



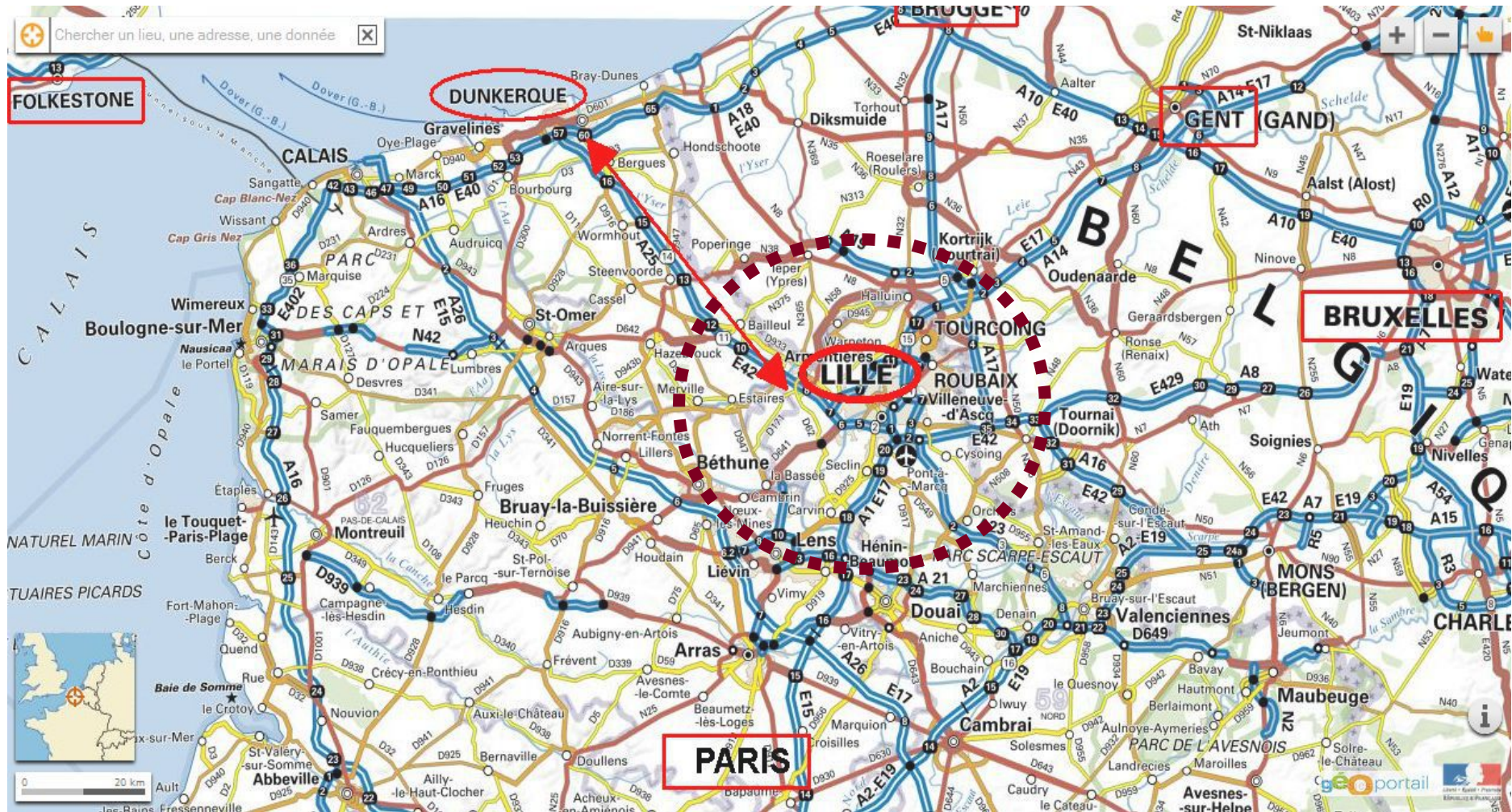
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Centre d'études et d'expertise sur les risques,  
l'environnement, la mobilité et l'aménagement

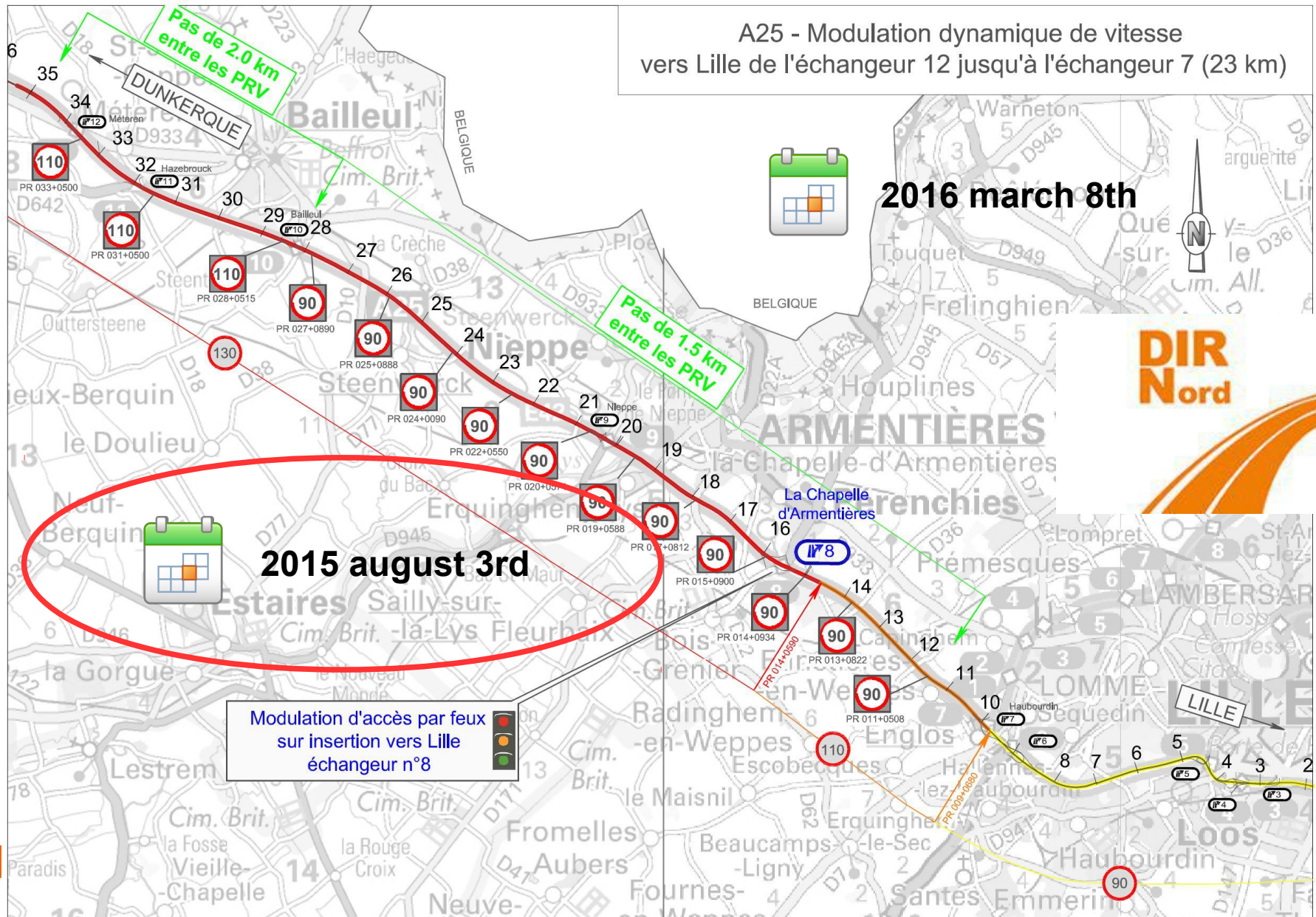
# Dynamic Traffic Control in A25 motorway

**Benchmarking in Netherlands  
Delft – 05/10/15**

# A25 motorway = transit + exchange + internal



# Ramp Metering (ramp n°8 - PK 15)

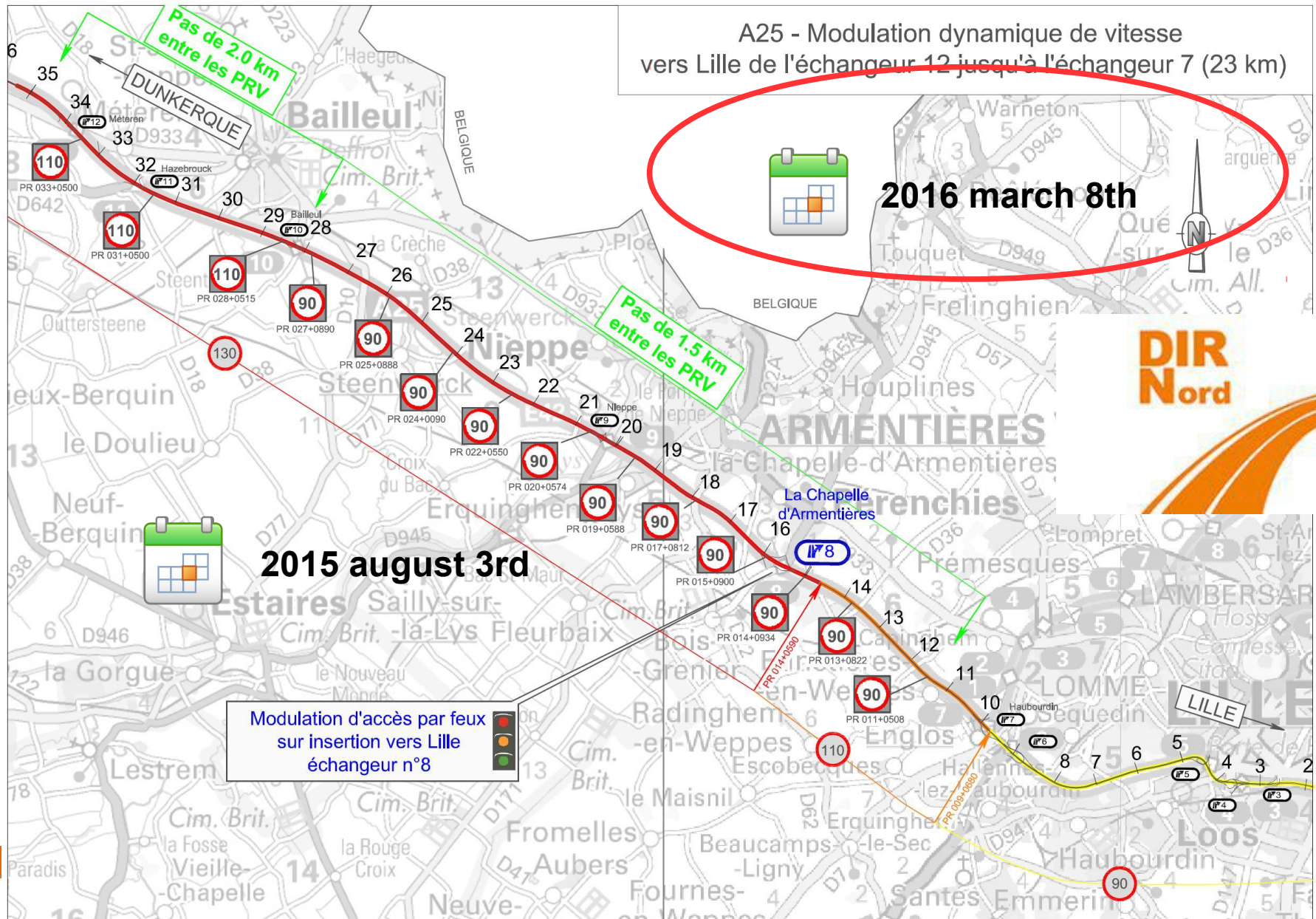


# Ramp Metering system



- *2 algorithmes tested : ALINEA (IFSTTAR) & CSM (LIX)*

# Dynamic Speed Limit system : 25 km



# 14 Variable Speed Limit Signs (ganteries)



- *System manage : VMS + VSLS*

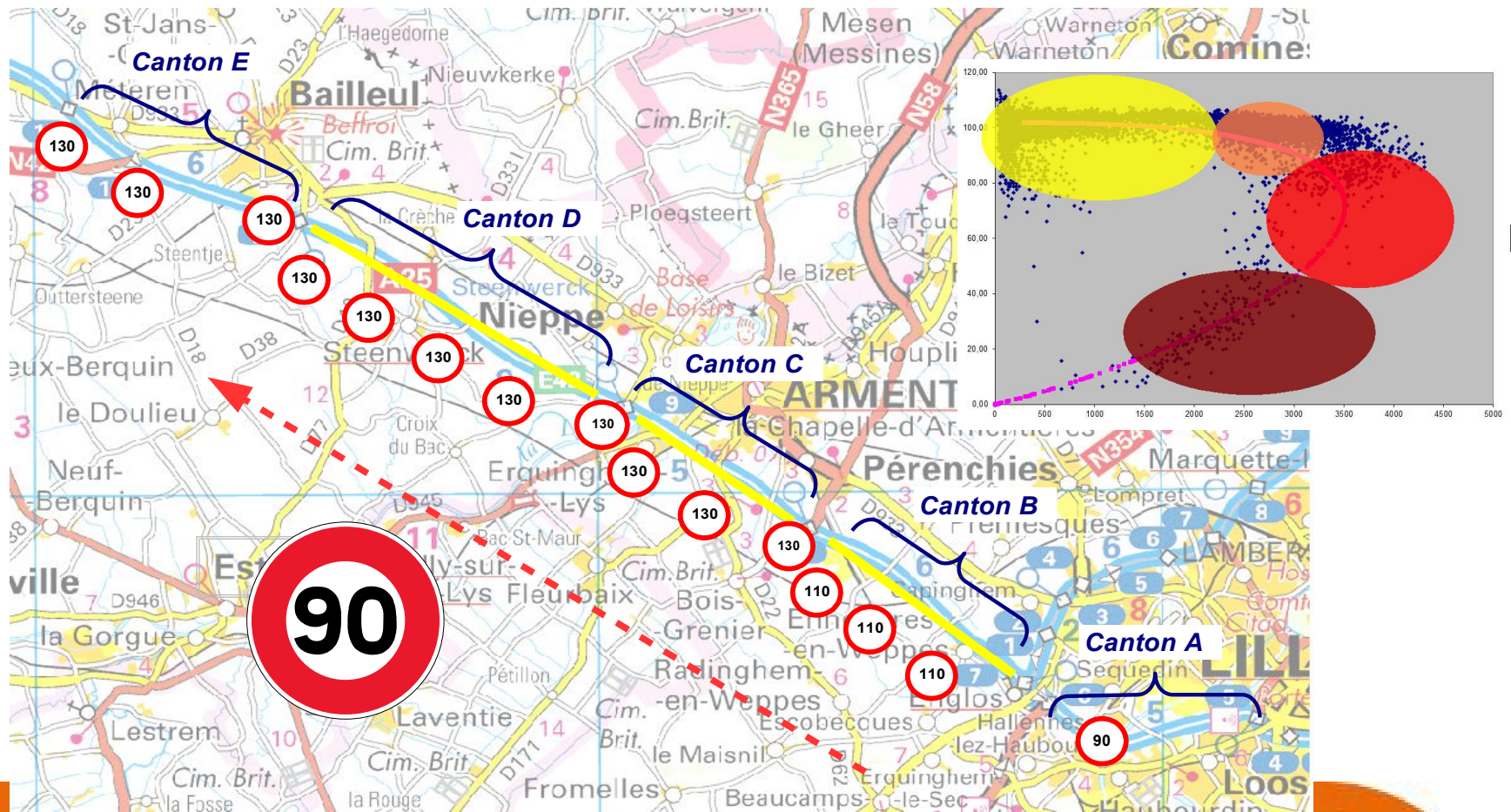
# Thinking during the project studies

- **System efficiency will be mostly the result of collective appropriation by the users/drivers, so:**
  - The system must be technically robust
  - It must be reactive / traffic conditions and events
  - It must be seen as stable by users/driver or managers

**Globally, to be efficient on the "flow" , individually, the system has to be understood, accepted, respected ...  
to facilitate acceptance → appropriation**

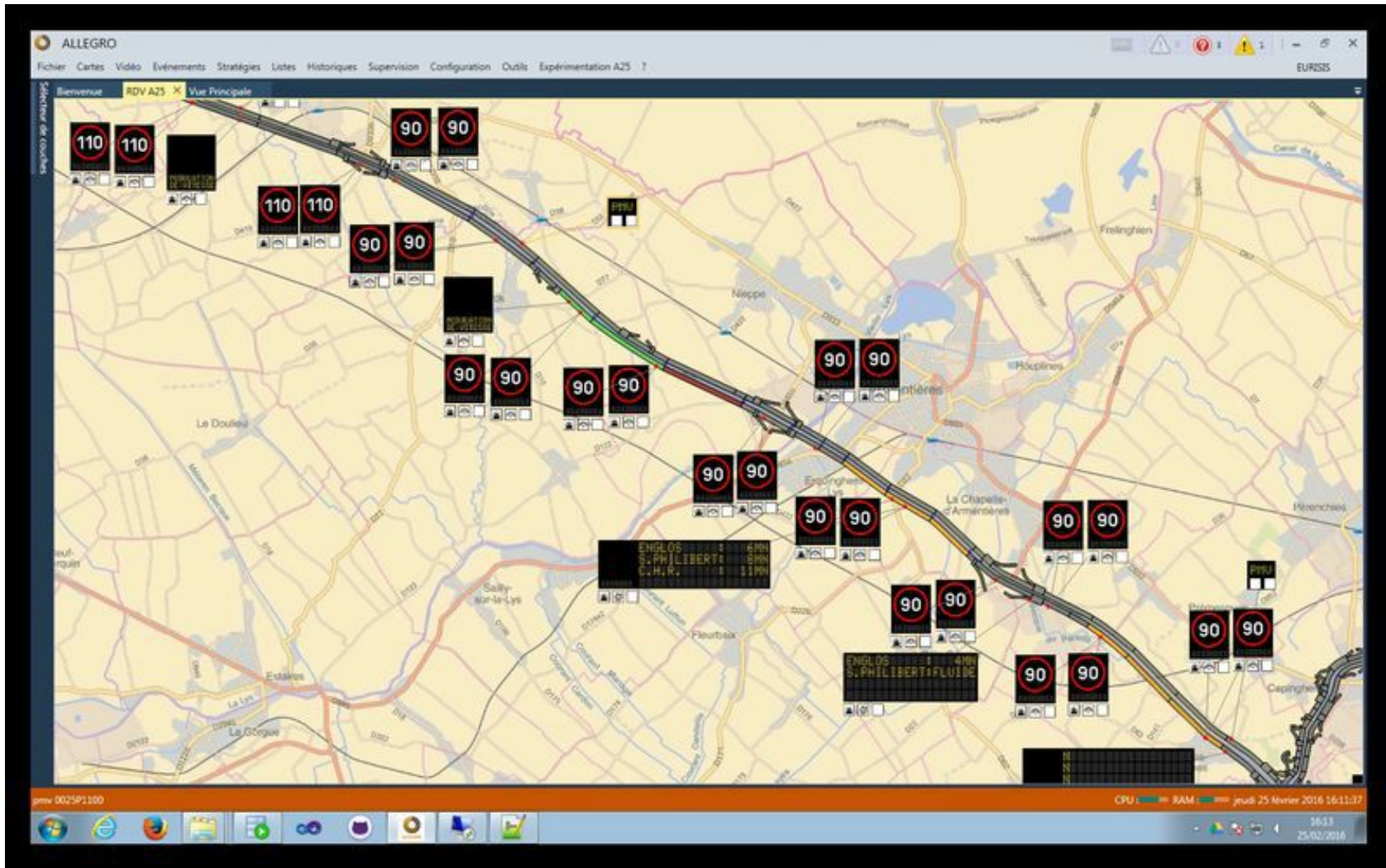
# Algo "EC" : looking for a simple principle

- Principle : Not to lower speed but to extend the 90 km/h speed from Part A to D (morning peaks and Sunday pm)





# Algo "EC" proof of concept (simulation)



# Results in travel times : after 6 months



Travel times, morning peak period 6h30 → 10h30

Stratégie	SC 2015	RA 2016	RA + RDV
Nb Jours ouverts	40	11	31
Taille échantillon	7905	2649	7446
tp minimum (s)	337	305	279
tp maximum (s)	1734	940	1128
tp médian (s)	495	493	396
tp moyen usager (s)	<b>631</b>	<b>536</b>	<b>480</b>
écart type (s)	367	231	152
Nombre d'usagers	10 802	11 081	11 383

A25 : trajet PMV1400 → Englos (7,804 km)

*Ecart (95 s) entre SC et RA, significatif au seuil de 5%*

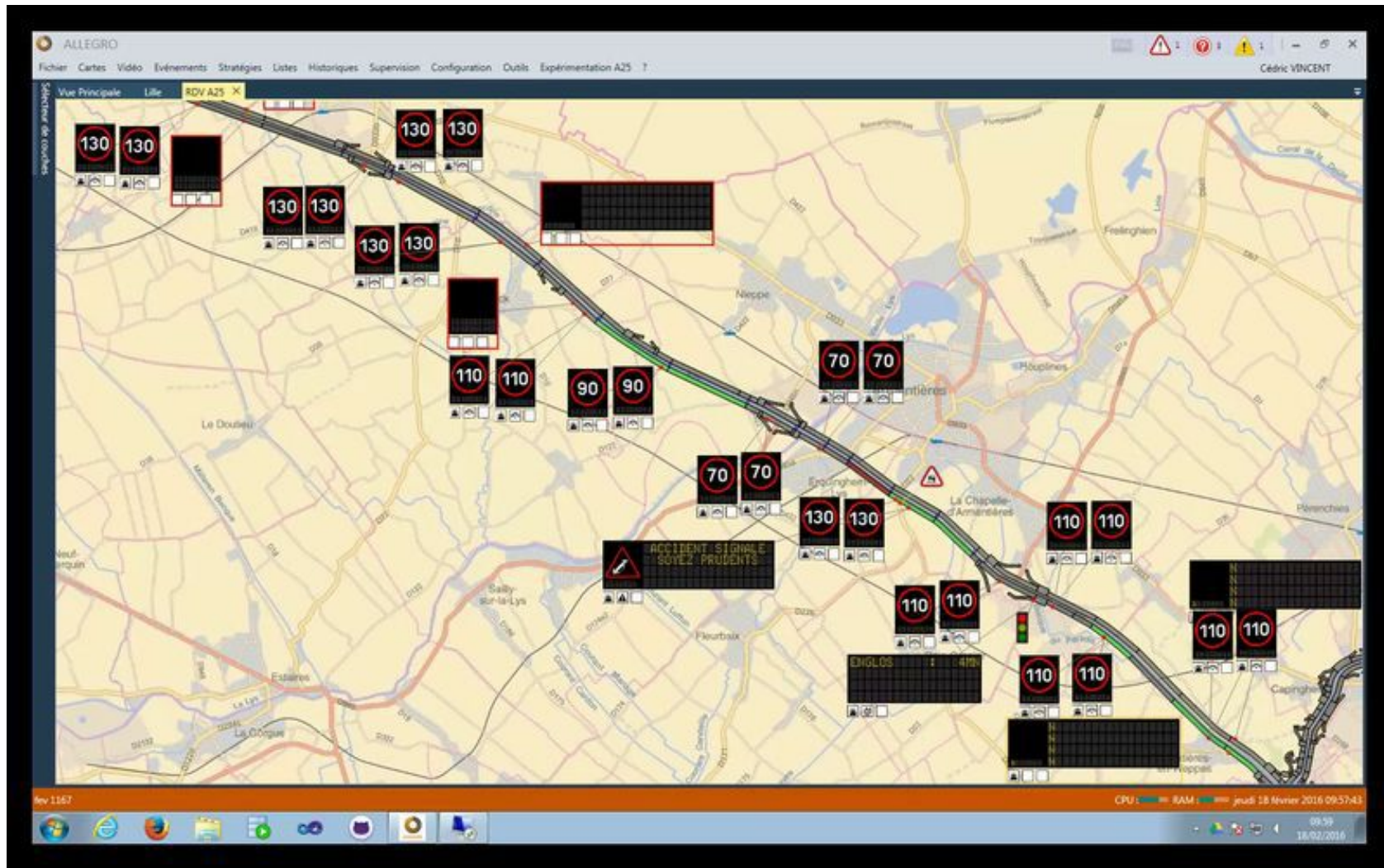
*Ecart (56 s) entre RA et RA+RDV, significatif au seuil de 5%*

# Additional functionalities

- Other technical possibilities, to complete “EC” algorithm :
  - Algorithm called “Event” : to reduce speed to 70 km/h, approaching a queue, activated by an operator
  - Different uses of dynamic Signalization, not controlled by an algorithm (and real time data) :
    - Reducing speed (- 20 km/h) during pollution periods
    - Signaling events : works and different other cases ...

**=> Signal system is used for different situations**

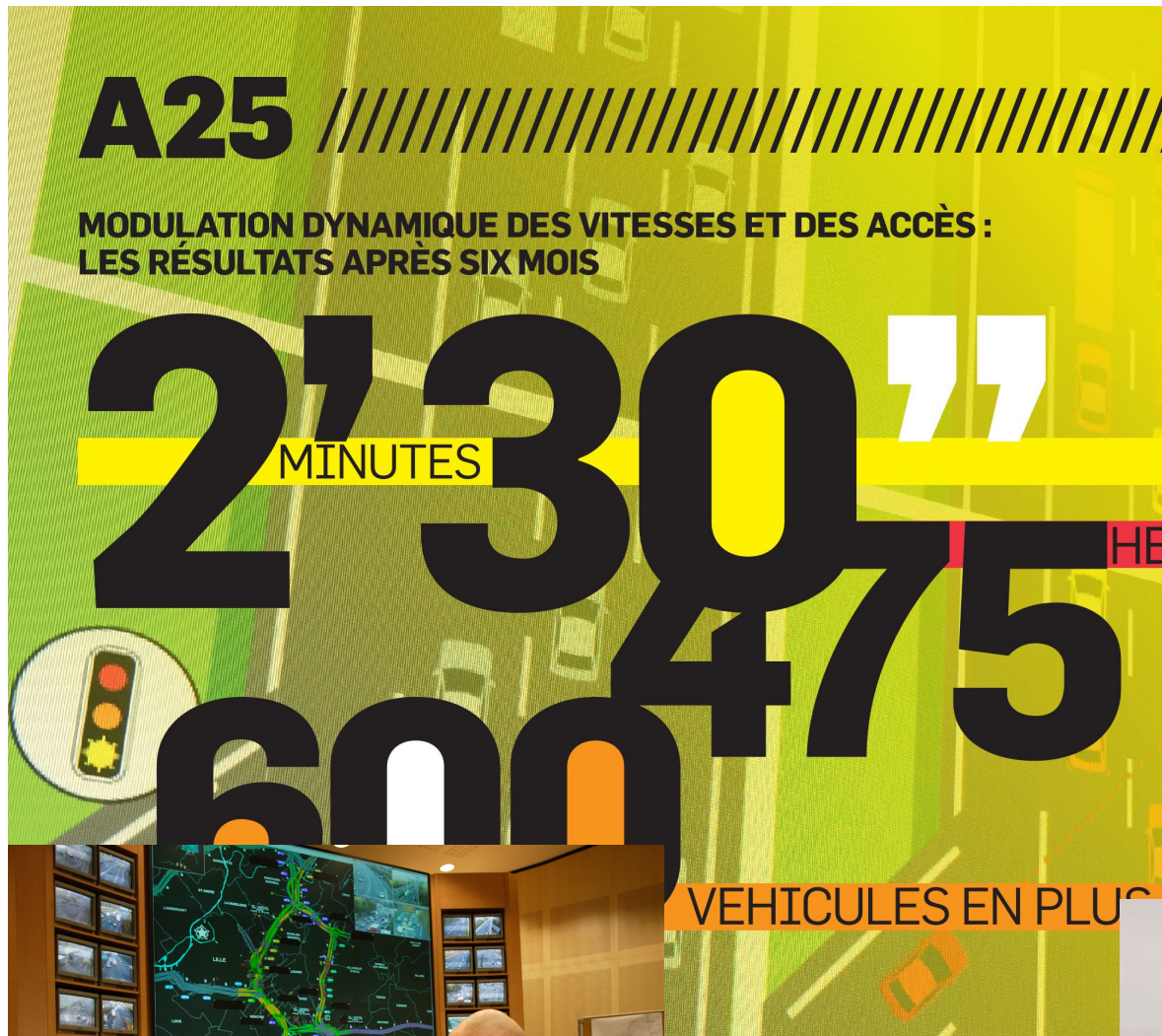
# Real-time data simulation : algo "EV"



# To conclude A25 systems assessment

- **First results dynamic traffic systems :**
  - Benefits in terms of FLUIDITY (shorter congestion periods)
  - Less VARIABILITY of travel times
  - More ATTRACTIVENESS of the motorway
  - NO SAFETY problems observed and LESS EVENTS  
=> For the moment, good results in safety, fluidity and environment issues
  - High ACCEPTANCE (from users and operators working in Supervision Management Center)
  - TECHNICALLY, the system is RELIABLE and ROBUST

# Results approved by users and services

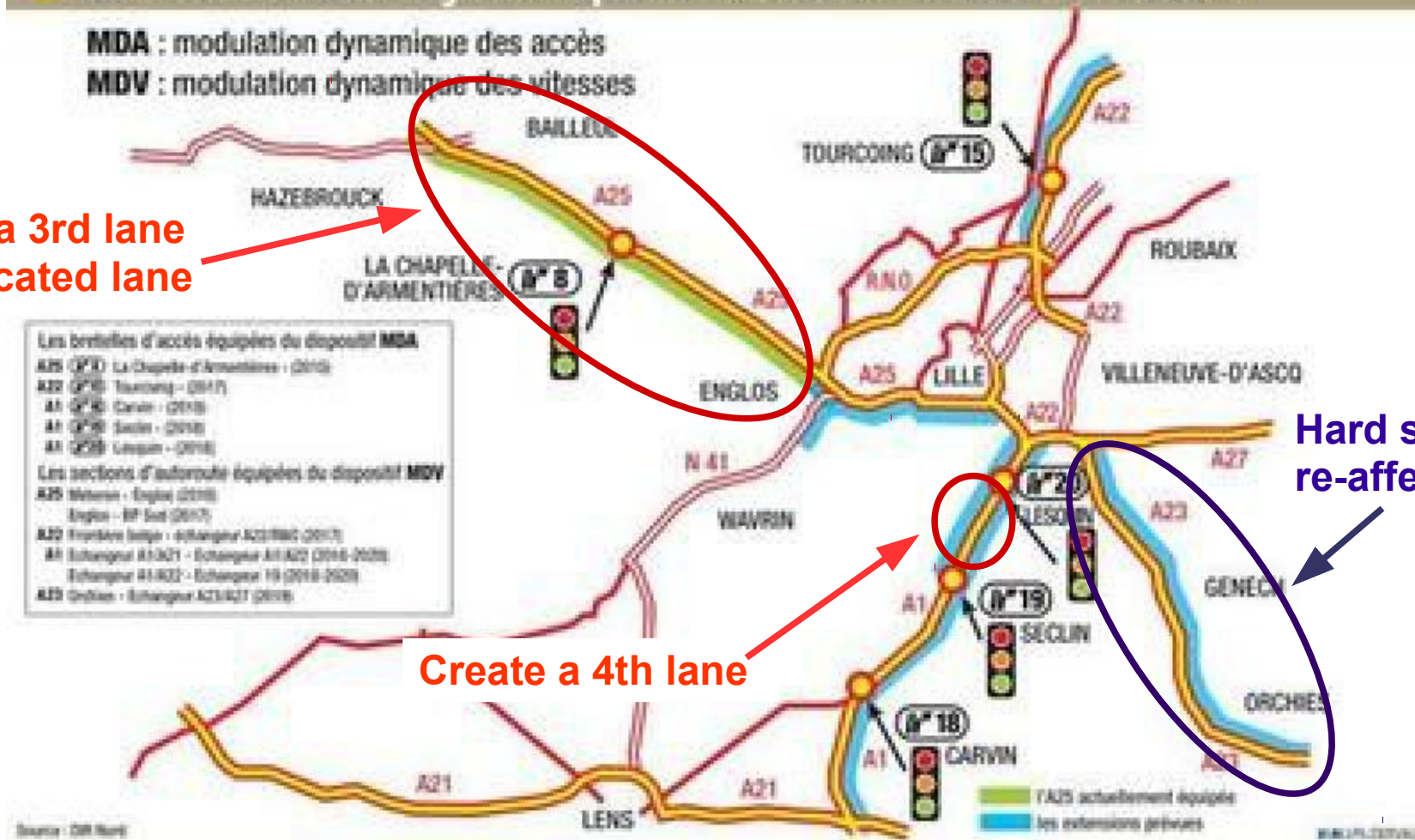


# Following DIR Nord projets

## La modulation dynamique des accès et des vitesses

**MDA** : modulation dynamique des accès

**MDV** : modulation dynamique des vitesses



Create a 3rd lane  
→ dedicated lane

Create a 4th lane

Hard shoulder re-affectation

# Our questions

- **What generic signalization equipments to equip future motorways, with dedicated lanes (nor hard shoulder) ?**  
→ To reduce speed and open carpooling lanes (same time)
- **How optimize the number of signal equipments ?**  
→ In motorways, to set up and integrate Dynamic (= evens or speed signals), Directional and Static signalization ...
- **How to design systems more intuitive → acceptable → efficient for drivers and manager services ?**
- **Other : Positive Toll (called “Eco-bonus” in France) ?**





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# Thank you for your attention

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