institut smart grids
connecter les énergies

SMARTCITY
EXPO WORLD CONGRESS

STUDENT CHALLENGE

« Smart Grids for Smart Cities »

Grenoble INP

GRENOBLE ECOLE DE MANAGEMENT
BUSINESS LAB FOR SOCIETY

MINALOGIC

ONLYLYON
LA MÉTROPOLE

Grenoble Alpes

Atos Worldgrid

ENEDIS
L'ELECTRICITE EN RESEAU

Novembre 2019

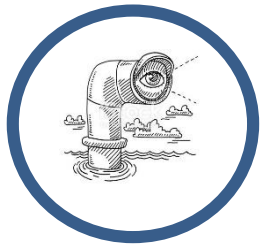
Contexte

24 étudiants de la promotion 2019-2020 du Mastère Management de l'Energie commun à Grenoble INP et Grenoble Energie Management,
en voyage école aux salons European Utility Week à Paris (12-14 novembre) et Smart City Expo World Congress à Barcelone (19-21 novembre).

➔ ont accepté le challenge de l'Institut Smart Grids intitulé « **Smart Grids for Smart Cities** ».

Le Challenge

2 défis au choix :



DEFI EXPLORATEURS

Identifiez les meilleures innovations de l'énergie dans la ville de demain
#Top 3 des solutions Smart Grids pour la Smart Cities
Défi basé sur la synthèse

DEFI INNOVATEURS

Imaginez la solution (produit ou service) énergétique (électricité, gaz, chaleur) qu'il manque aujourd'hui pour réussir la transition énergétique dans les territoires
Défi basé sur la créativité

➔ 6 équipes de 4 personnes : 4 groupes ont choisi le défi explorateurs, 2 le défi innovateurs

La Restitution

Chaque team a présenté les résultats de son défi **le jeudi 21 novembre à 11h**
à l'occasion du **Smart City Expo World Congress de Barcelone** sur le stand OnlyLyon

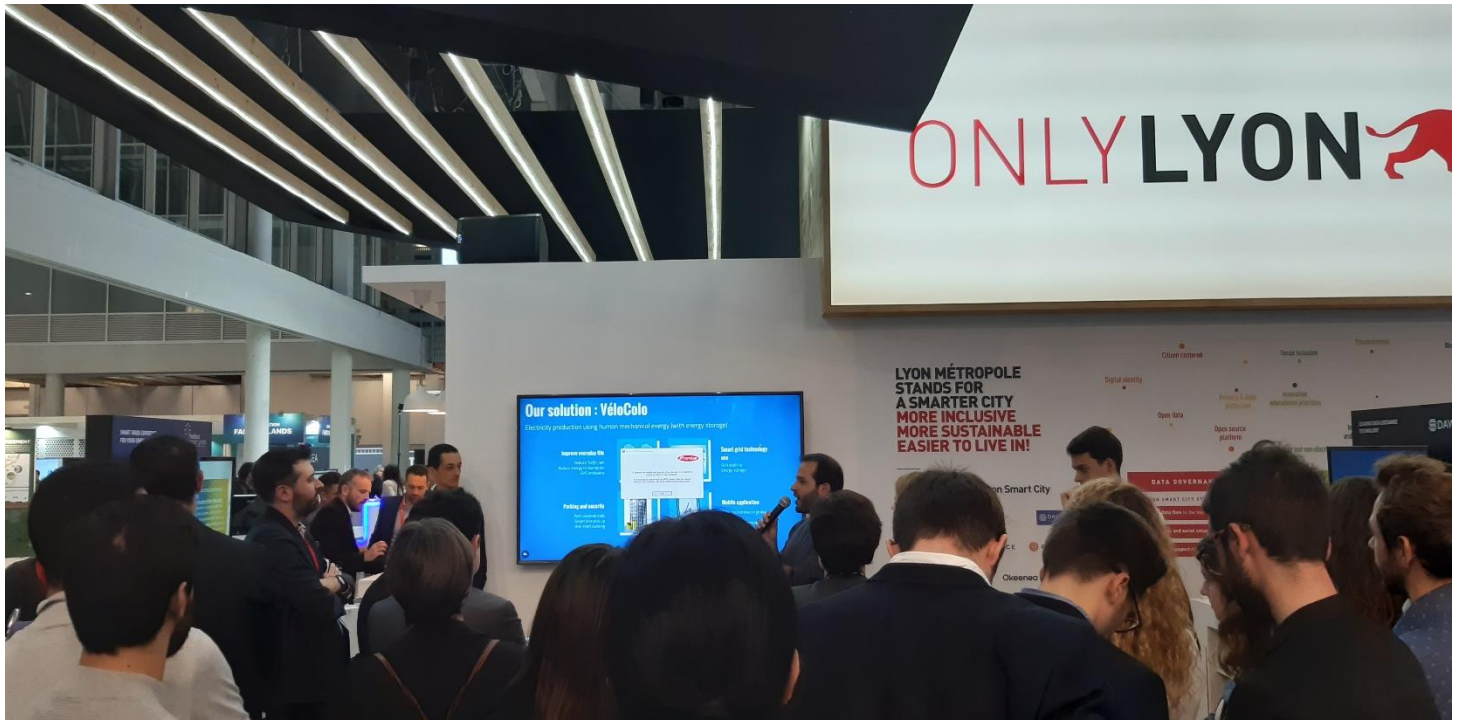
***Restitution par équipe* (8')**

Pitch (5') : présentation orale
Questions du jury - 2 questions

Délibération du jury (10')

Awards - Remise de prix (5')

3 Catégories :
Défi Innovateurs,
Défi Explorateurs
Coup de Cœur



Jury

Devant un jury composé d’experts des Smart Grids et villes intelligentes.

Anne-Elisabeth COTTE	Grenoble-Alpes Métropole
Céline BLANCHON	Grenoble-Alpes Métropole
Emmanuel GASTAUD	Métropole de Lyon
David LEICHER AUCHAPT	Métropole de Lyon
Kates MARGETTS	Minalogic
Bruno MOREL	Atos
Damien PICAULT	Enedis

« Explorers » Award by

Team « Big Nudge Theory »

+ retrouvez leur présentation **slides 13-18**

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« Innovators » Award by

ONLYLYON
LA MÉTROPOLE

Team « The Cooling Tower »

retrouvez leur présentation **slides 41-47**

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« Heart-stopper » Award by

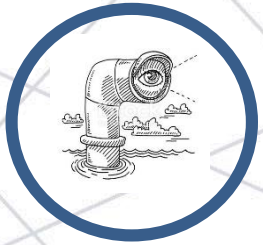
MINALOGIC

Team « Velo Colo »

retrouvez leur présentation **slides 48-54**

> les présentations par groupe

Big Nudge Theory



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Smart City Expo

Exploration Team

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Eric Delangre

Justine Bouchet

Adrien Spicq

Antoine Juillion

European Utility Week

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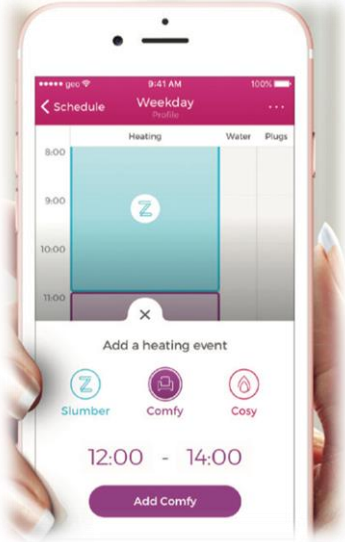
BUSINESS LAB FOR SOCIETY

In-home displays for smarter energy

geo
smarter energy



5

Million home in UK & Nordic countries

40%

Energy savings and improved comfort control

500

Average cost of the system in euros: sensors, screen, app

HYDRAO
SMART SHOWER FOR SMART SAVINGS

Ecological & Connected Showerhead

- 150 €

Per person per year

Energy savings

32 **cents** for heating (per shower)

Water savings

10 **cents** (per shower)

Real-time light change based on water usage

Smart Waste & Recycling

UP TO 80%

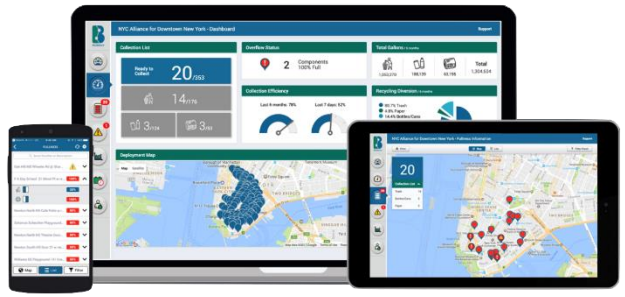
REDUCED COLLECTION

Increased Capacity (5x Traditional Bin)

REDUCED CO_2 EMISSIONS

HUGE FUEL SAVINGS

NO OVERFLOWS OR VISIBLE WASTE



Make people smarter

Nudge Theory

Concept using unconscious ways to encourage / influence people to take positive helpful decisions

→ Enable change in people

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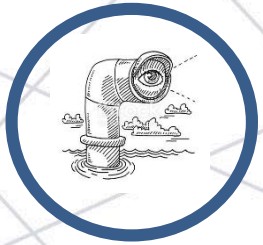
The Blue



SMARTCITY
EXPO WORLD CONGRESS

Explorator challenge

GRENOBLE ECOLE DE MANAGEMENT

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Iris Cheval
Céline Guillemin
Vincent Lassalle
Clara Ponçon

Involve citizens in the decision-making process

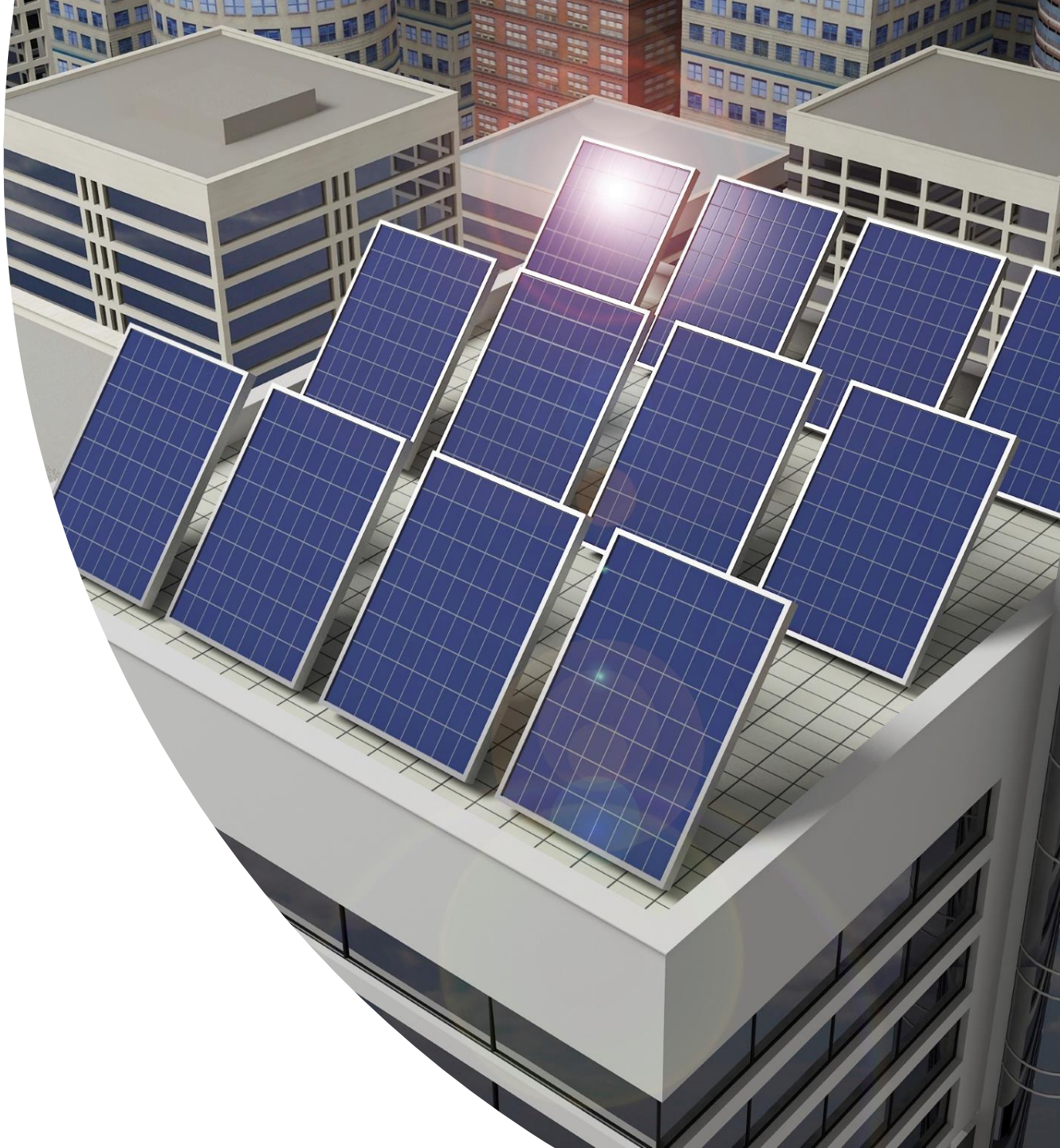
- Place people in the centre

➔ **Collective thinking**

- **Co-investing** in renewable energy solutions : citizens associations

Centrales Villageoises

Accueil ciation



Air quality : carbon wells

- **Goal**: store CO2, N2 and fine particles

- **Technology**: CO2 is absorbed by the microalgueas
- Microalgueas are then reused for biogas via a sewage system.

The Poissy system is equivalent to 40 trees, and capture **400kg of CO2/year**

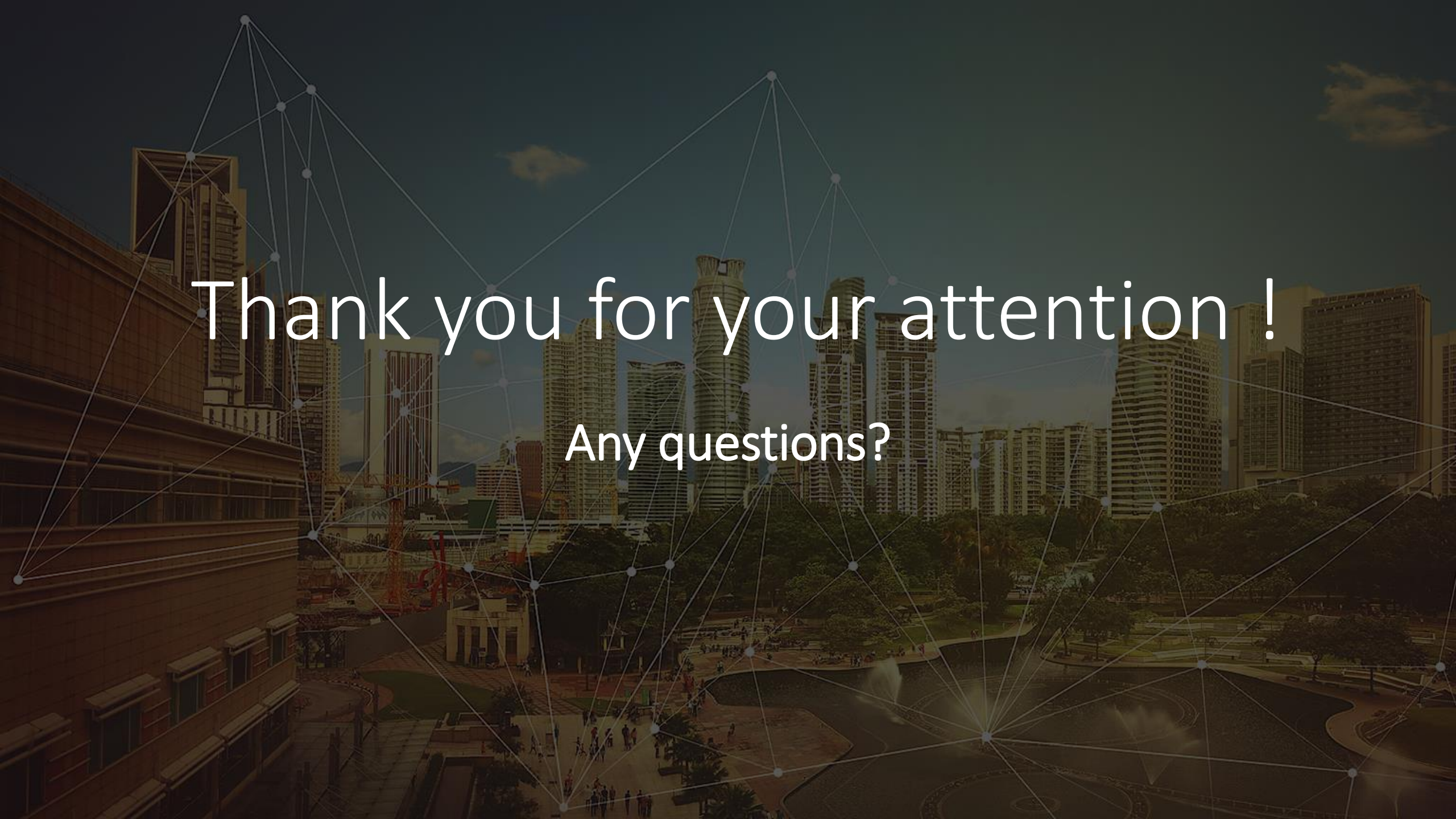
Cross-Laminated Timber

- **Goal**: build wooden building and therefore **store CO2**

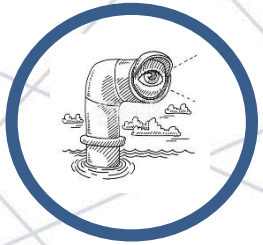
- **Advantages**:
  - High mecanical properties in every directions

  ➔Makes it possible to build several floors buildings.

  - Wood encourages local firms, circular economy and generate local activities (jobs…).


Thank you for your attention !
Any questions?

Les explorateurs



smart city Exploration

About the context

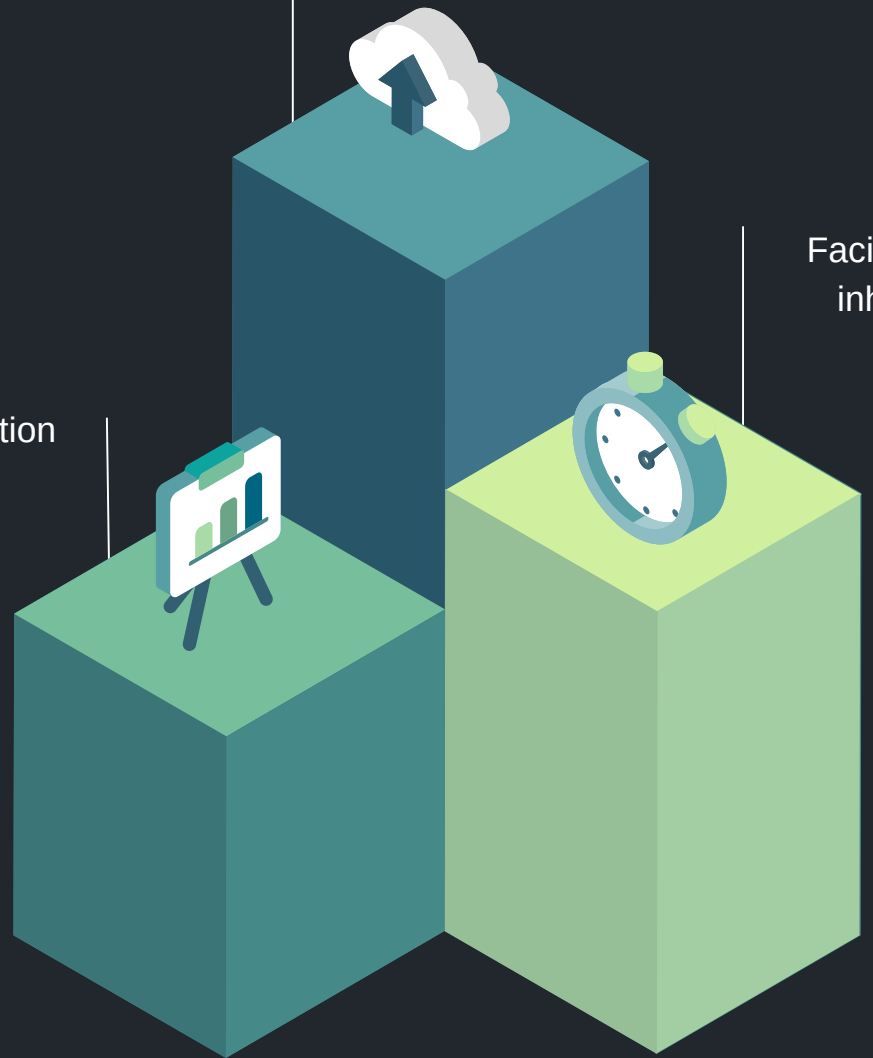
With 2020 just around the corner and decarbonization targets set through to 2050, the sector needs a place to come together to address the challenges around the transitioning generation mix and maintaining security of supply in implementing smart cities

Main challenges

Ensure that the dangerousness of a territory is reduced through predictive analysis

Facilitate the daily life of the inhabitants, their energy consumption

Streamline transport and limit pollution



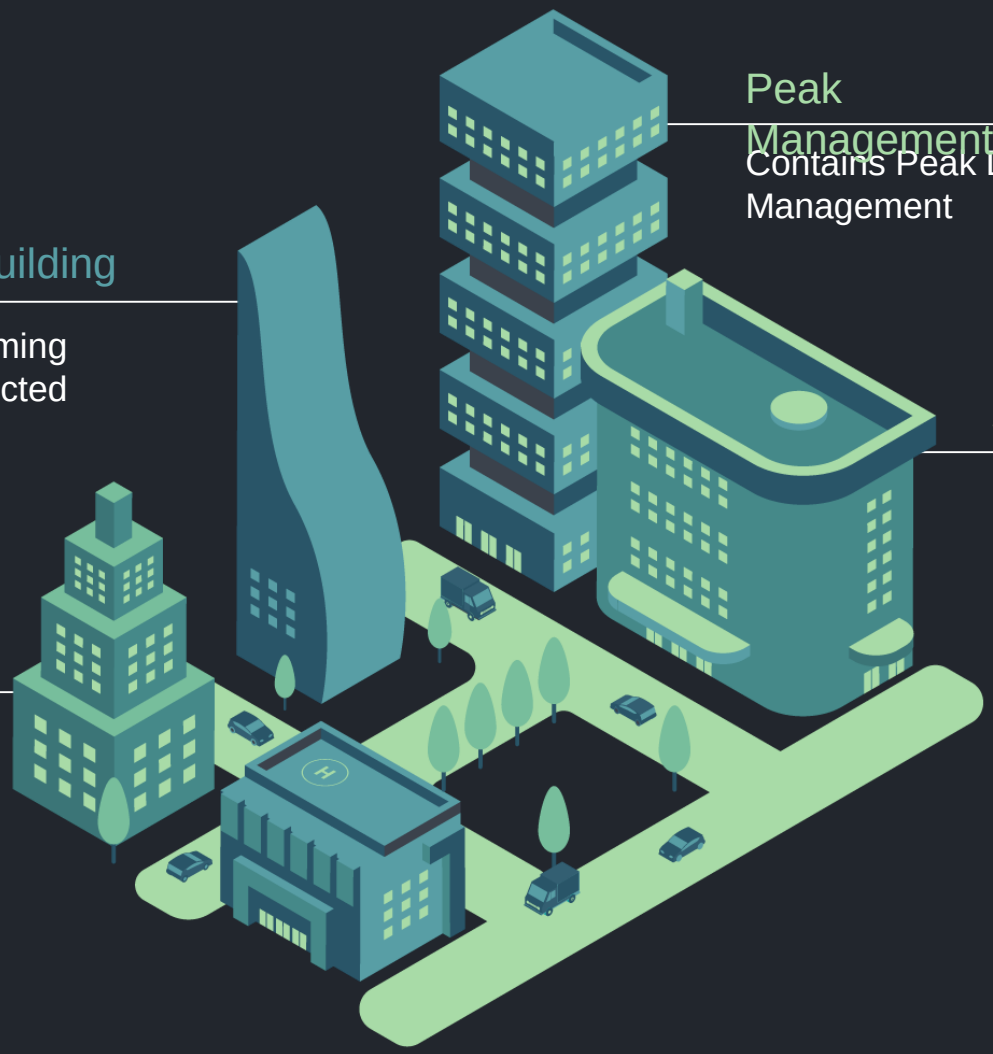
Innovations

Internet of energy
Better buildings for a better tomorrow

Led Roadway lightning
The rural lighting of the future

Smart air cleaner
Cubes easily installed are reducing the NO2 and other noxious gases concentration

X - Internet Of Energy by Voltalis



Peak Management

Contains Peak Demand Management

New building

Buildings are becoming more and more connected

3S

More Security, Savings and Solidarity

IoT

Contains Internet of Things

Led roadway lighting – NXT – LITE - M

- Attractive return on investment

→ Energy savings

→ Lower maintenance costs

- Installation & maintenance simple installation

→ Over the air support

→ Efficient maintenance

- The well being of the city

→ Comfortable light levels

→ increased safety and Reducing C02 Emissions

Smart Air Cleaner by Mann + Hummel – Filter Cube

NO2 absorption

Reduces NO2 concentration, a gaz responsible for several lung diseases

Low consumption

Few power is necessary to power a cube

Big amounts of filtered air

The cube can filter up to 15 000 m3 of air per hour

An invention already installed

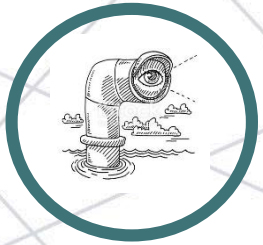
Hundreds of cubes have been installed in different cities

Main challenges for the future

- Not involving citizens sufficiently
- Make the city "cold" (or over-technological with sensors everywhere) without knowing its history or its culture
- Underestimate the increasing complexity of managing multiple urban networks;
- Do not anticipate inappropriate uses of the collected big data (drift towards mass surveillance)

Thanks for your attention

Smarties



Exploration challenge

Our three best innovative solutions

European Utility Week

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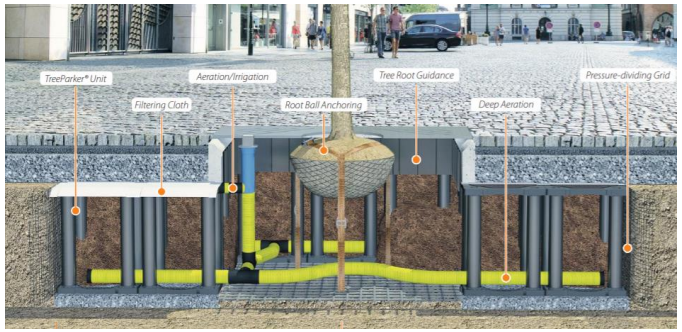
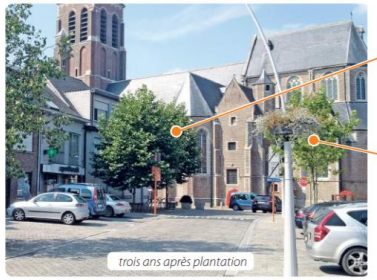
Treeparker | urban tree solutions

Street F, stand 647

Collaborating closely with local authorities, contractors and landscape architects worldwide.





SunOyster | Double the power

SO 16 hybrid - Combining Heat and Electricity

6 kW Solar Heat + 7 kW PV power

1 Product / 2 or 3 solutions

Possibilizzeurs | Toile Maker

Street D, stand 401

Possibilizzeurs
OPPORTUNITY CREATOR

Startup specialised in concepting creative innovations.

Environmental challenges faced by industrial cities like Dunkirk.

Data mapping solution. Graphical representation of a whole ecosystem.

Thank you
and
Enjoy the Smart City Expo !

How do we make our cities cool?

GRENOBLE ECOLE DE MANAGEMENT
TECHNOLOGY & INNOVATION

ONLYLYON

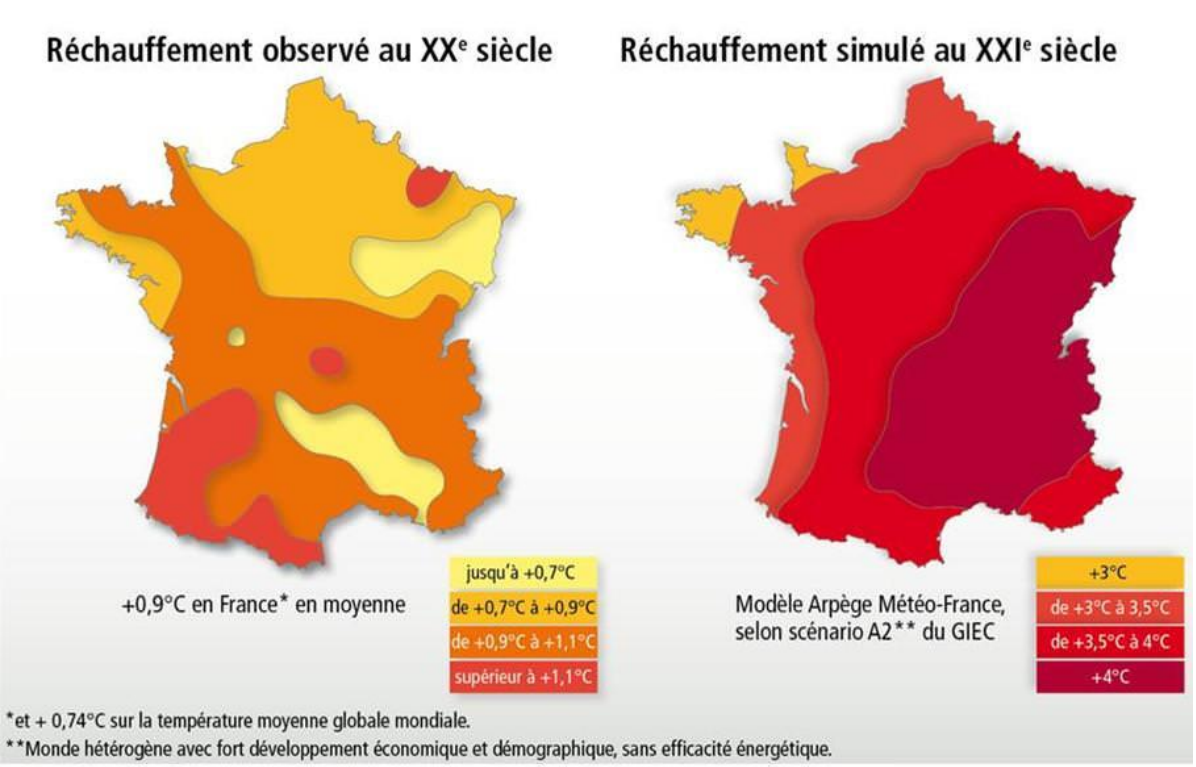
GRENOBLE • ALPES
METROPOLE

Smart cities - Innovation challenge

- Guillaume KRAEMER
- Julien BENOIT
- Ludovic JOLY
- Corentin BOILLET

Effect of Global Warming

Towards an era of cooling consumption

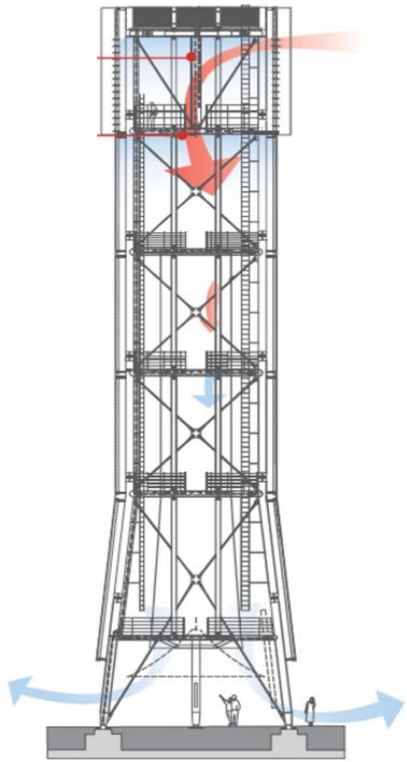


Source : Météo France

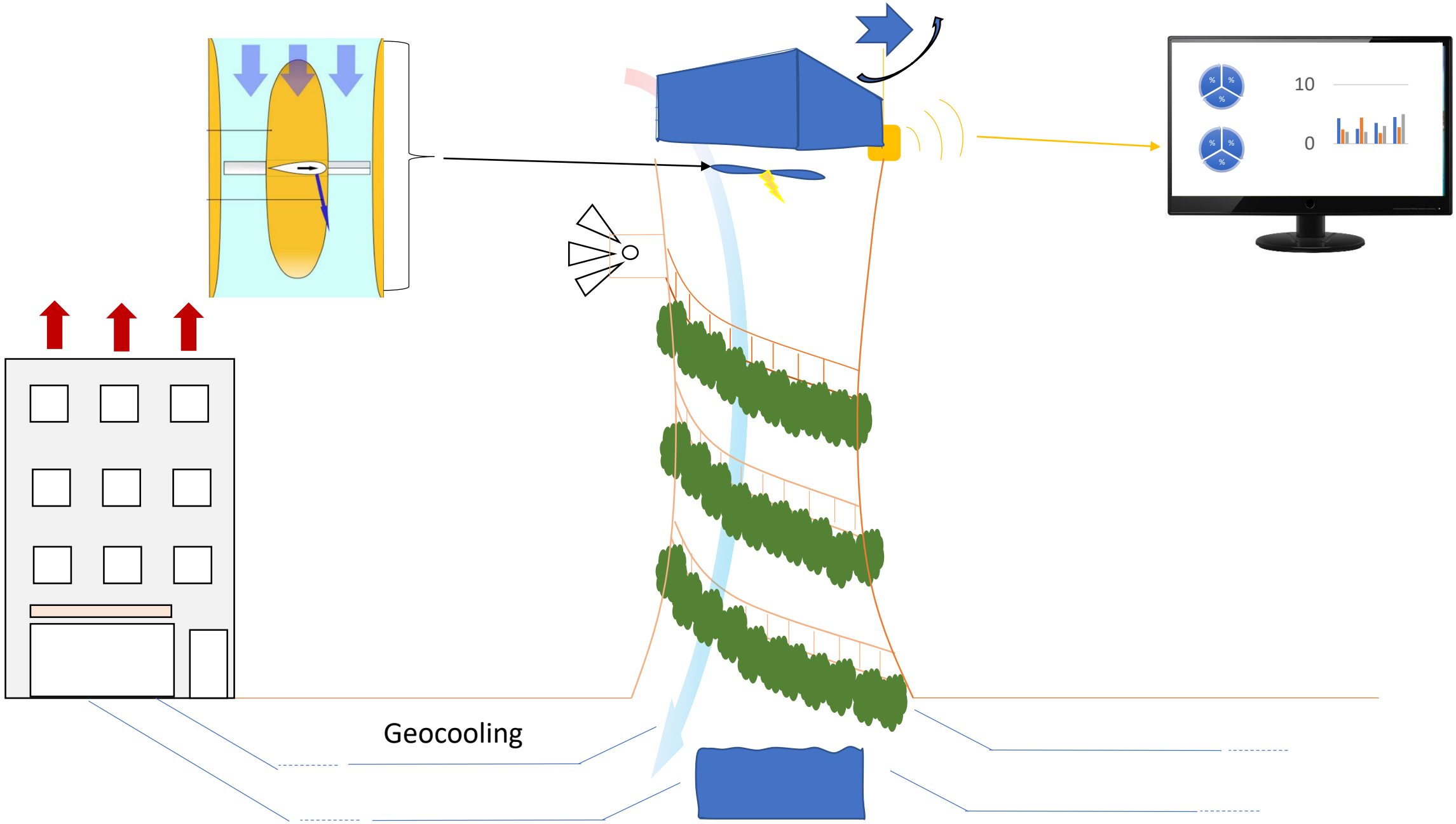
Hong Kong Street

Our solution : *The Cooling Tower*

Windcatcher in Yazd (Iran)



Modern Windcatcher in Masdar (United Arab Emirates)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Geocooling

Financial model

Based on the District Heating model

R1 :

Energy consumption (€/MWh)

R2 :

Power Subscription (€/kW)

[R21] R22 R23 R24

Thank you for attention !

Velo Colo

CONTEXT

Business Model

GEM

Our Solution
"VéloColo"

Energy Flow &
Mobile App

CONTACT
INFORMATION

SMART CITY EXPO 19

Innovation Challenge

VéloColo

Context

Main challenges

Promote soft mobility

- **5,7** hours per day in front of TV
- **150** minutes of physical activity are recommended

*ESTEBAN Survey

Higher energy cost

The energy cost increases **by 5,3% per year**
41% of increase since **2017**
Grid stability

Air pollution

Green house gas emissions
CO2, **NOx**, **PM10**...
Traffic jam

Our solution : VéloColo

Electricity production using human mechanical energy (with energy storage)

Improve everyday life

Reduce Traffic jam
Reduce energy consumption
GHS emissions

Smart grid technology use

Grid stability
Energy storage

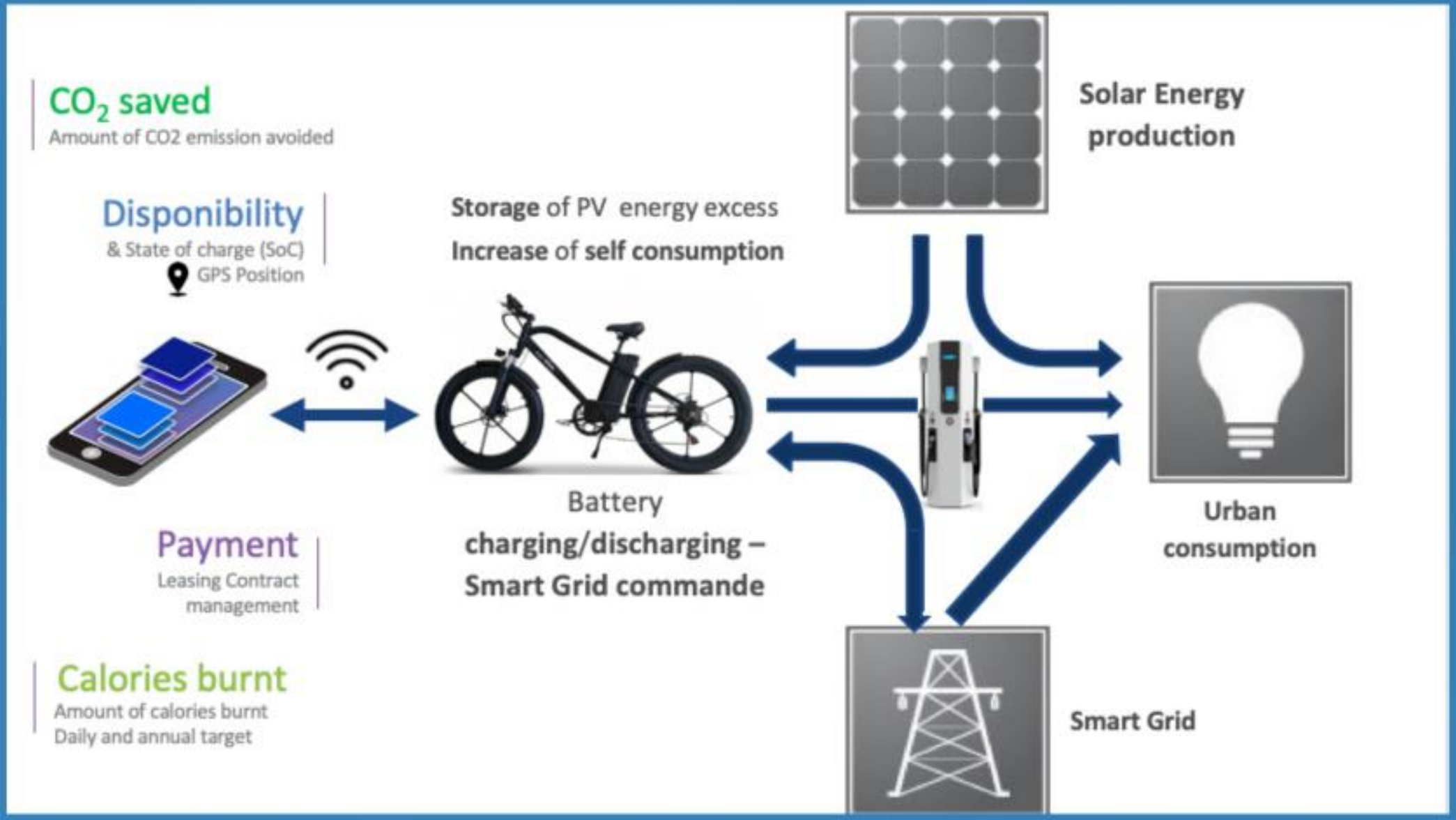
Parking and security

Park automatically
Smart bike pick up
Anti-theft building

Mobile application

Raise awareness on global warming
Act on a large community

Energy flow and mobile App

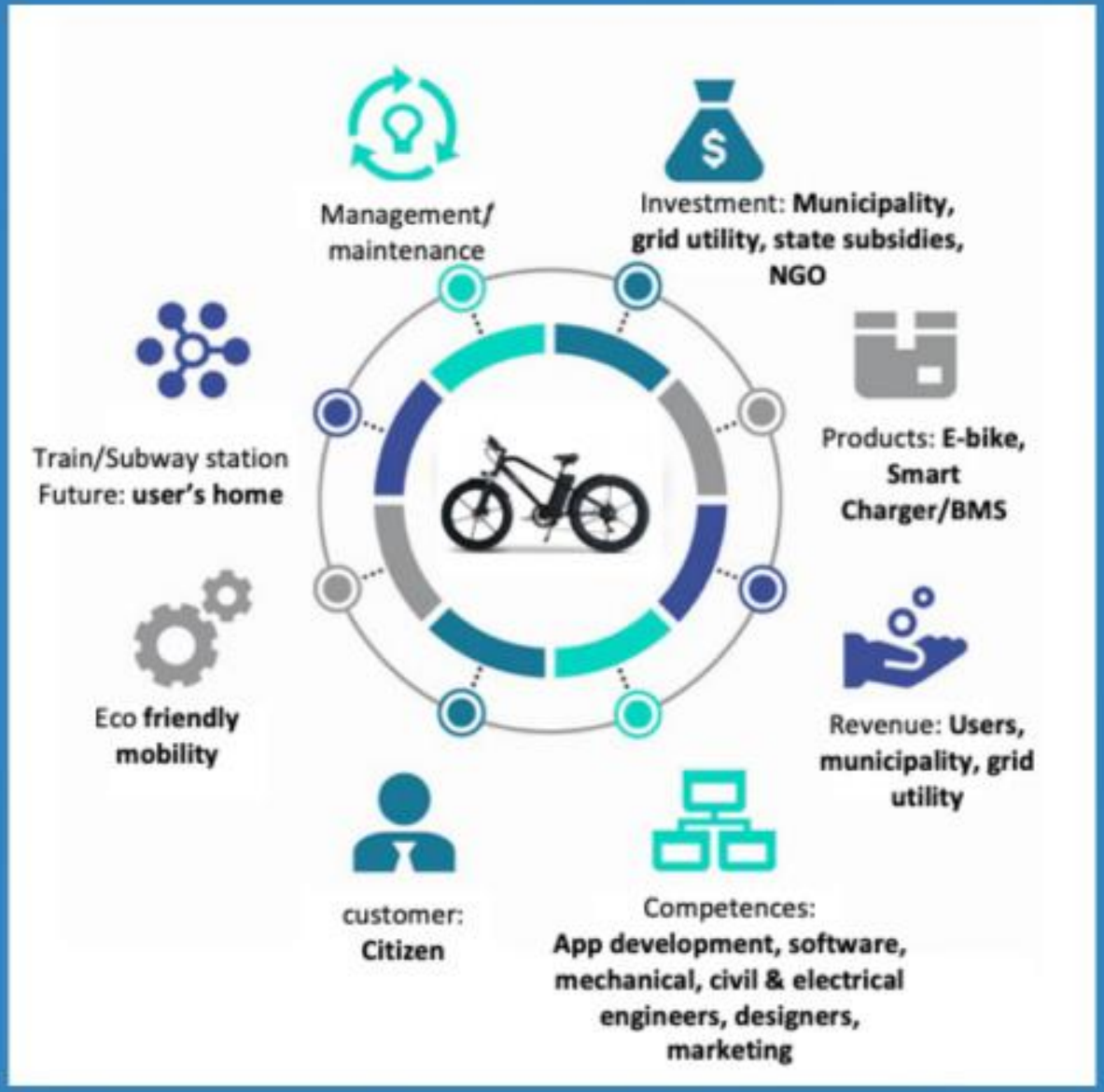


Business model

Market potential

- **10 000** Public bikes in Paris
- With a potential storage capacity **300 -> 600 Wh**
- Global storage capacity **3 -> 6 MWh**
- Target **'Vélo et mobilités actives Plan'** in 2024: **from 3 to 9%***

*statistics of « observatoire du cycle »
**Minister of ecology



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