Prof. Sidharta Gautama

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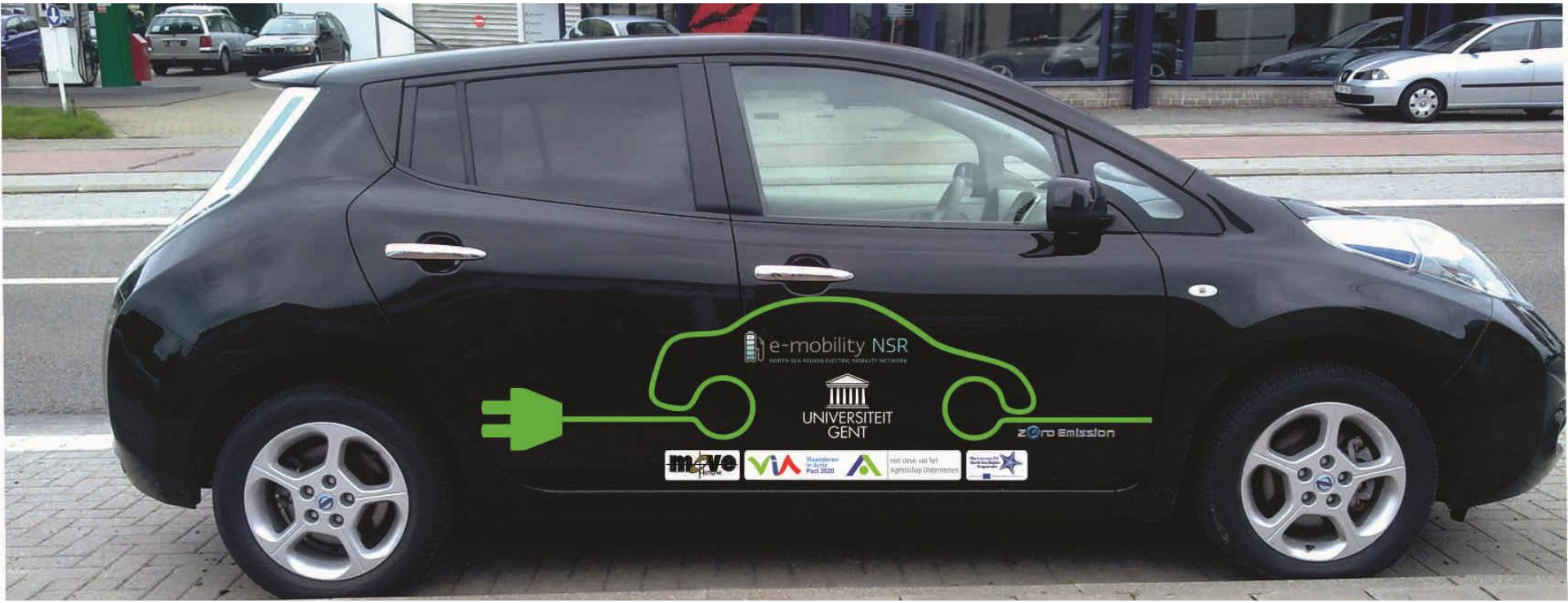

The role of EV consumer behavior in smart grid solutions

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Agenda

- Introduction
- Battery and driving behavior monitoring for mobility consumer insight – Sidharta Gautama (UGent)
- Smart EV charging and battery optimization to support the smart grid – Ghanim Putrus (Northumbria University)
- Tools in support of market acceptance and mass adoption
- Interactive session

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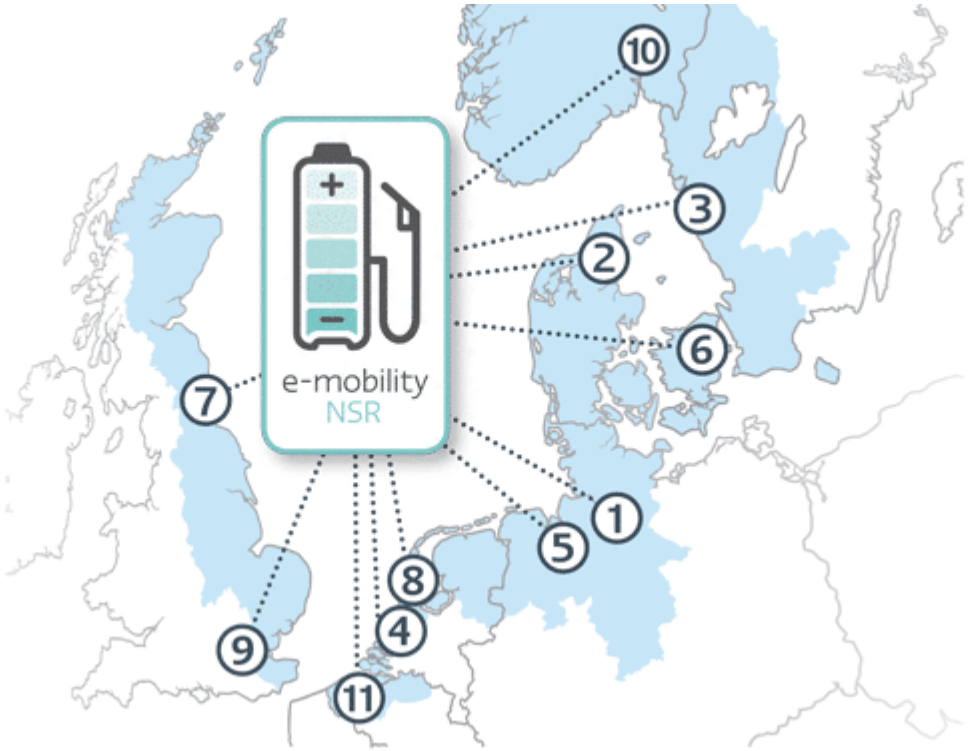

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Consumer insight through lab and field tests of EV technology in order to better understand how technology will be used

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Who are potential consumers for EV car sharing?

How does an EV battery behave in the lab and in the field for different driving profiles?

What does this mean for smart grid?

Consumer insight through field tests of EV technology
in order to better understand how technology will be used

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EV Field tests

- Personal use
  - Co-housing in urban context
  - Co-housing in rural context
  - Car sharing in urban context
- Professional use
  - Daily use in logistics
  - Daily use in intervention
  - Electric bus for campus service

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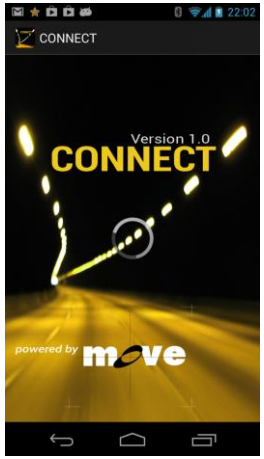
EV Field tests



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EV Field tests

move i-know

Mobility management and business intelligence suite

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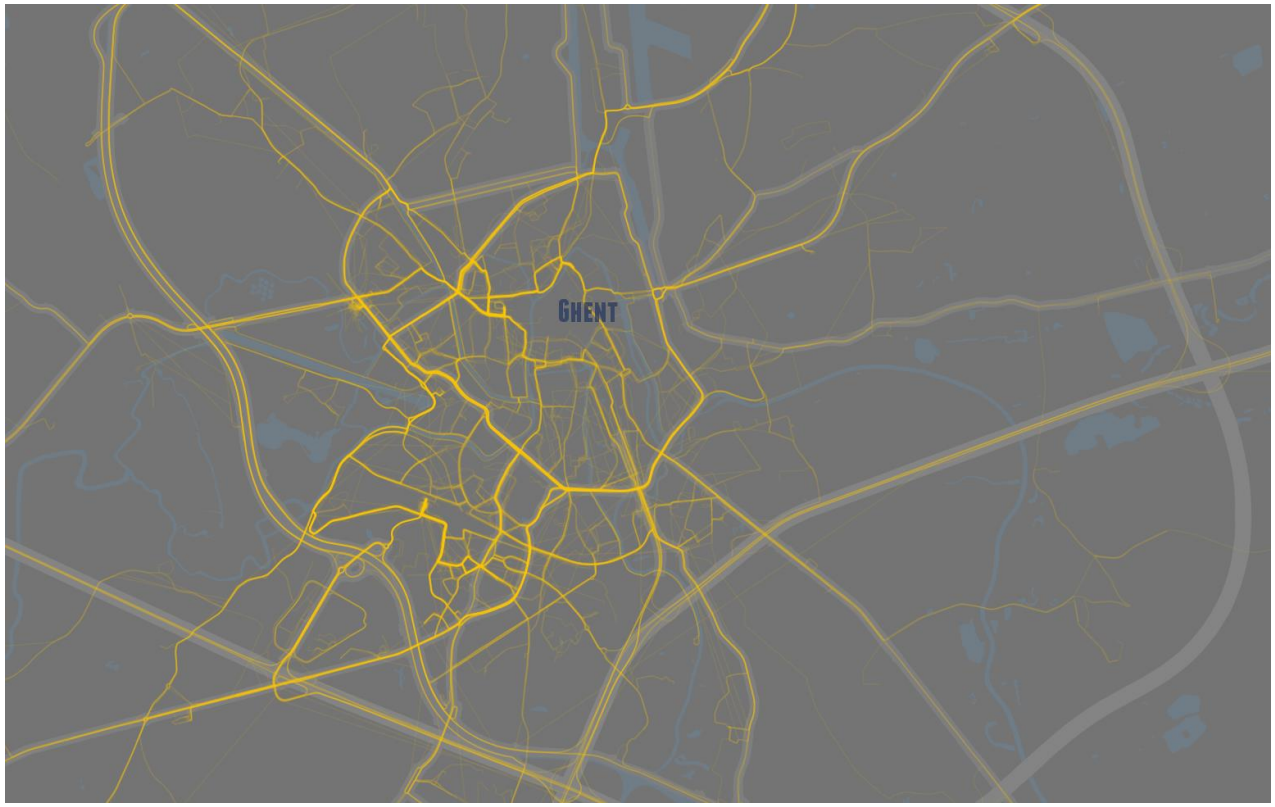
EV Field tests

move i-know



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EV Field tests

MOVIE CO-HOUSING

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User segmentation approach

- **Segmentation** - subdividing the public into manageable groups based on the attributes they possess, e.g. their social status, their attitudes or their dominant behaviour
- A good segmentation model - allows its user to **identify clearly differentiated groups** within a broad audience, and to **understand the most effective means by which to engage those groups**
- **Why** segmentation?
  - There is no 'one size fit all' approach
  - Different people are **motivated by different things**

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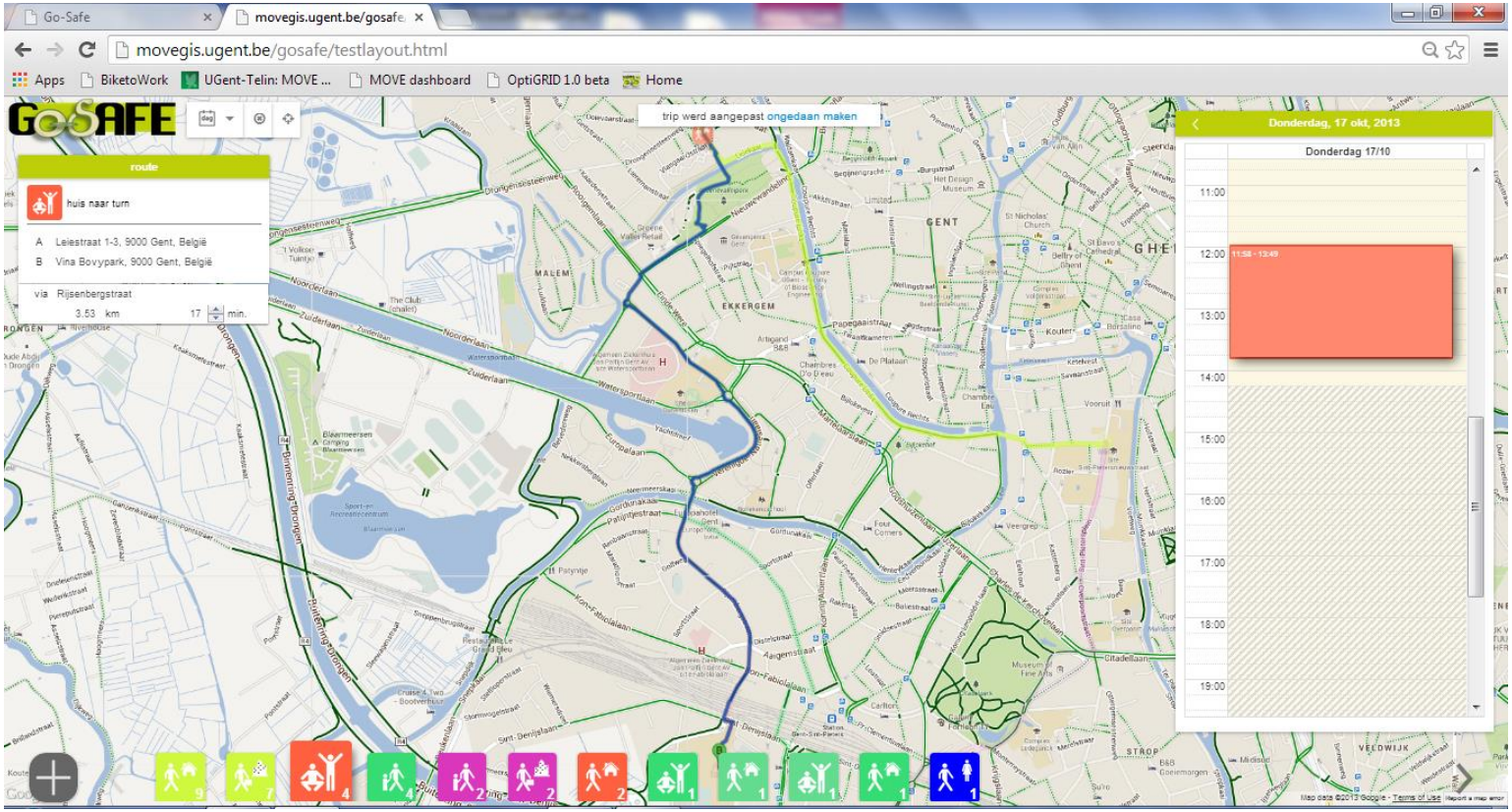
User segmentation approach



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Consumers

CAR CONTEMPLATORS

Would like to increase car travel

Neutral attitude towards the cycling

The youngest segment, mostly students

More likely to be women

PUBLIC TRANSPORT DEPENDENTS

Least likely to have a bicycle available to them

Most likely to think they have reduced car use as much as they can and that travelling by car is expensive

CAR-FREE CHOOSERS

By far the largest group of non-licence holders and non-car owners

Highest number with a bicycle available to them

High levels of bus, bicycle and walking

PRACTICAL TRAVELLERS

Highest proportion with ≥ 3 bicycles available to them and using a bicycle to get to and from work/school

Have five-minute or less walk time to public transport

to 7 days per week)

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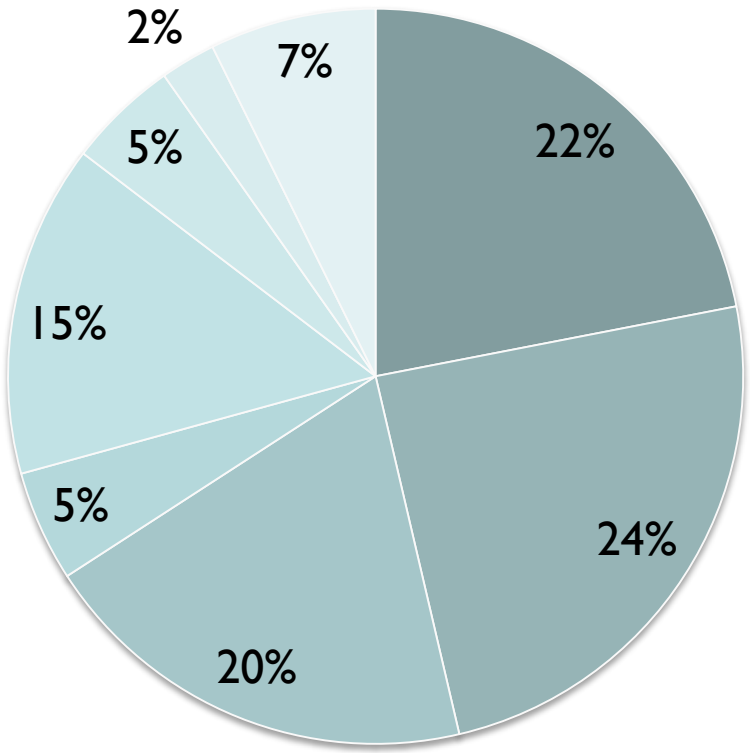
Consumers co-housing



- Devoted Drivers
- Image Improvers
- Malcontented Motorists
- Active Aspirers
- Practical Travellers
- Car Contemplators
- PT Dependents
- Car-free Choosers

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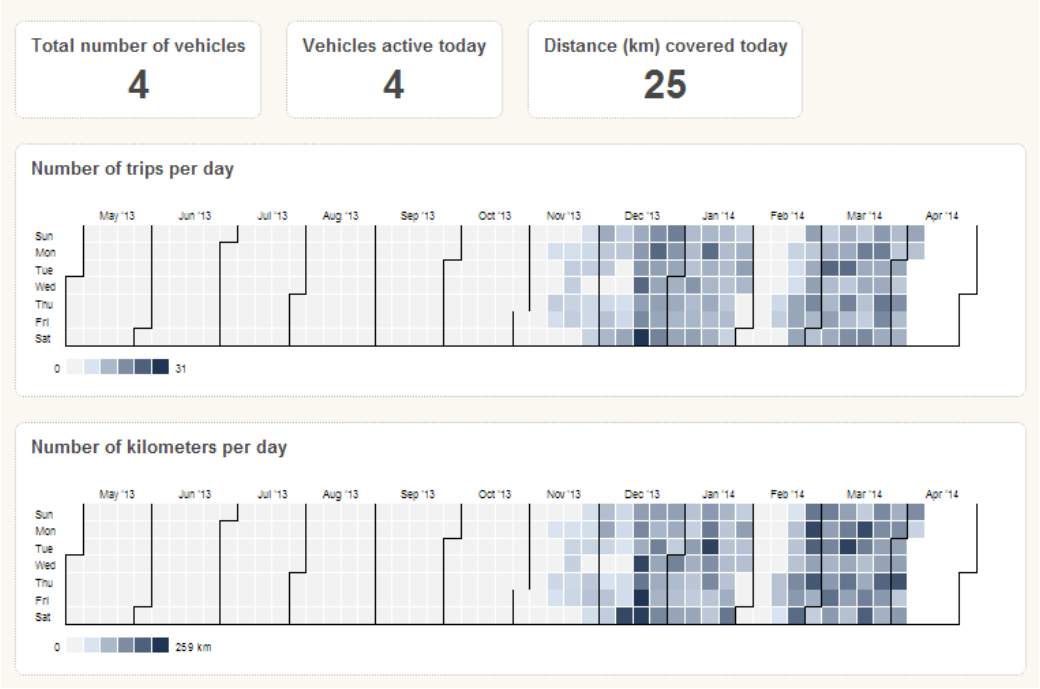
Consumers co-housing



Co-housing Suburban
5,1 trips/day
52 km per day
Max 186 km

Co-housing Urban
2,1 trips/day
14,9 km per day
Max 97 km

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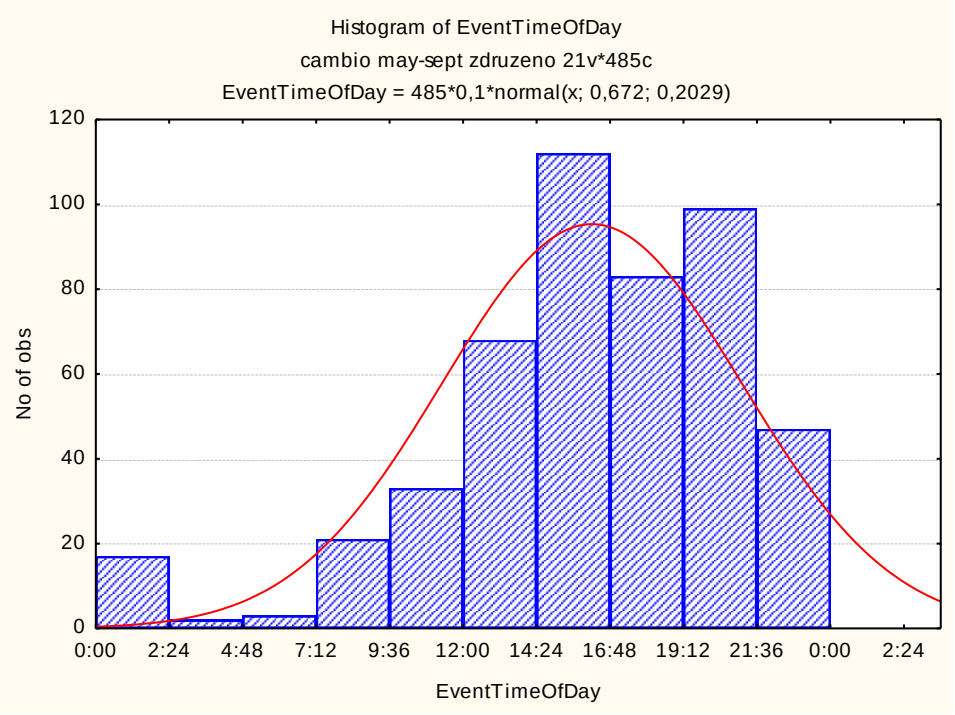
Consumers car sharing

- Average use time – 4 h 44
- Average traveled distance – 27,6 km
- Average charging time – 2:02:34 h
- Average battery % charged – 25,5%



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GHANIM PUTRUS

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BATTERY MODELS

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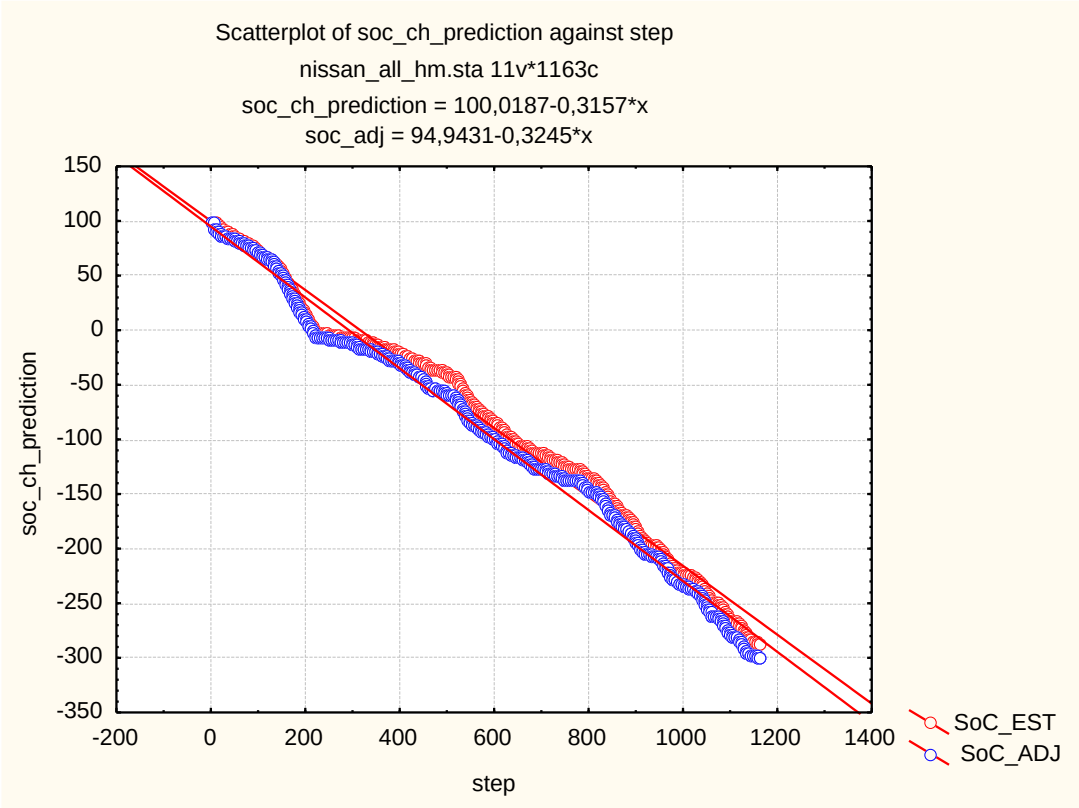
Nissan Leaf



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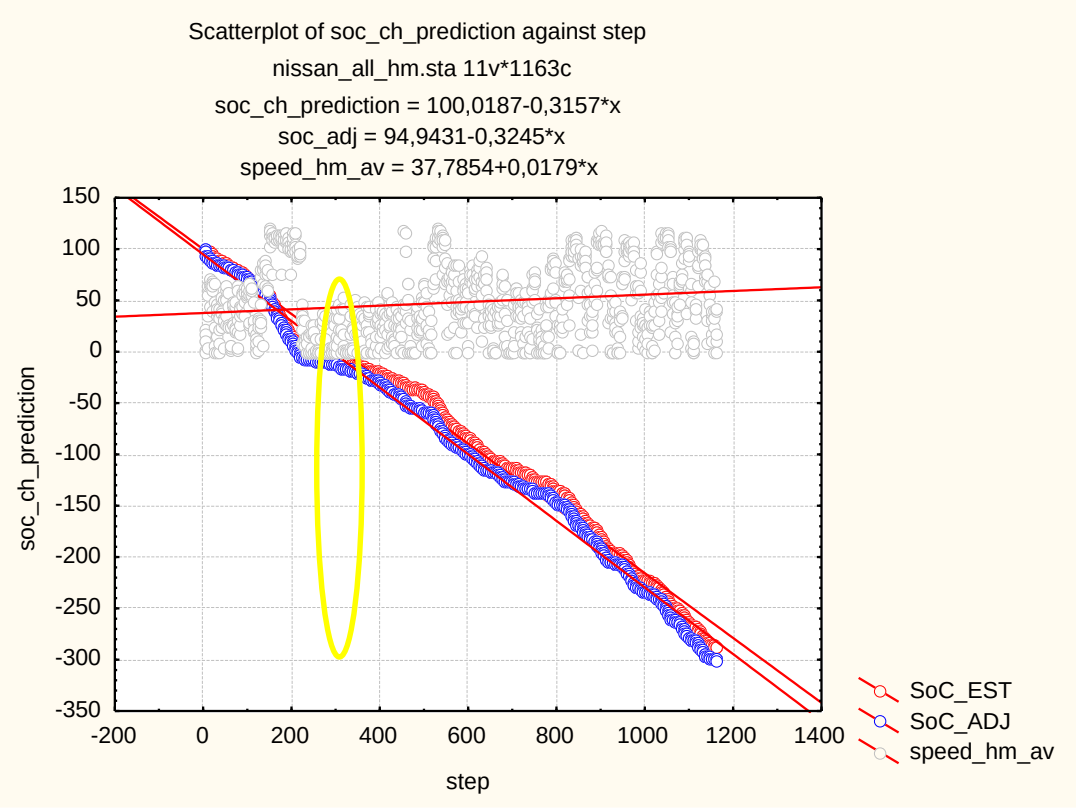

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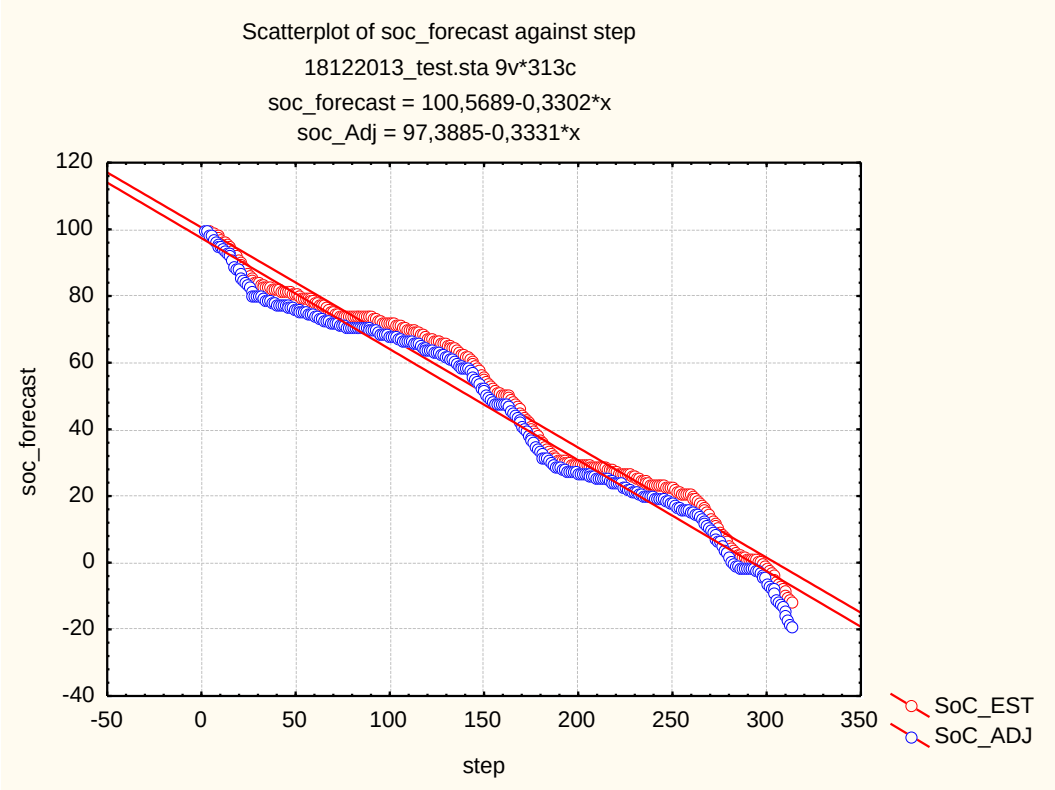

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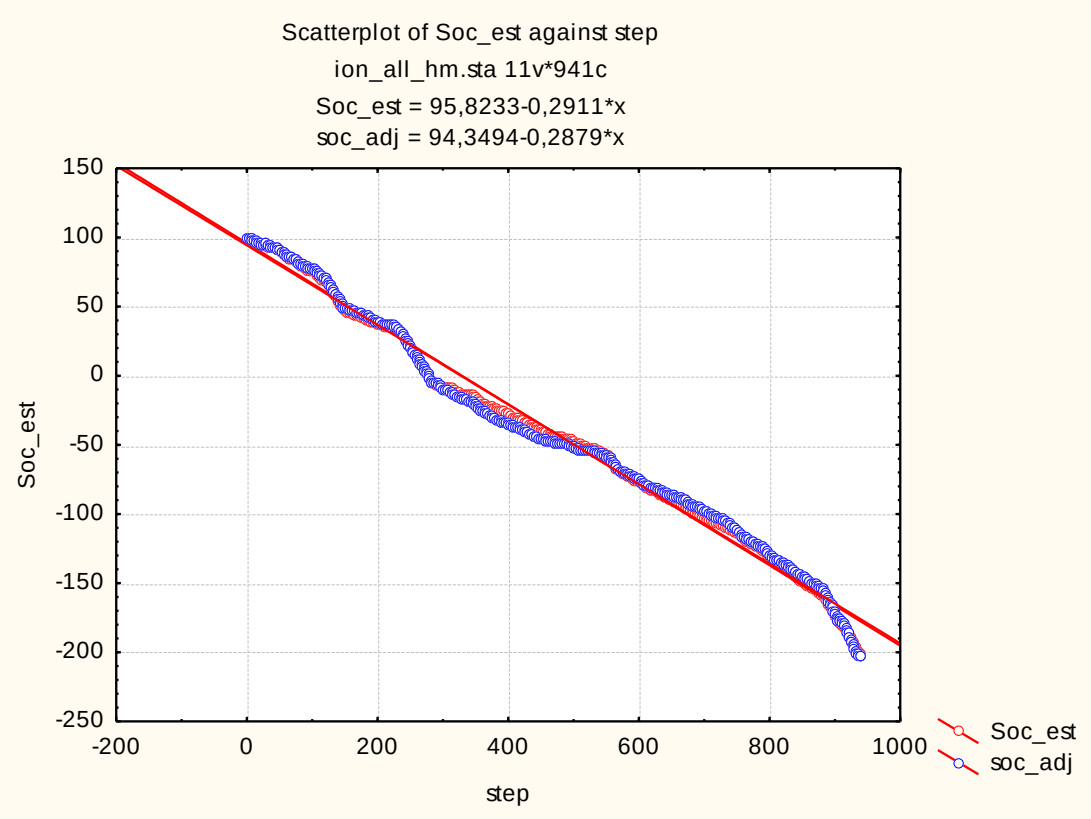
Peugeot Ion



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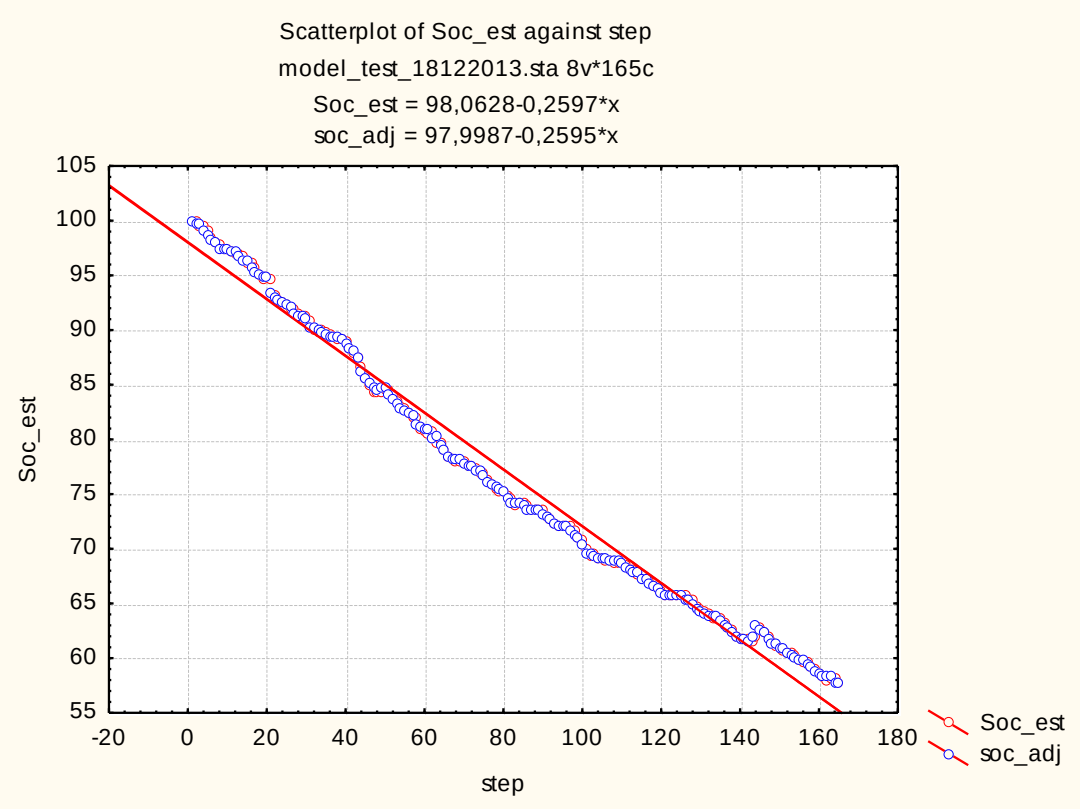

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Mobile App eCO-DRIVER

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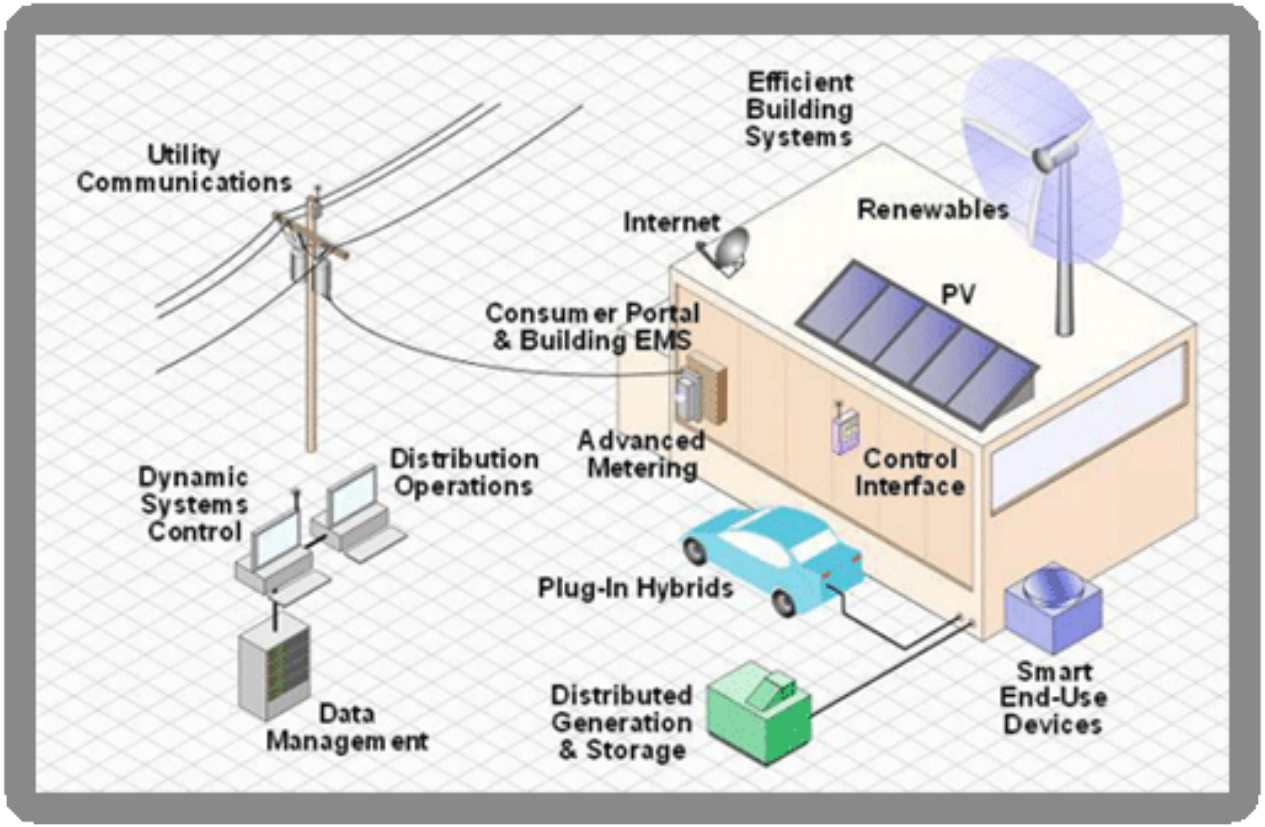
Smart grid macro model



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TESLA MOTORS

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materials for a better life

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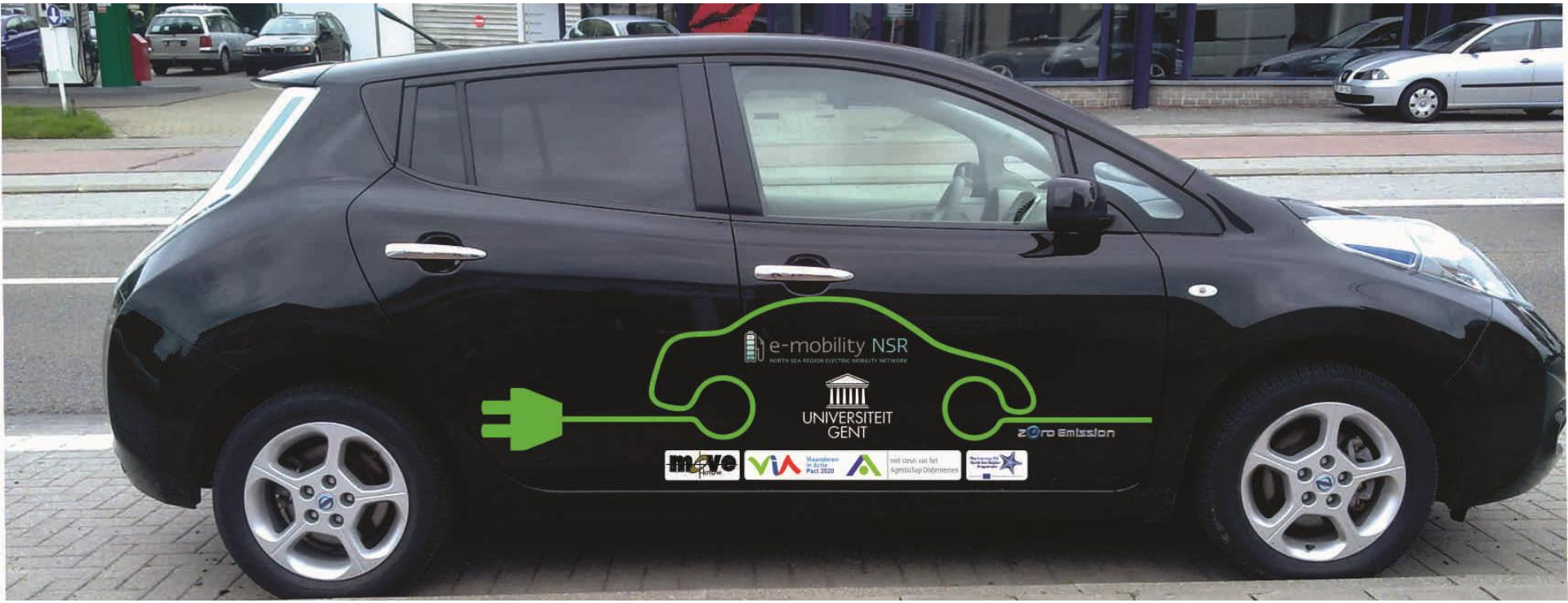

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