

Speed pedelec rider's behaviour as input for appropriate legislation

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Who am I?

- Researcher on speed pedelecs @ KU Leuven since 2012
- Advising Flemish, Belgian and EU government on LEV legislation
- Member of *Scientists for Cycling* network
- Board member of LEVA-EU



What do we know about
the speed pedelec?



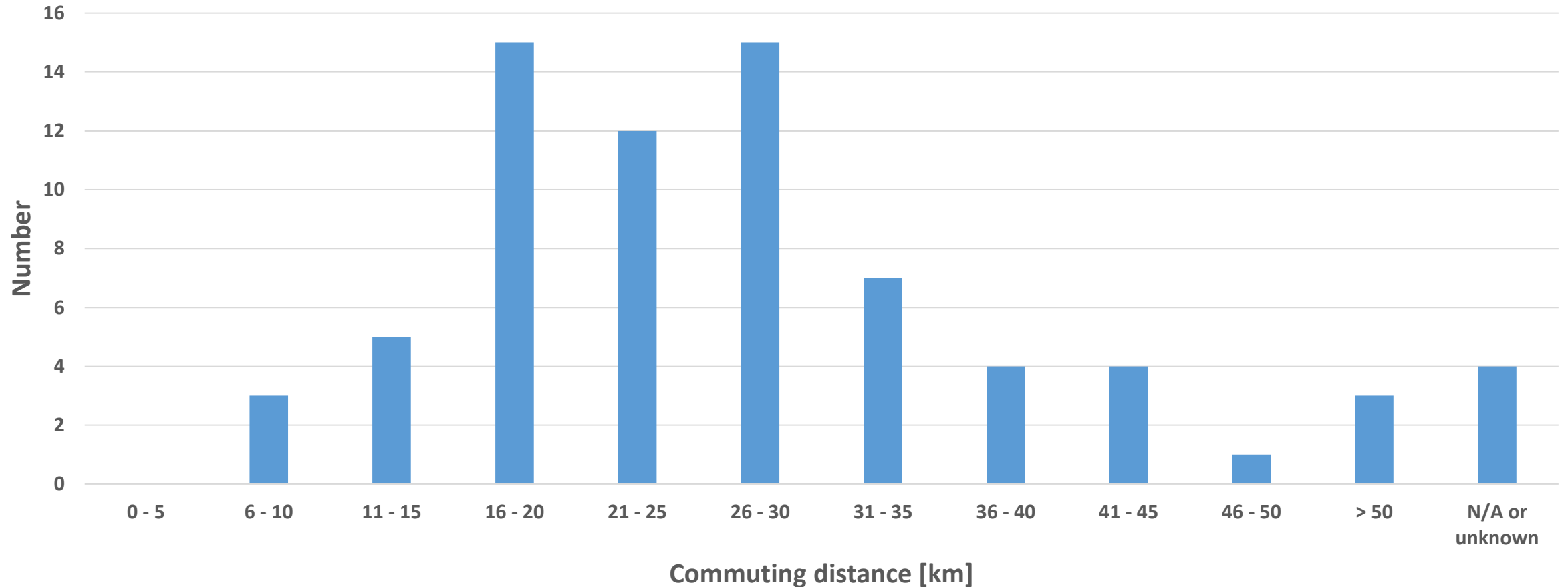
Belgian commuters do buy it

- Sales numbers show clear interest
 - *2041 registered in 2016*
 - *Over 6 700 registered in 2017 (↔ 2 713 electric cars)*

→ Offers alternative for car commuting

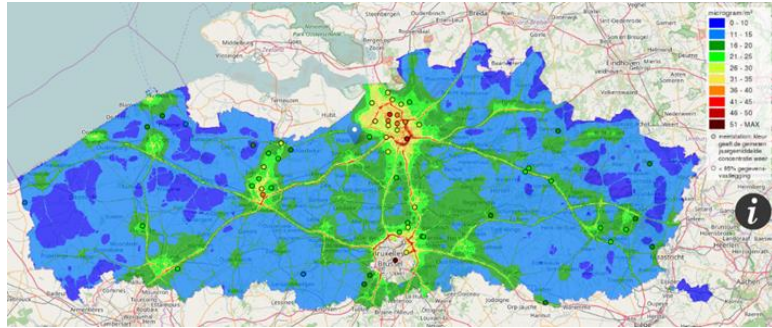


Typically used for commuting

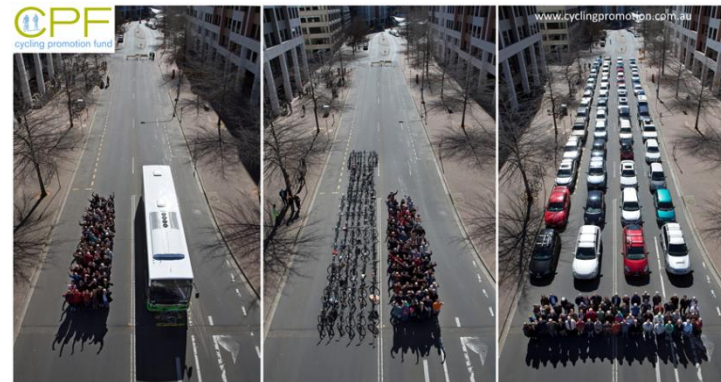
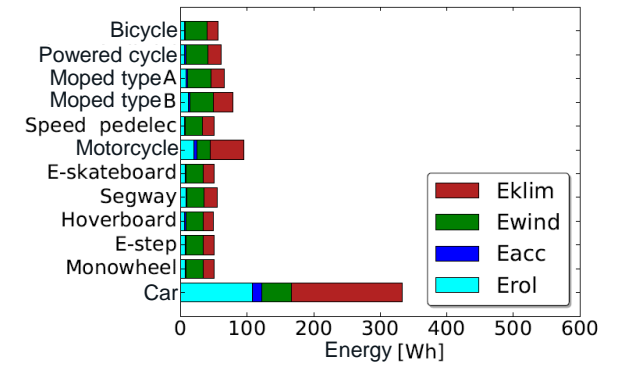
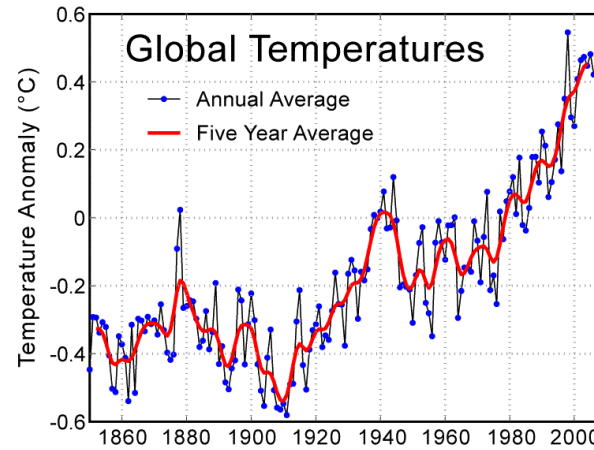
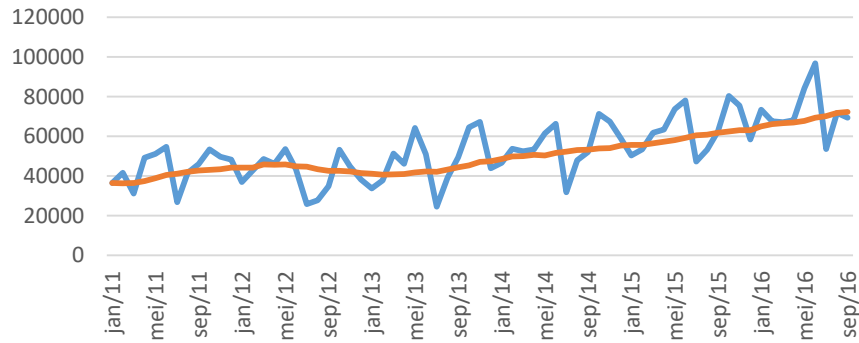


Rotthier B., Huyck B., Dikomitis L., Motoasca E., Cappelle J. (2016). *Social benefits and legislative challenges of speed pedelecs*. Velo-city Global 2016. Taipei, February 27 - March 1 2016.

Social advantages



Hours lost in traffic

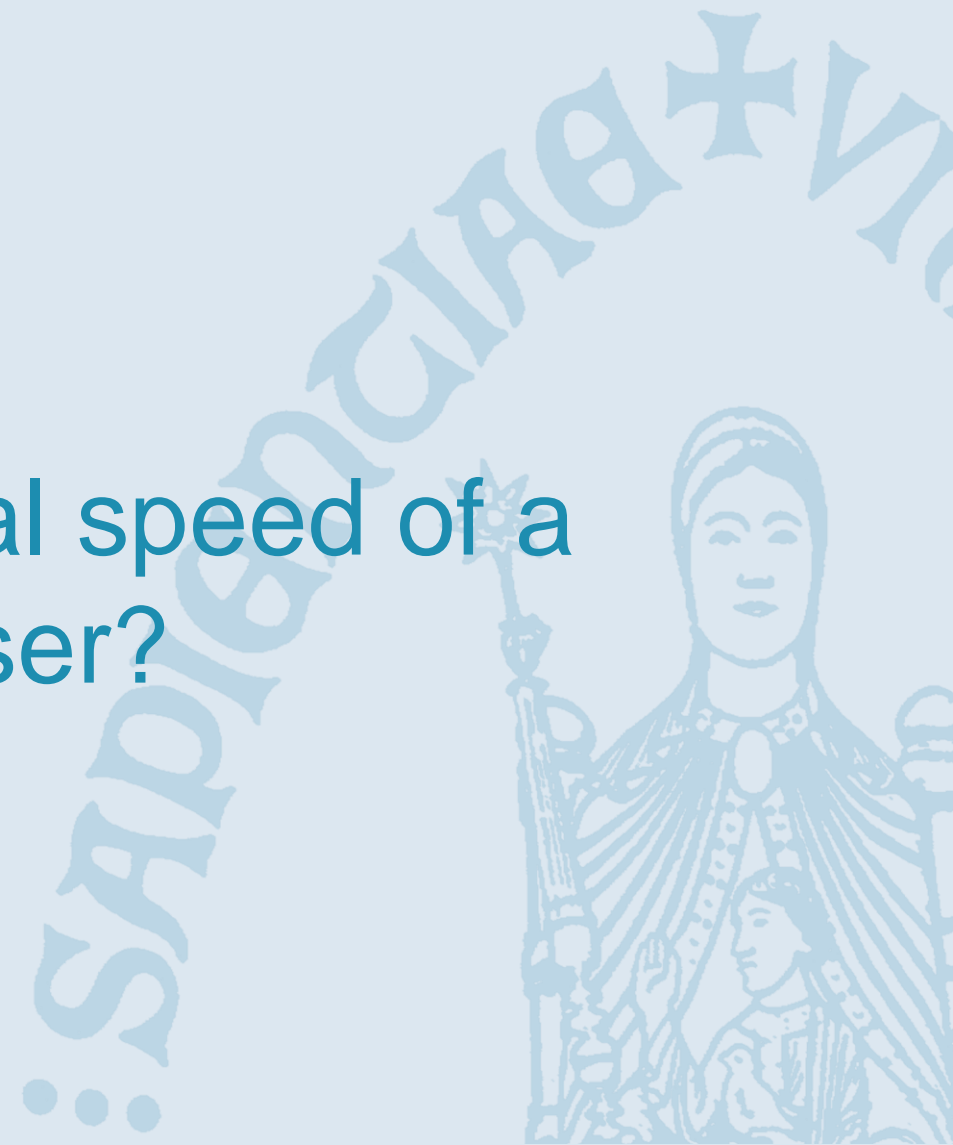


Personal advantages

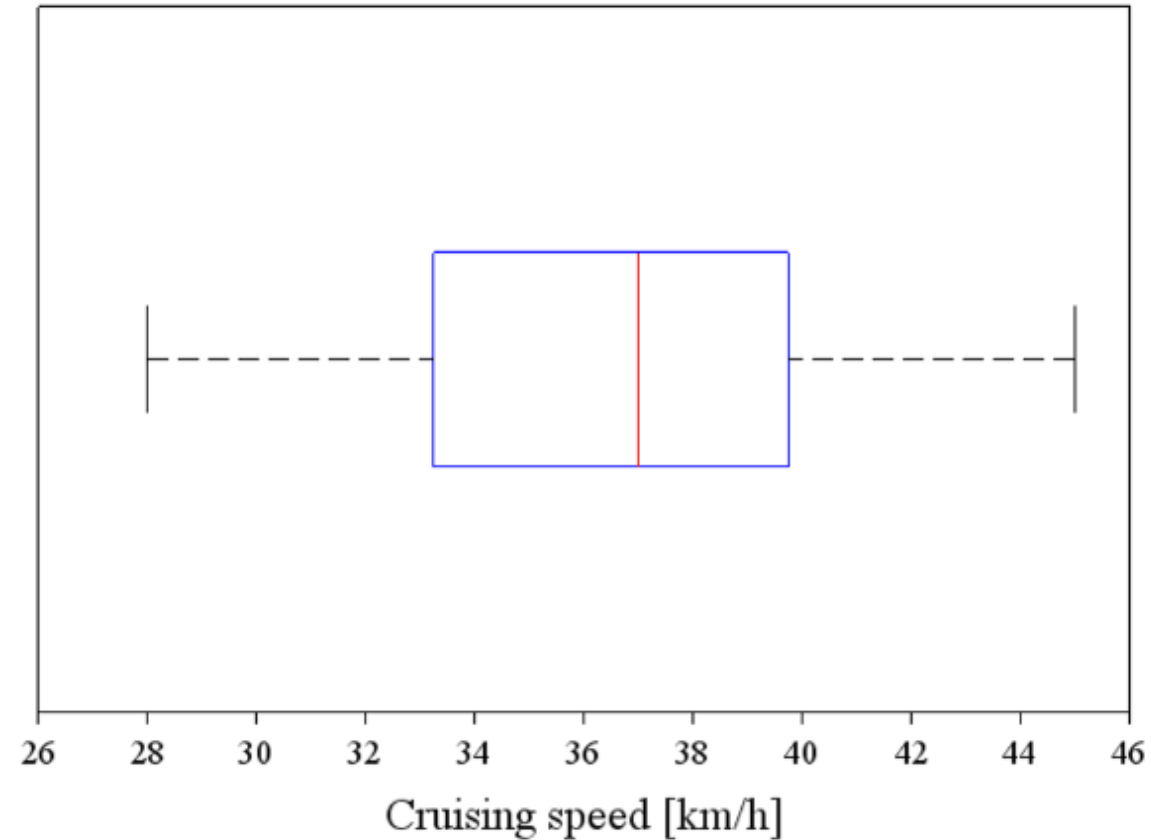
- Commuting time competitive with car commuting or public transport
- Low variation in commuting time
- Cost
- Sport
- Fun
- ...



What is the typical speed of a speed pedelec user?

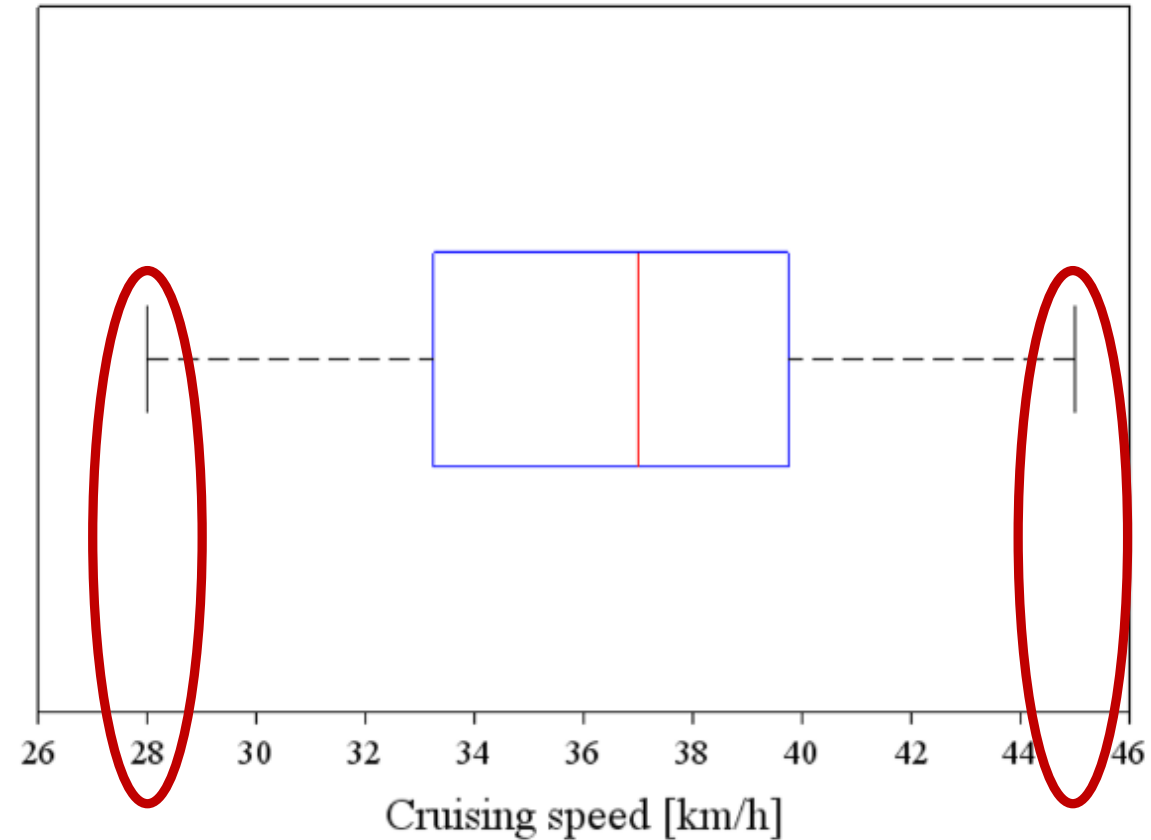


Cruising speed of speed pedelec users

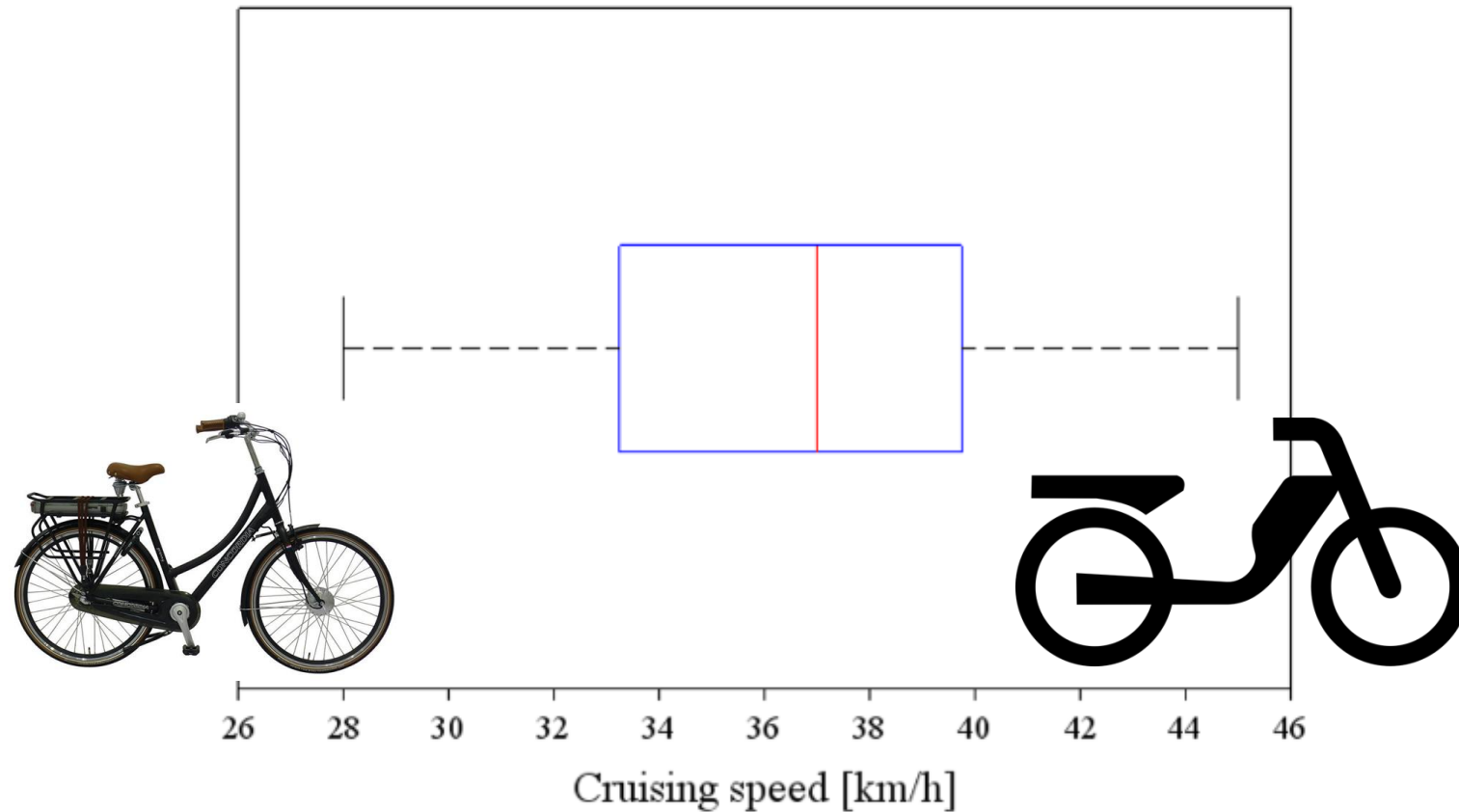


Rotthier B., Stevens G., Dikomitis L., Huyck B., Motoasca E., Cappelle J. (2017). *Typical cruising speed of speed pedelecs and the link with motor power as a result of a Belgian naturalistic cycling study*. International Cycling Safety Conference. Davis, USA, 20-23 September 2017

Cruising speed of speed pedelec users



Cruising speed of speed pedelec users



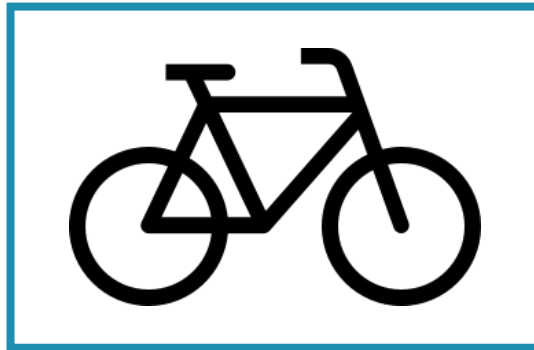
What about legislation?



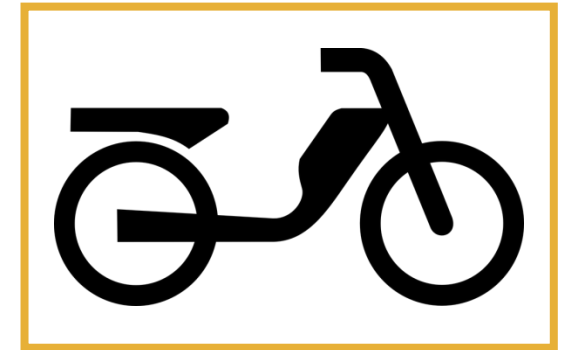
Bike lane users in Belgium



Pedestrians

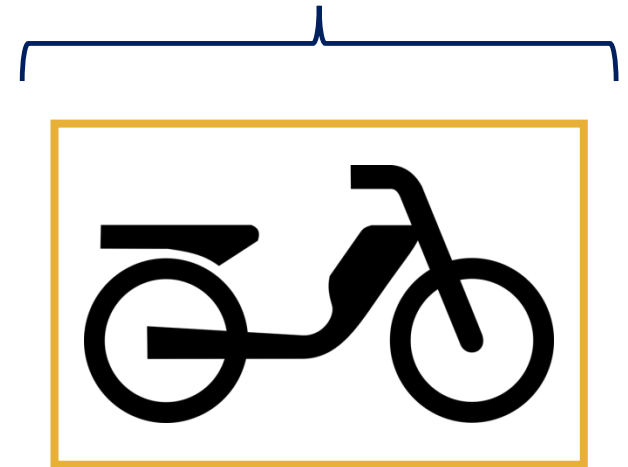
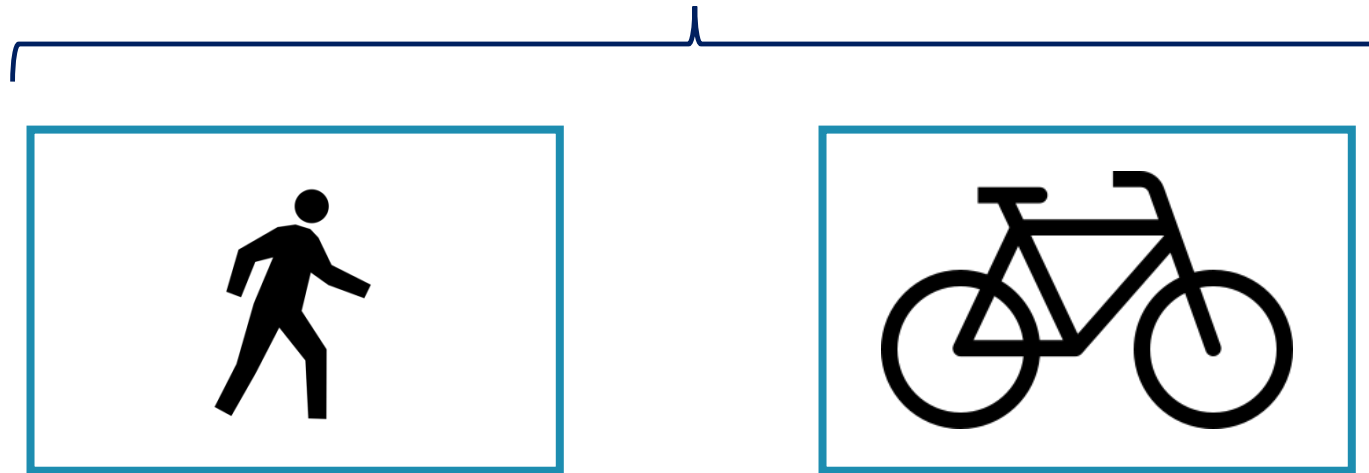


Bicycles

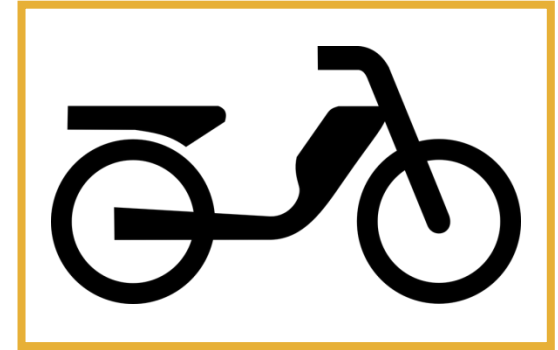
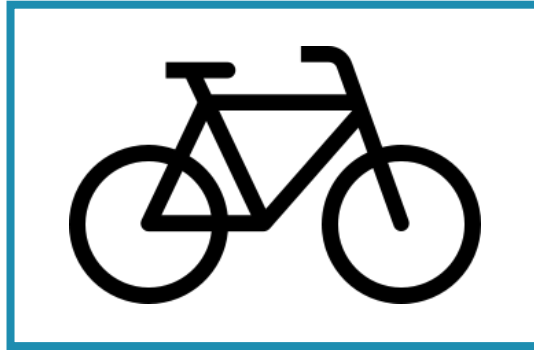


Mopeds (*in some cases*)

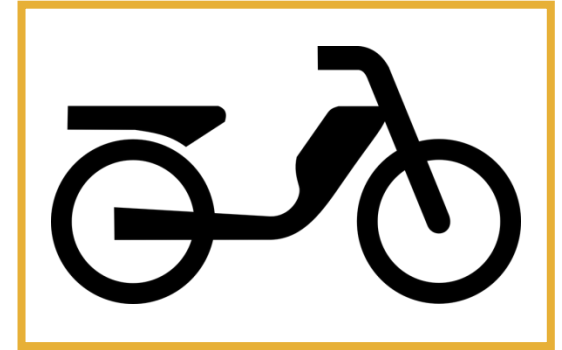
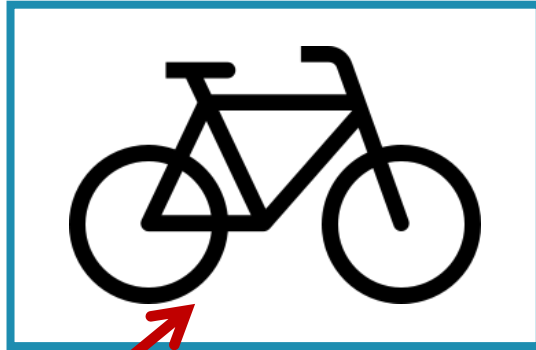
Original difference



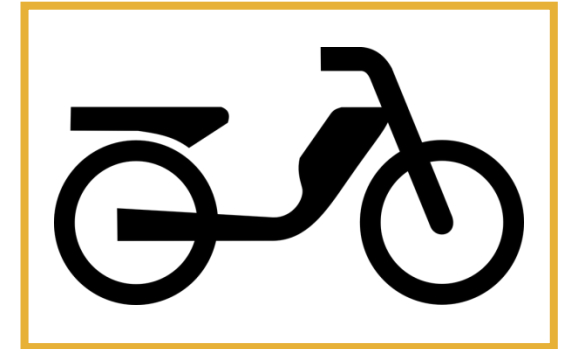
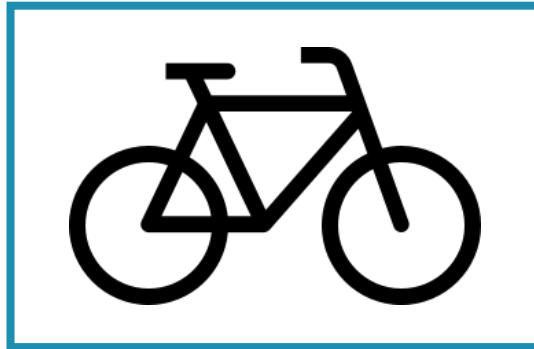
~ 1995: Introduction traditional electric bike



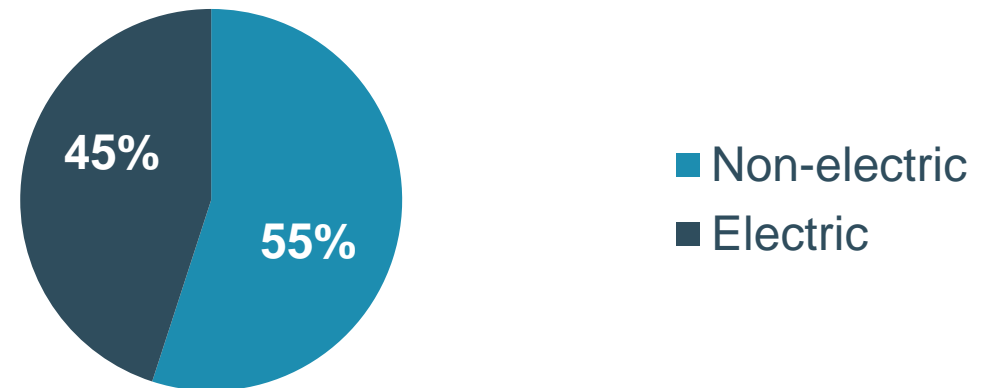
- Pedal assistance
- Maximum assistance speed ≤ 25 km/h
- Max. cont. rated motor power ≤ 250 W



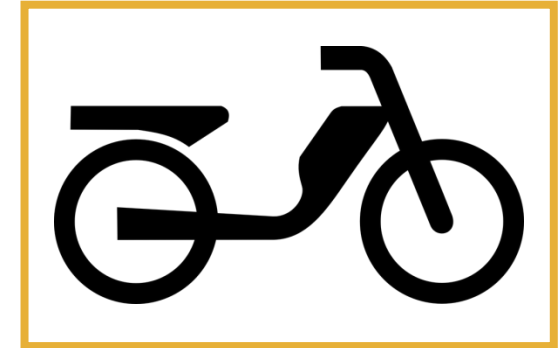
~ 1995: Introduction traditional electric bike



Belgian bicycles sales in 2017

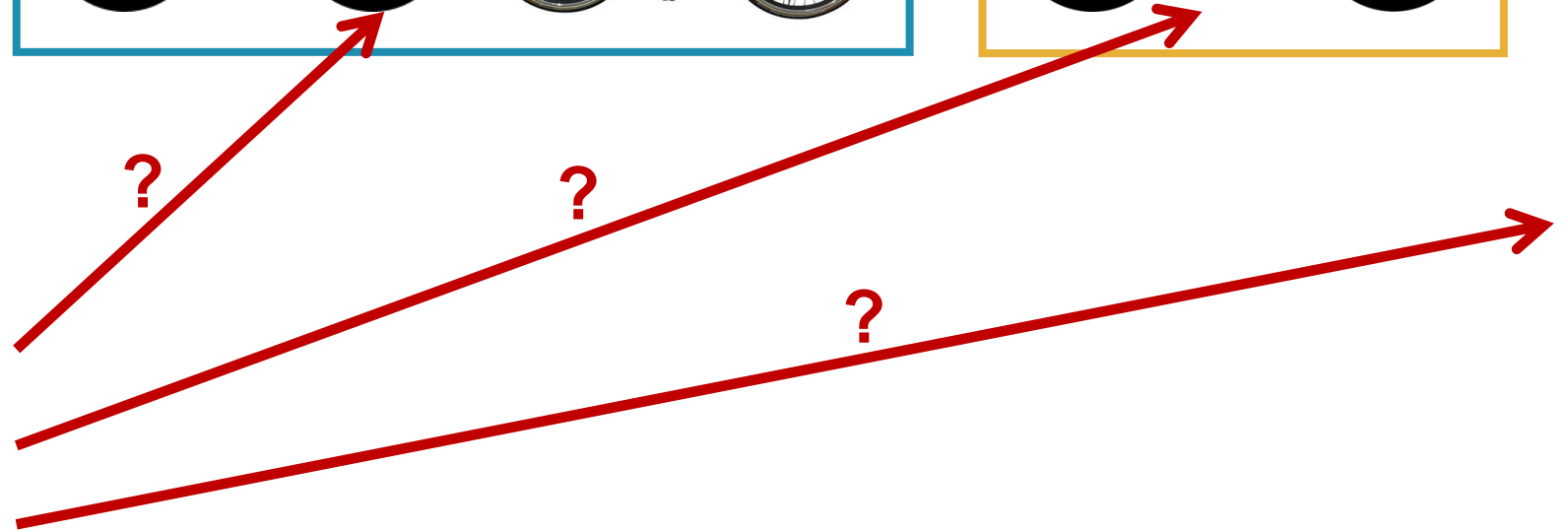
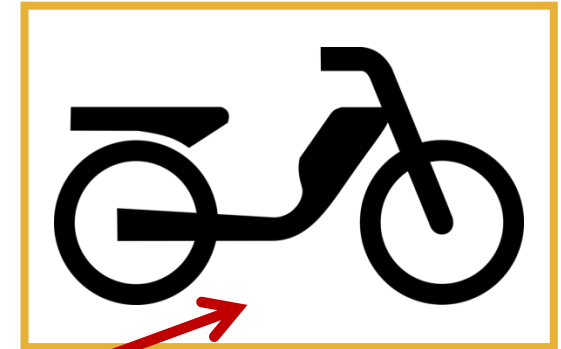
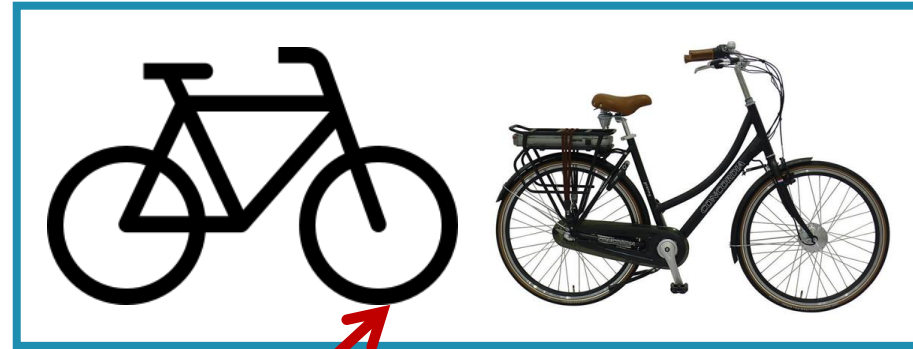


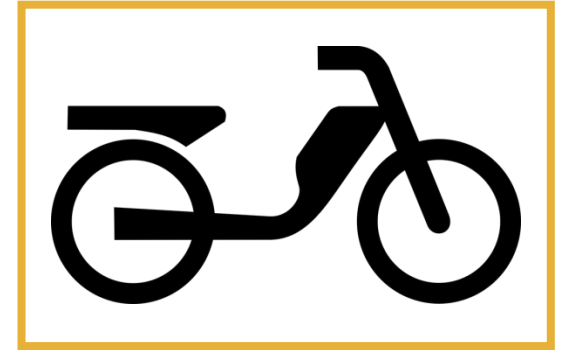
~ 2013: Introduction speed pedelec



- Mainly pedal assistance
- Maximum assistance speed ≤ 45 km/h
- Max. cont. rated motor power ≤ 4000 W
(typically 350 W or 500 W)

~ 2013

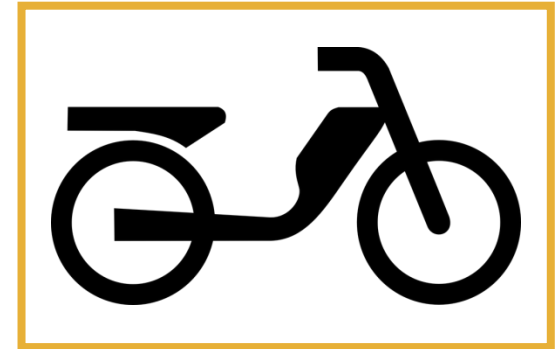




Belgian legislator



**Moped type
Speed pedelec**

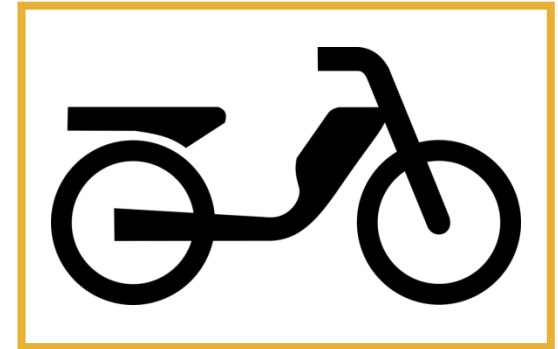


Belgian legislator



**Moped type
Speed pedelec**





Belgian legislator



**Moped type
Speed pedelec**



The speed pedelec in Belgium

If speed limit ≤ 50 km/h



If speed limit > 50 km/h



The speed pedelec in Belgium

If speed limit ≤ 50 km/h



If speed limit > 50 km/h



Choice for road authority



D7



D9



D10

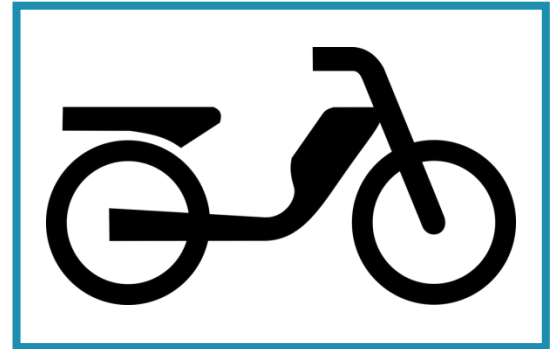


F99c



Is this legislation future proof?





Walking pace

Faster than walking pace

(Belgian traffic legislation)

Future

- More innovations in Light Electric Vehicles
 - More “intermediate” vehicles



Future

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 - More “intermediate” vehicles



Option 1: Extra categories and exceptions

→ For every innovative vehicle, creation of new category or extra exception?



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Option 1: Extra categories and exceptions

→ For every innovative vehicle, creation of new category or extra exception?



→ Knowledge of road users up to date?



F99c



F101c



D7



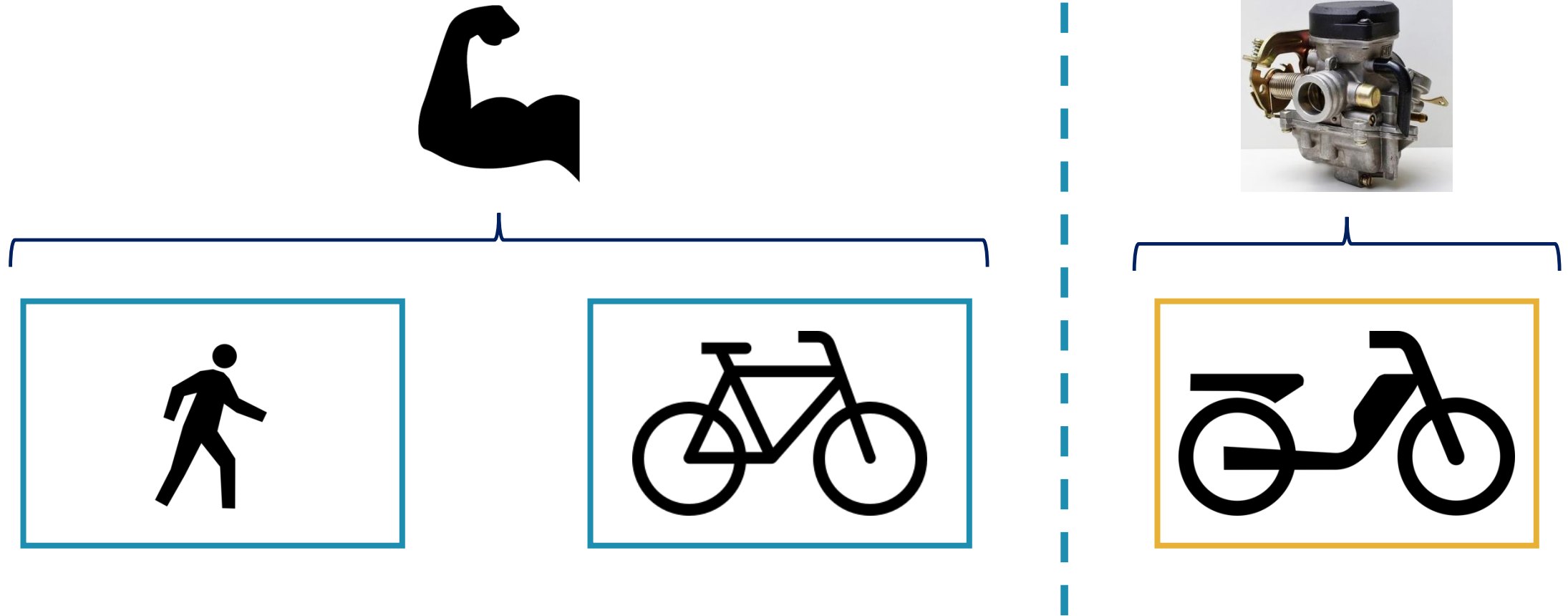
D9



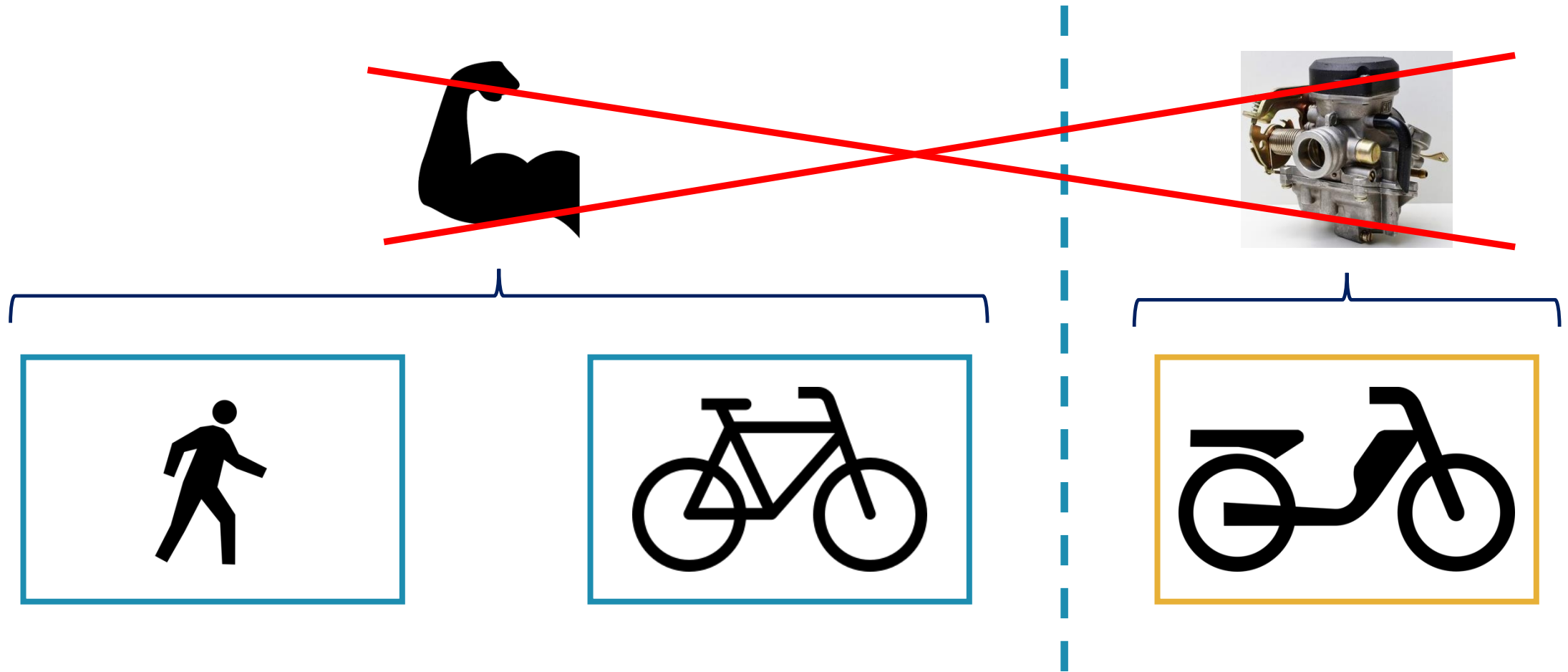
D10



Option 2: Dogmatic approach

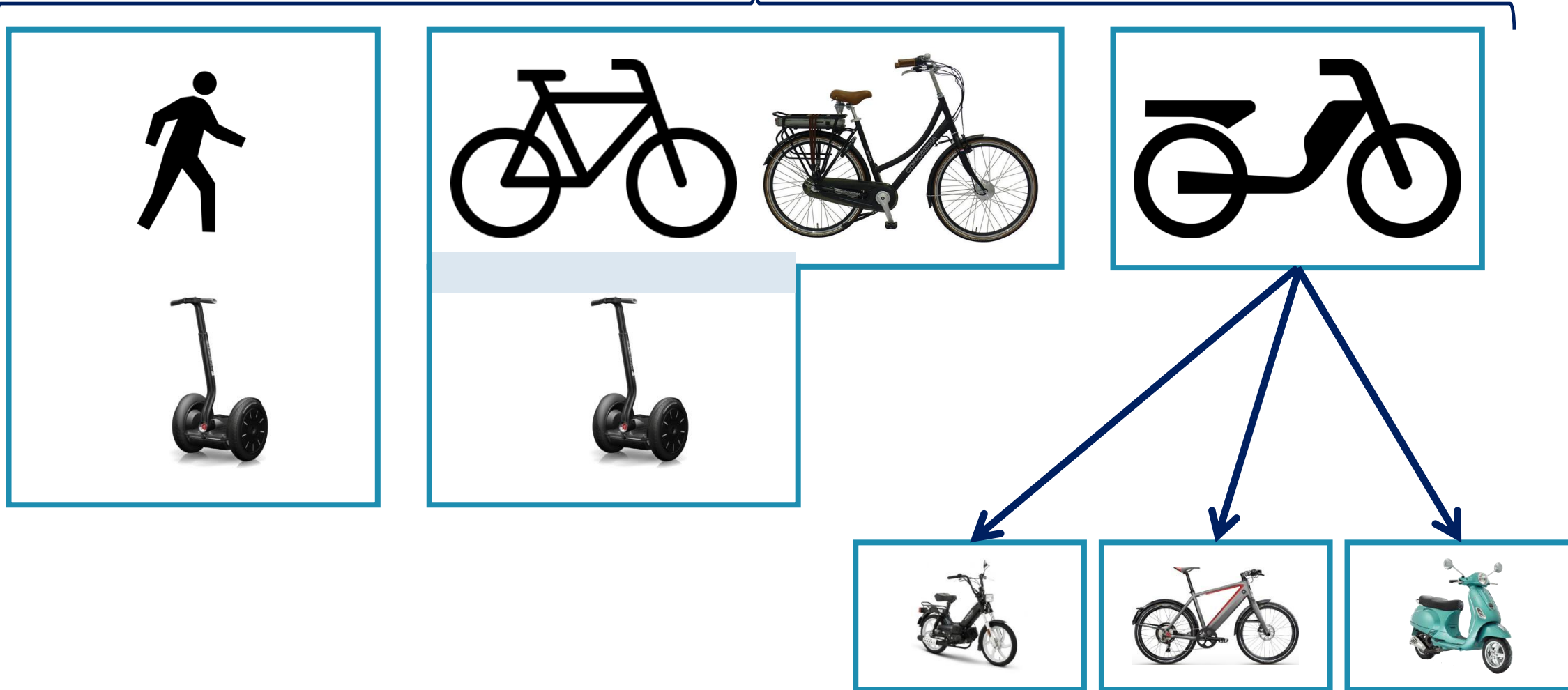


Option 2: Dogmatic approach

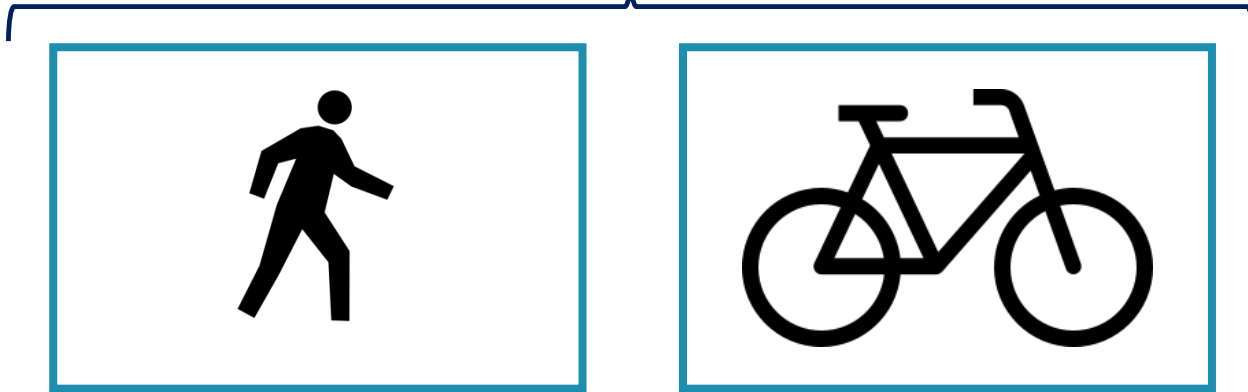




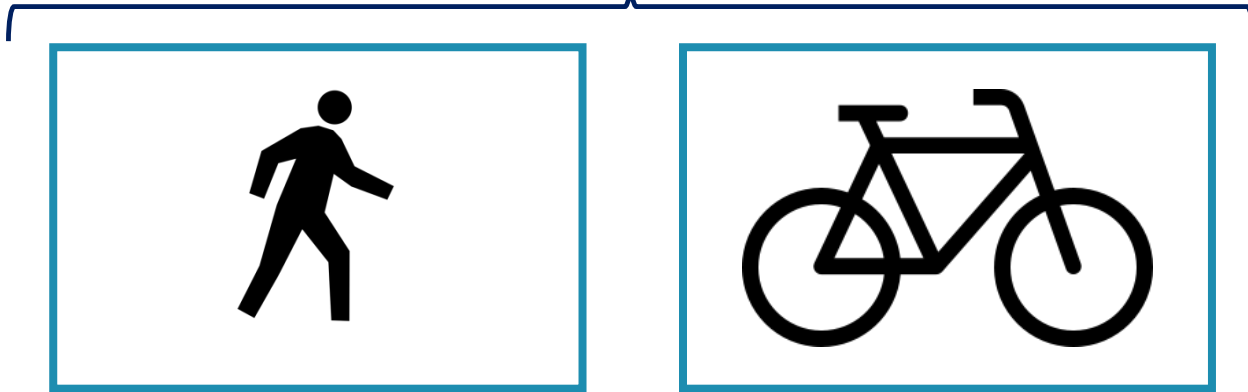
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Option 2: Dogmatic approach



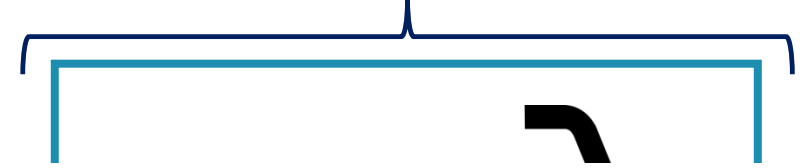
Option 2: Dogmatic approach



Option 2: Dogmatic approach



What about?



Motor?

Back to the essence of traffic regulations

*"A set of agreements, which regulate traffic behaviour on the road in advance, general rules that are applicable in every situation and that regulate the positions and movements on the road in such a way that **collisions are avoided**"*

D. Weber, *Automobilisering en de overheid in België voor 1940: besluitvormingsprocessen bij de ontwikkeling van een conflictbeheersingssysteem*, Gent: Proefschrift tot het behalen van de graad van doctor in de geschiedenis aangeboden aan de Faculteit Letteren & Wijsbegeerte van de Universiteit Gent, 2008.

Back to the essence of traffic regulations

"A set of agreements, which regulate traffic behaviour on the road in advance, general rules that are applicable in every situation and that regulate the positions and movements on the road in such a way that collisions are avoided"

- Is “motor ↔ muscle power” a good distinction to avoid collisions?

Back to the essence of traffic regulations

"A set of agreements, which regulate traffic behaviour on the road in advance, general rules that are applicable in every situation and that regulate the positions and movements on the road in such a way that collisions are avoided"

- Is “motor ↔ muscle power” a good distinction to avoid collisions?
- Alternative: based on objective parameters
 - *Actual speed (road dependent)*
 - *Mass and dimensions (vehicle dependent)*
 - **Impulse and kinetic energy**

Conclusion

- Speed pedelec offers various social and personal advantages
- Typical speed varies between that of bicycle and moped
- Introduction of ‘moped type speed pedelec’ in Belgian traffic legislation
- New innovative vehicles?
 - Creation of new categories and exceptions?
 - Distinction based on “*Motor* ⇔ *Muscle power*”?
 - Basing distinction on objective, measureable parameters?

Interreg

North Sea Region

SEEV4-City

European Regional Development Fund



Questions, ideas or suggestions?

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