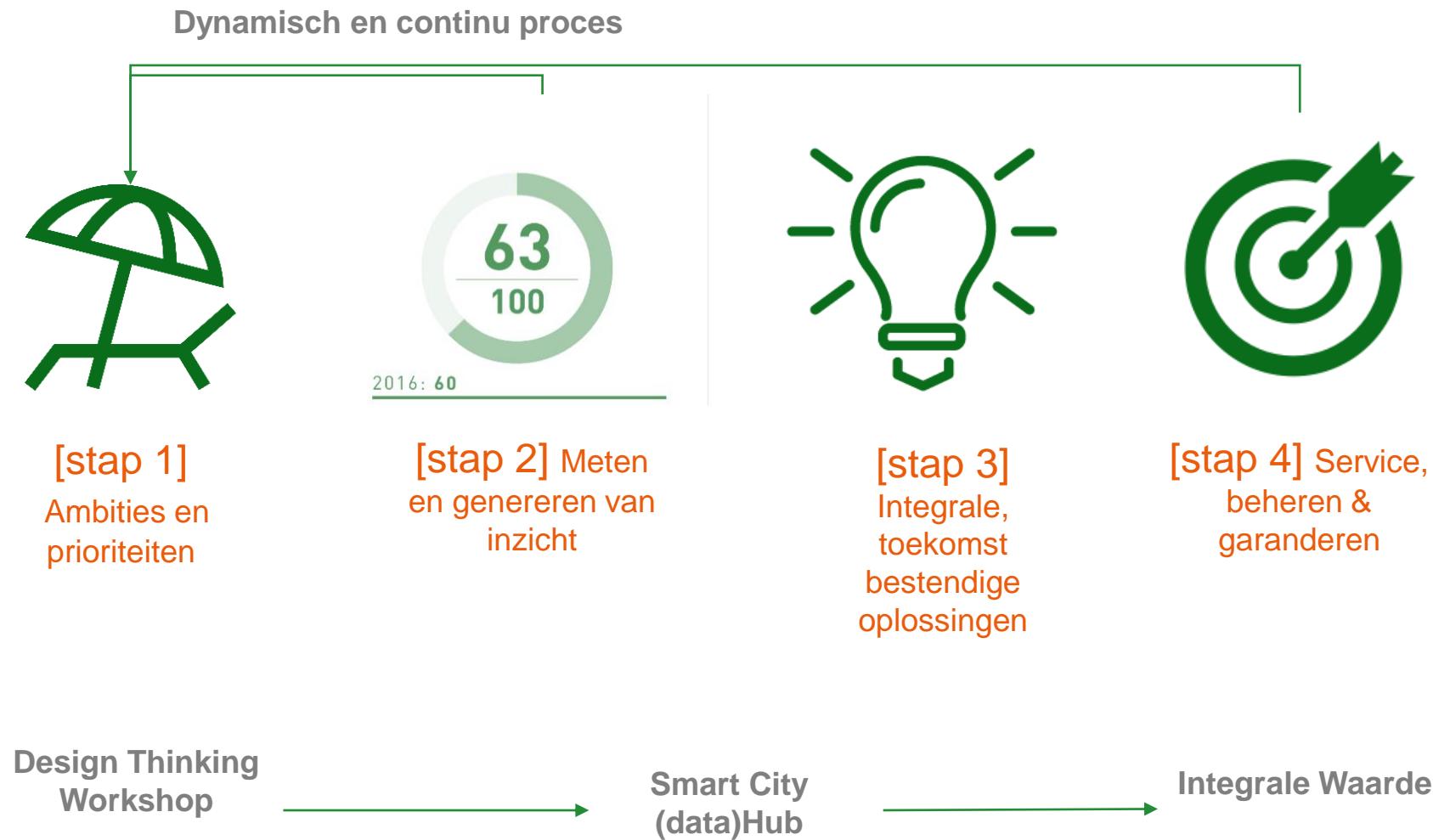
Optimization of a Smart Grid? Mix of energy carriers/assets, use cases, stakeholders etc.



GAMIFICATION



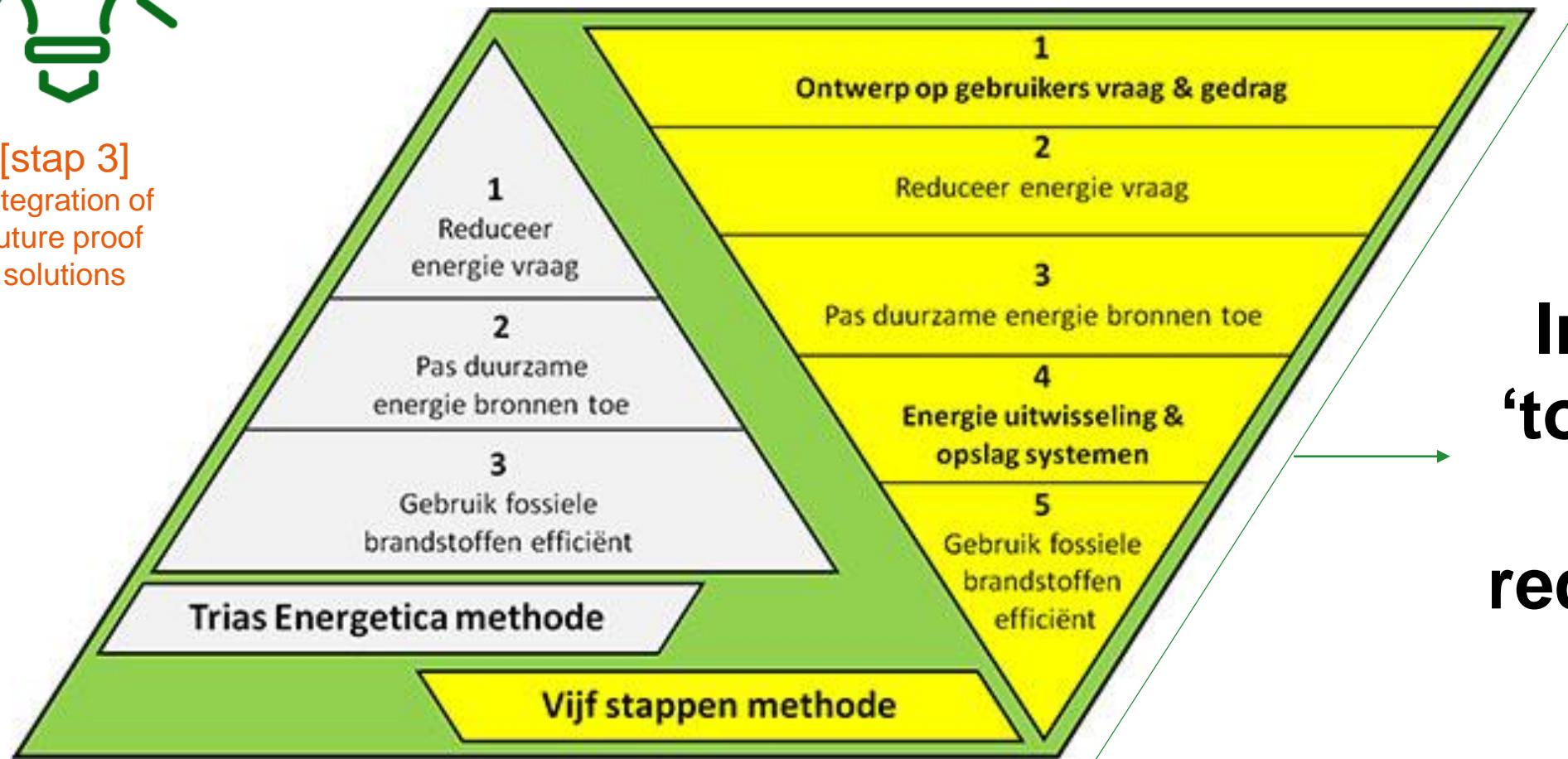
Smart Grid as part of the Smart City; Design





Smart Grid as part of the Smart City; Design

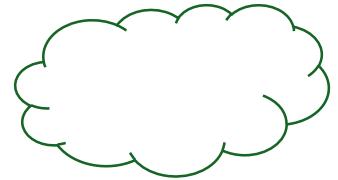
[stap 3]
Integration of
future proof
solutions



**Integral –
'total value'
as
requirement**

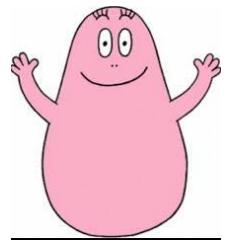
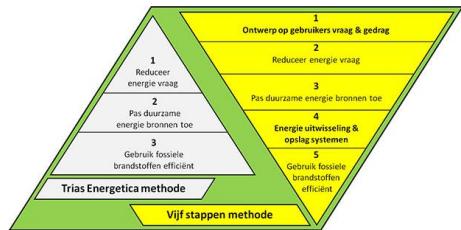


Smart Grid as part of the Smart City; Design



Involve & Measure: value, priorities and users

Organize: Architecture and platforms

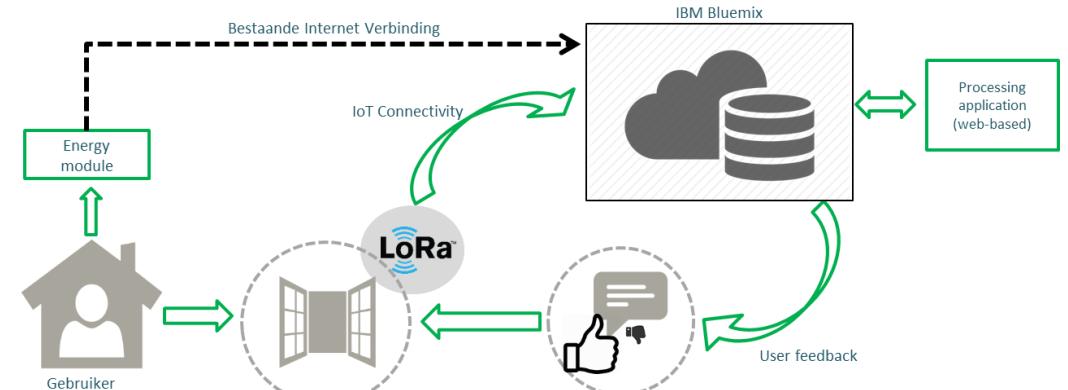
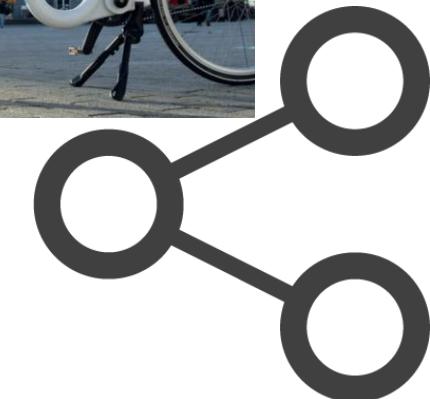
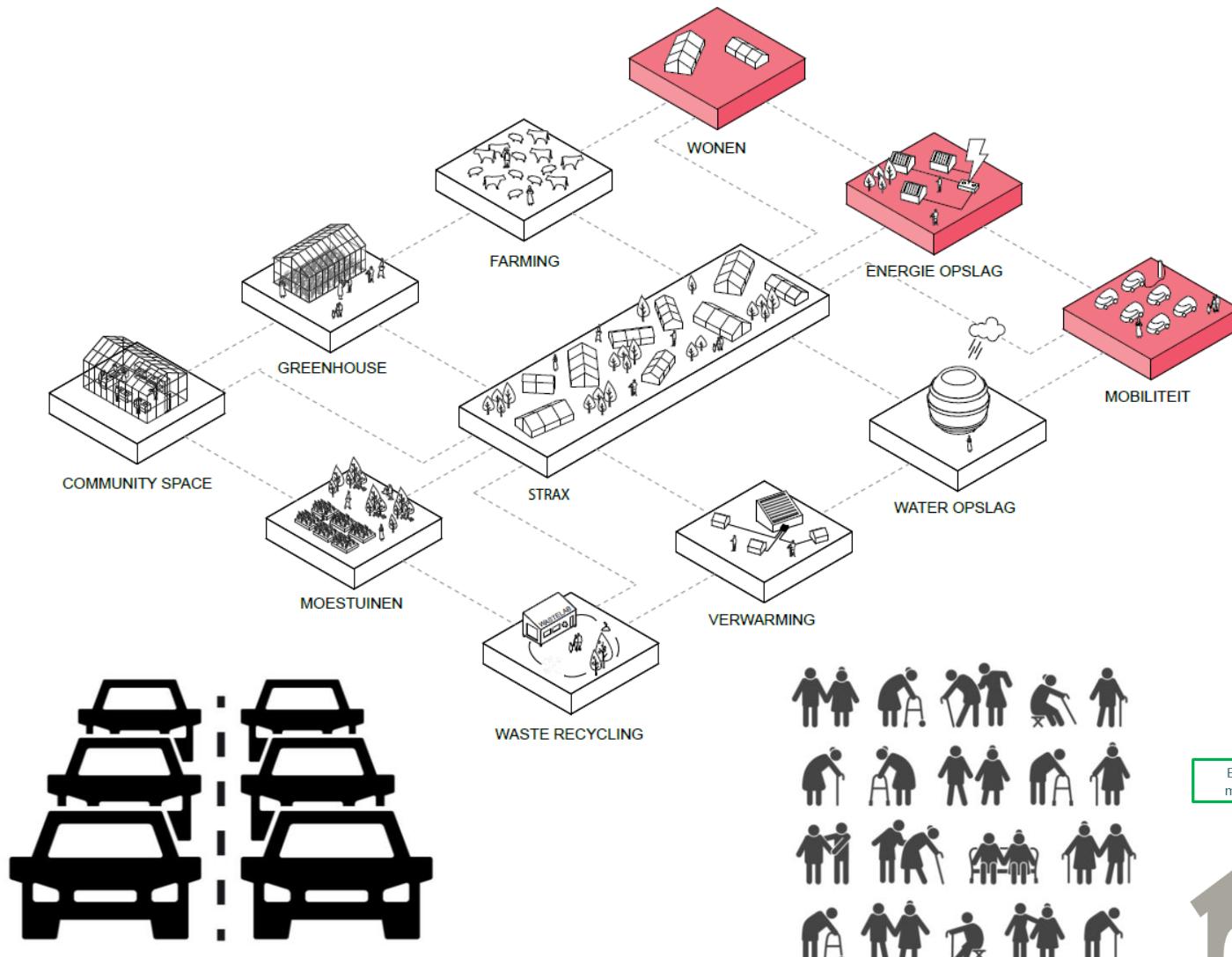


Smart Concepts and development

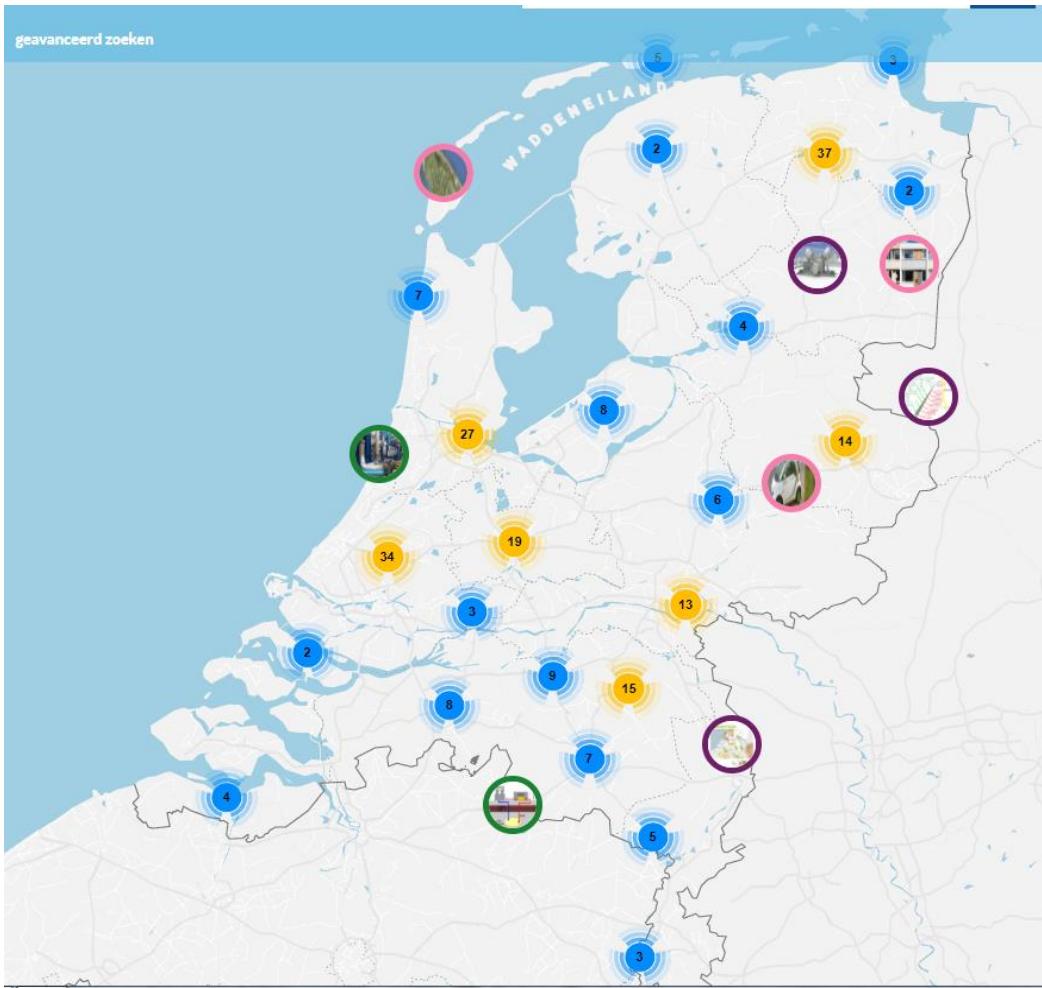
Flexibility and evolution



“An environment the proactively adjusts to user needs, that connects people with the surroundings, and in which actors cooperate in a dynamic ecosystem in order to provide a healthy, comfortable, sustainable and affordable built environment.”

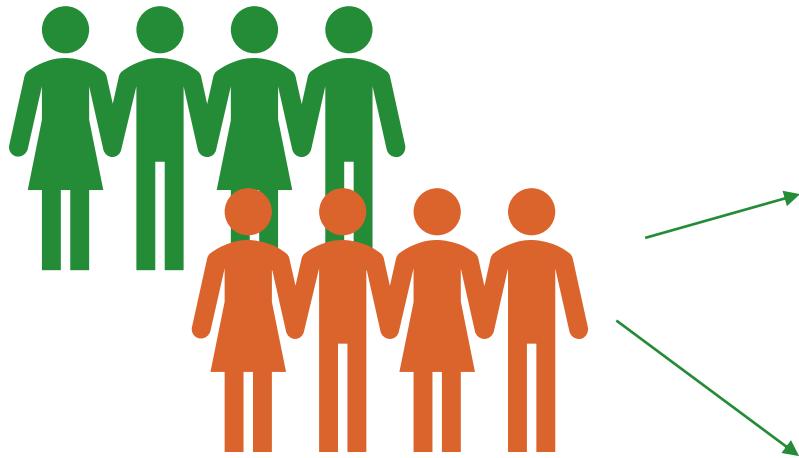


Experience With Smart Grids



<https://energiekaart.net/>

(Short)Workshop – How could a smart grid support the Smart City?



Workshop Smart City - Smart Energy Grids 22-05-2019			
	Uitdagingen en eerste stappen?	Hoe maak ik van mijn straat een Smart (Energy) Street?	De missie/ horizon
Technologische Concepten		- Welke concepten moeten we toepassen? Hoe gaan we meteren? Hoe houden we dit up-to-date? Hoe gaan we ons net veranderen?	Hoe zorg ik dat mijn Smart Neighbourhood over 20 jaar nog steeds ' slim' is?
Business en Waarde		- Wie past het belang? Hoe gaan we het behoren? Voor wie is dit geldig waarde?	
Samenwerken & Organiseren		- Wie moeten we betrekken? Hoe werk ik samen met mijn concurrent? Hoe blijven we de climate shift? Wie is de eigenaar?	 2011-10

How do you transform your street into a smart Energy Street?

Workshop Smart City - Smart Energy Grids 22-05-2019			
	Uitdagingen en eerste stappen?	Hoe maak ik van mijn straat een Smart (Energy) Street?	De missie/ horizon
Technologische Concepten		- Welke concepten moeten we toepassen? Hoe gaan we meteren?	Hoe transformeren we jouw straat naar een 'slimme straat'?
Business en Waarde		- Gaan we besparen? Wie past het belang? Hoe gaan we het behoren? Voor wie is dit geldig waarde?	
Samenwerken & Organiseren		- Wie moeten we betrekken? Hoe werk ik samen met mijn concurrent? Hoe blijven we de climate shift?	

How can we keep the smart City smart? What is the role of the Smart Grid?

Workshop Smart City - Smart Energy Grids

22-05-2019

Challenges and Initial Steps

What do we need? How to realize the mission?

Ambition/Horizon

Technological Concepts

- What concepts will be applied? How do we measure results? How are they integrated?

How do we transform your street into a 'Smart Energy Street'?

Ambition: CO2 Neutral & Free Energy

Business and value

- Who benefits? Who will pay for it? Will we save costs? How to maintain this?

Organization and cooperation

- Who should we involve? How to organize an ecosystem? How do we remain a 'smart area'?



Workshop Smart City - Smart Energy Grids

22-05-2019

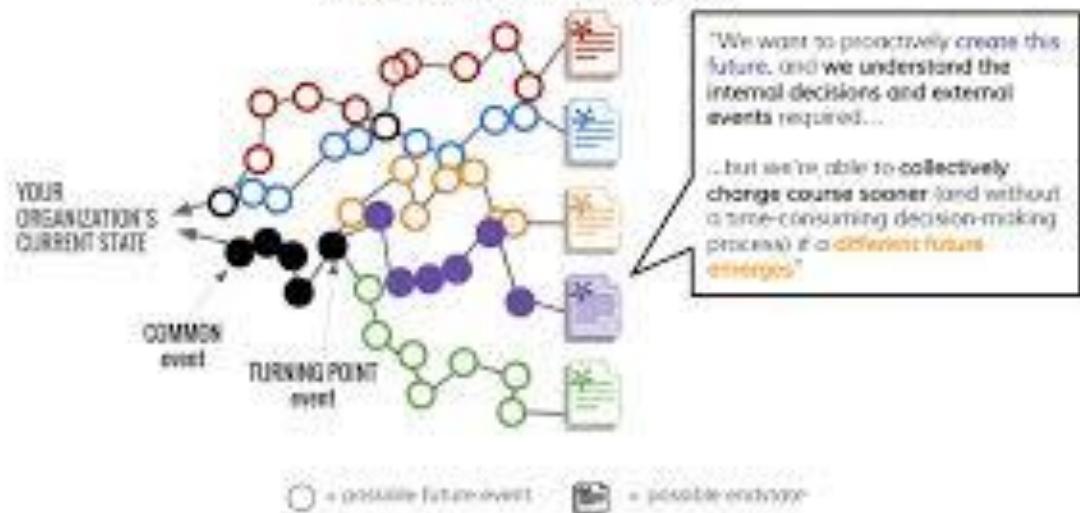
	Challenges and Initial Steps	What do we need? How to realize the mission?	Ambition/Horizon
Technological Concepts		<ul style="list-style-type: none">- What concepts do we apply? How do we measure this? How do we keep it up-to-date? How do we cope with changes?	How to ensure that my Smart Grid is still 'Smart' 20 Years from now
Business and value		<ul style="list-style-type: none">- Who will pay? How do we ensure we have finances to update the city?	<i>Ambition: Dealing with unknown technological evolution, supporting 'aging in place' and no 'lock in'</i>
Organization and cooperation		<ul style="list-style-type: none">- Who owns the concepts? What ecosystem do we need to ensure an ecosystem 20 years from now?	



4 Smart Steps op weg naar de slimme stad powered by BAM

Done a bit of 'Future Backward'

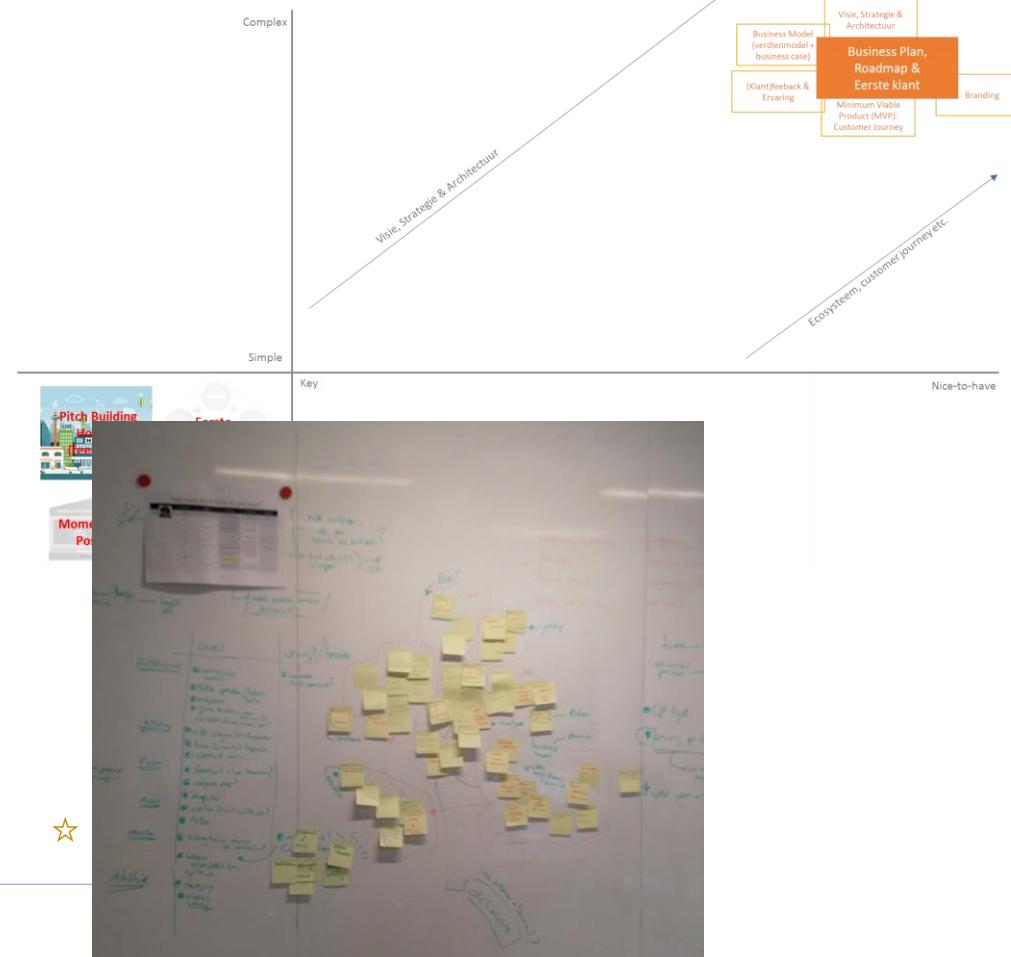
THE FUTURE MAP FORMS THE BASIS FOR IMPLEMENTATION PLANNING AND ONGOING EVENT MONITORING



Concrete afspraak vervolgstep

Check taken en doelen; wat heeft prioriteit? Kan het SMART gemaakt worden? Wat is haalbaar voor M2? Wie kan je helpen/wat heb je nodig?

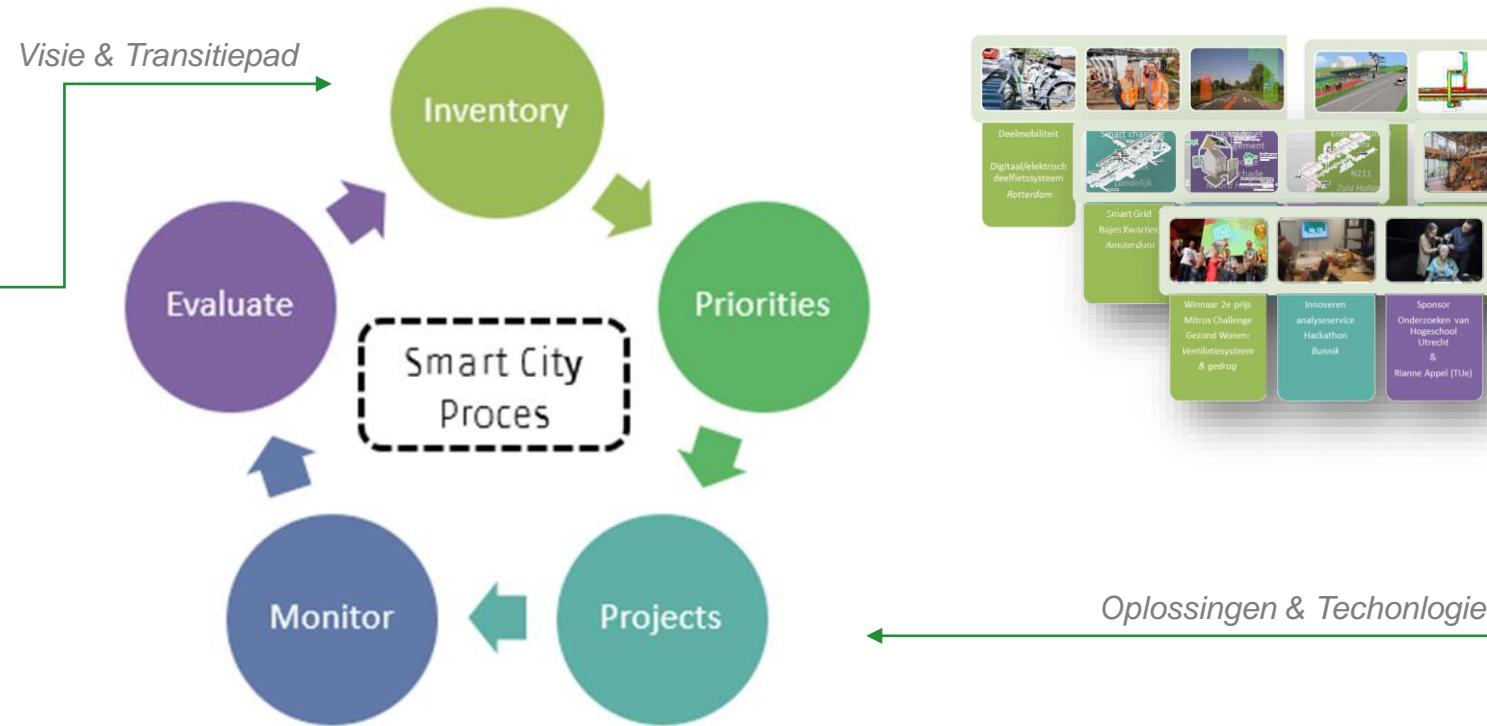
simpel
key

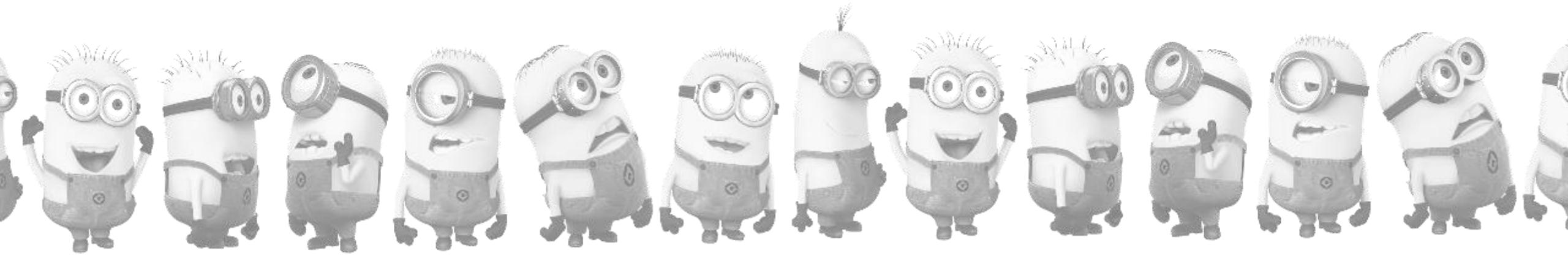


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Work at BAM

Stages	Startersposities	Graduate Programme	Young Engineers Program (YEP)
 <ul style="list-style-type: none">• Meewerkstage• Afstudeerstage/afstudeerproject	 <ul style="list-style-type: none">• BIM Engineer• Werkvoorbereider• Technisch ontwikkelaar• Tenderstrateeg• Constructeur• Calculator	 <ul style="list-style-type: none">• Vier functies in twee jaar• Technisch & strategisch• Creëer je eigen programma en geef zelf richting• Persoonlijke ontwikkeling	 <ul style="list-style-type: none">• BAM International• Expat life• Two-year-programme

BAM Learning, BAM Startersprogramma, GoodHabitz, Young BAM

Let's stay in touch!



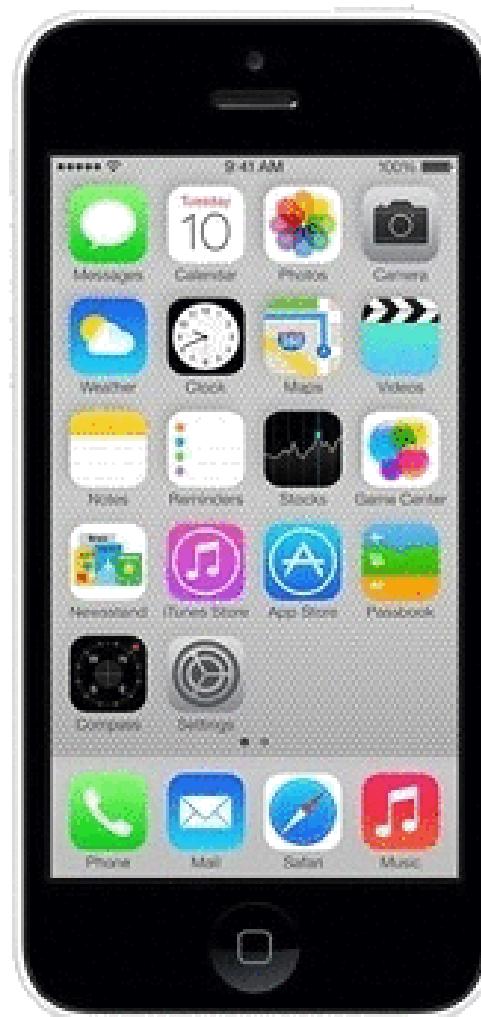
<http://www.bamcareers.com>



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Voeg me toe op LinkedIn:
www.linkedin.com/in/sarakwakman





BAM Smart City

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