

MOBEV: NEW OPTIMISATION TOOLS FOR ELECTRIC VEHICLES INTEGRATION

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CHOOSE EXPERTS, FIND PARTNERS



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MOBEV?



A modelisation and simulation tool for optimised EV fleet management



How to optimise the EV fleet related to the needs?

How many vehicles are required?

How many charging stations?

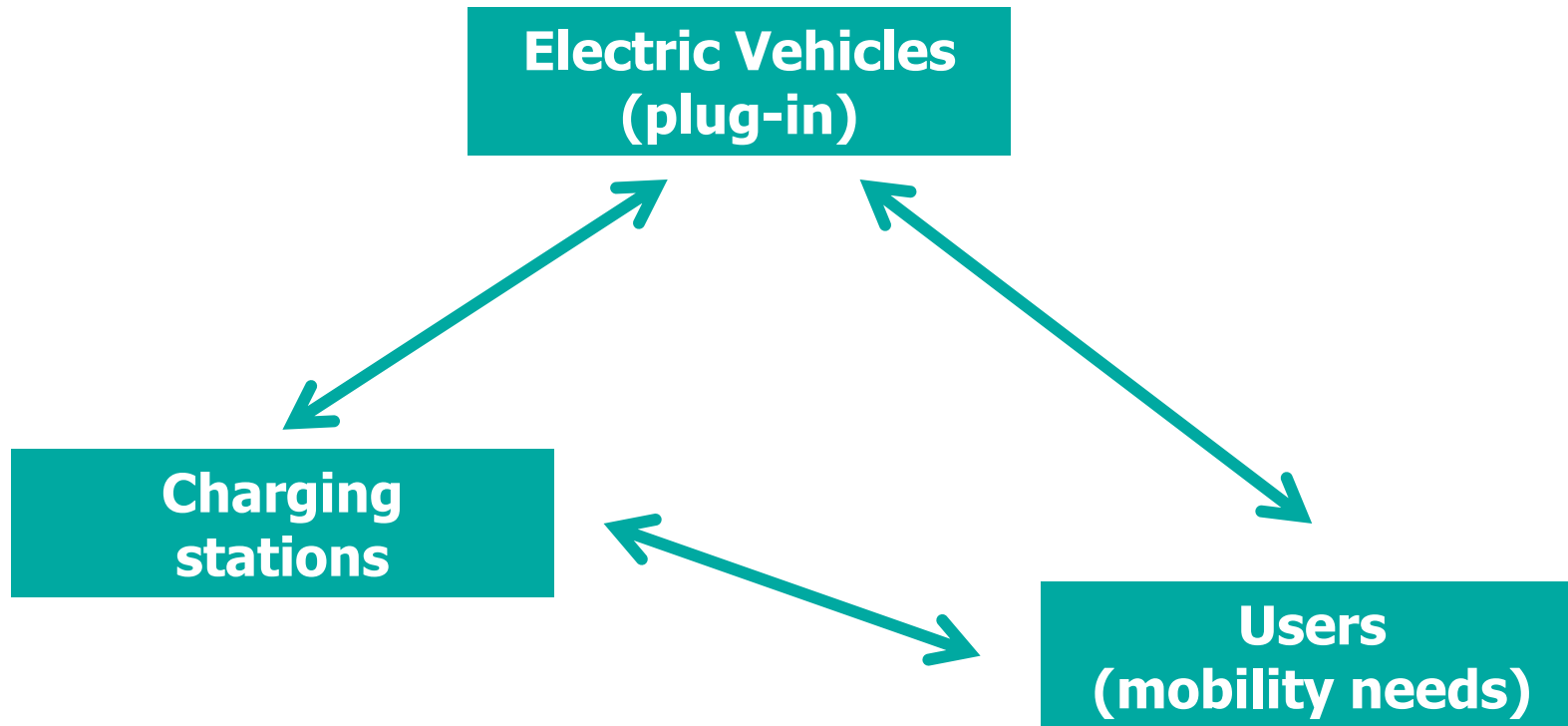
Which rides are (not) possible?

What are the limitations of a proposed scenario?

How can I connect my mobility to my energy management?

...

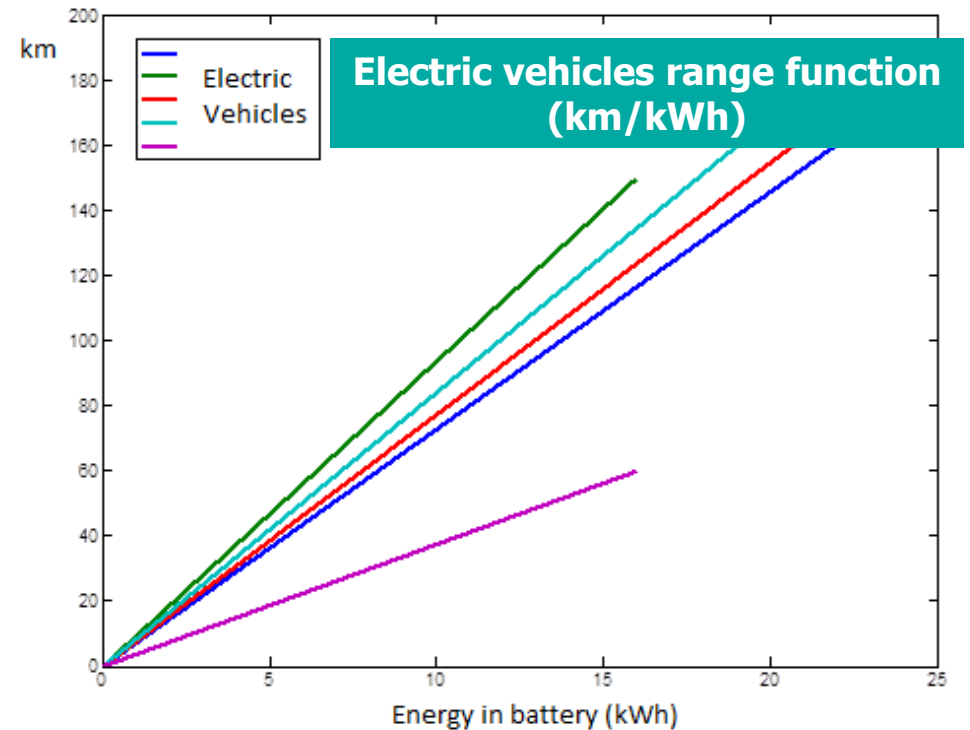
ELECTRIC VEHICLES SYSTEM COMPOSITION



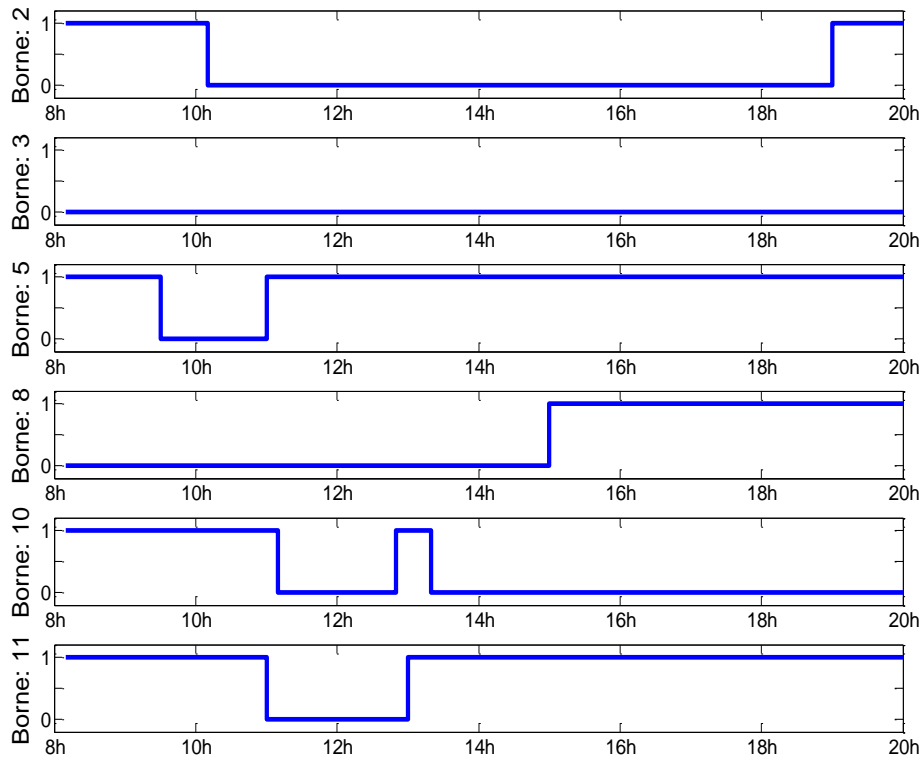


MODELLING THE EV SYSTEM

- Collecting information about the infrastructure and mobility needs
- Modelling
 - Electric vehicles
 - Charging stations
 - Journey
- Building the system

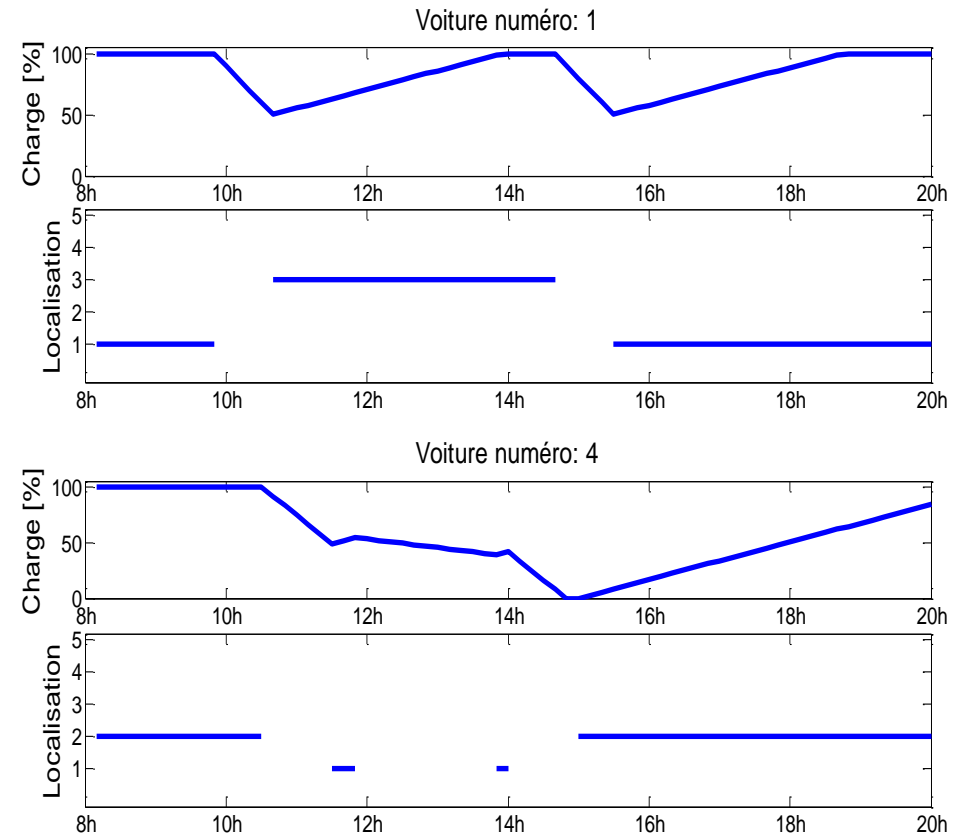


SIMULATION



**Charging stations
Availability**

Electric Vehicles Energy and location



PROOF OF CONCEPT



- Pilot project **Mobilitissimo**: integration of electric vehicles into the RTBF fleet (public broadcasting organization of Belgium)
- First project input:
 - No data about journeys
 - No customer specific mobility wishes or goals
 - 5 separated locations in Belgium
 - List of the vehicles
 - Data sheet of the charging station



mobilitissimo

rtbf.be

GDF SUEZ

PROOF OF CONCEPT



- Pilot project **Mobilitissimo** – mission:

What are the opportunities with a new EV fleet?

Which scenario is the best in terms of electric vehicles usage?

How many charging points are needed for each scenario?

Where should the charging points be implemented?

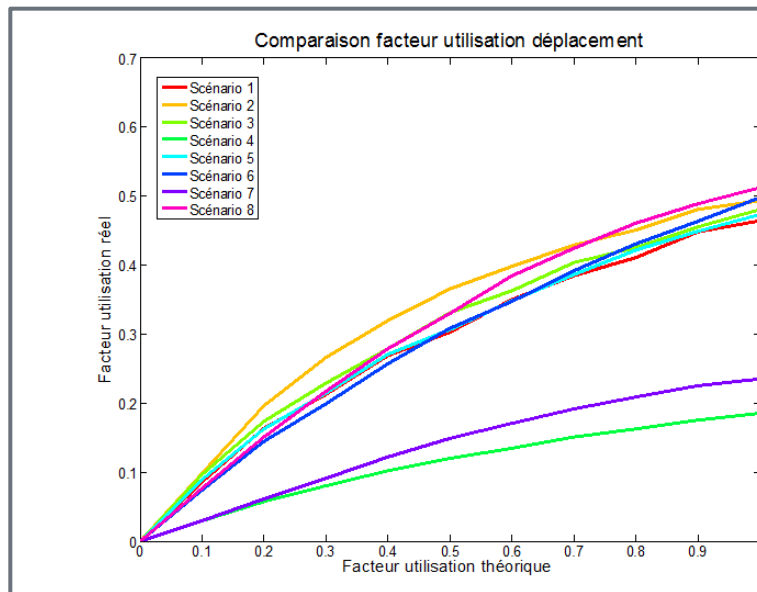
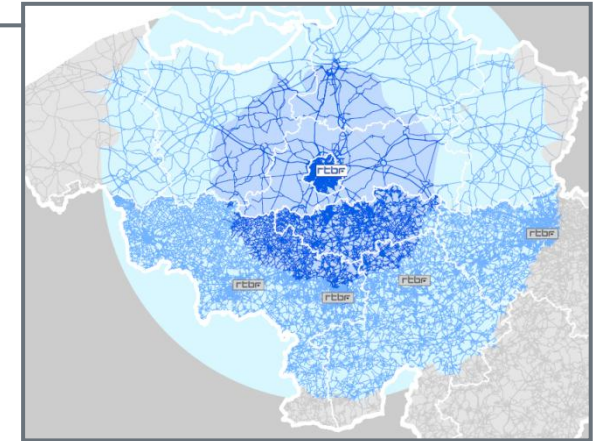
What are the pro's & con's of the different scenarios?

Conducting a survey

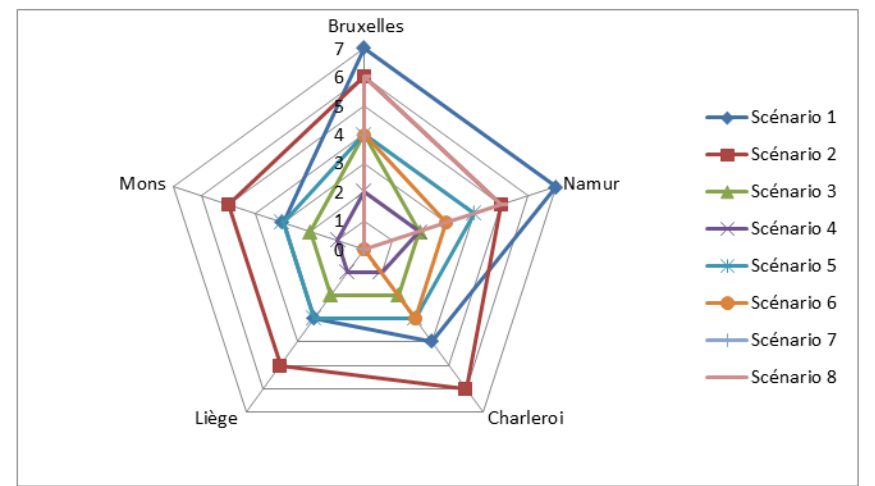


PROOF OF CONCEPT

- Studying the system limitations
- Building mobility scenarios
- Simulation process
- Scenario comparison and final decision



VS



PROOF OF CONCEPT

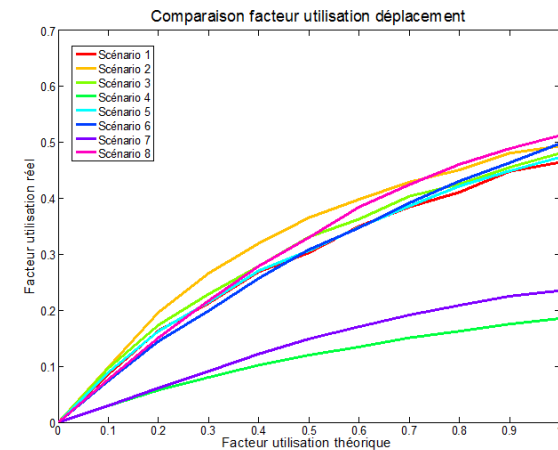


- Results: number and locations of the charging points and estimated use of EV

	Bruxelles	Namur	Charleroi	Liege	Mons	Total
Scénario 1	7	7	4	3	3	24
Scénario 2	6	5	6	5	5	27
Scénario 3	4	2	2	2	2	12
Scénario 4	2	2	1	1	1	7
Scénario 5	4	4	3	3	3	17
Scénario 6	4	3	3	0	0	10
Scénario 7	4	0	0	0	0	4
Scénario 8	6	5	0	0	0	11

- “Scenario 6” was chosen:

- Only journeys between Brussels, Namur and Charleroi
- High prospective use of the vehicles
- Satisfying also the needs of scenario 7 (short displacements only in and around Brussels)



We demonstrated that only **4** charging points were necessary for **7** electric vehicles in the location of Brussels (scenario 7) → less charging points compared to the number of electric vehicles

ADDITIONAL MODULES



Economic module

- Pricing system comparison (for public shared vehicles)
- Electricity prices input
- Total Cost of Ownership

Energy module

- Link with renewable/local energy production
- Link with local energy consumption (electric vehicles used for energy storage)

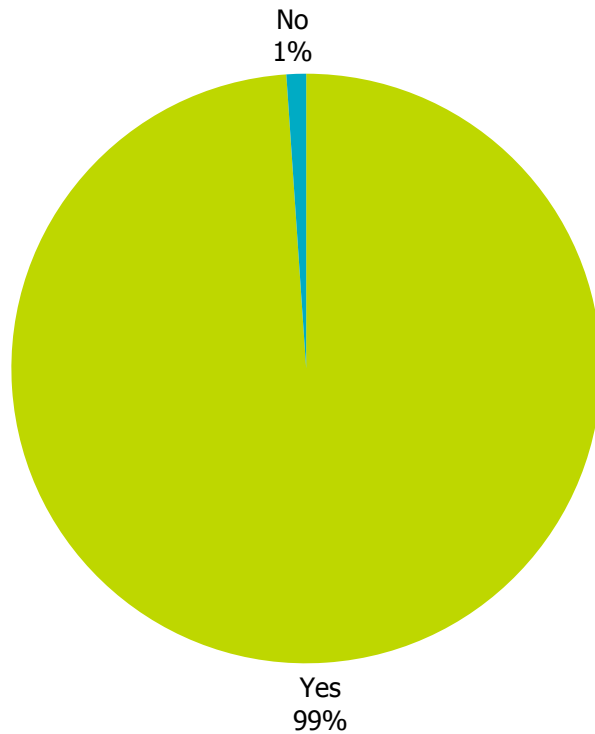
Environmental module

- CO2 emissions
- NOx, PM, HC and CO emissions

Mobility module

- Reservation platform
- Traffic prediction model

SURVEY RESULTS



Would you use an electric vehicle again in the future?

→ 99% of the EV users replied **“Yes”**

(Mobilitissimo survey result)

CONCLUSION



MobEV = a powerful and versatile tool to:

- Understand the complexity of EV fleets;
- Predict the usage of EV in the fleet;
- Facilitate the decision making in terms of infrastructure;
- Define and clarify the limitations of the system;
- Create the link between mobility, energy, economy and environment.



**THANK YOU FOR
YOU ATTENTION !**

