BETTER SAFETY AND TRAFFIC FLOW OPTIMISATION :

THE ASF « SPEED CONTROL » EXPERIMENT ON THE A7 MOTORWAY

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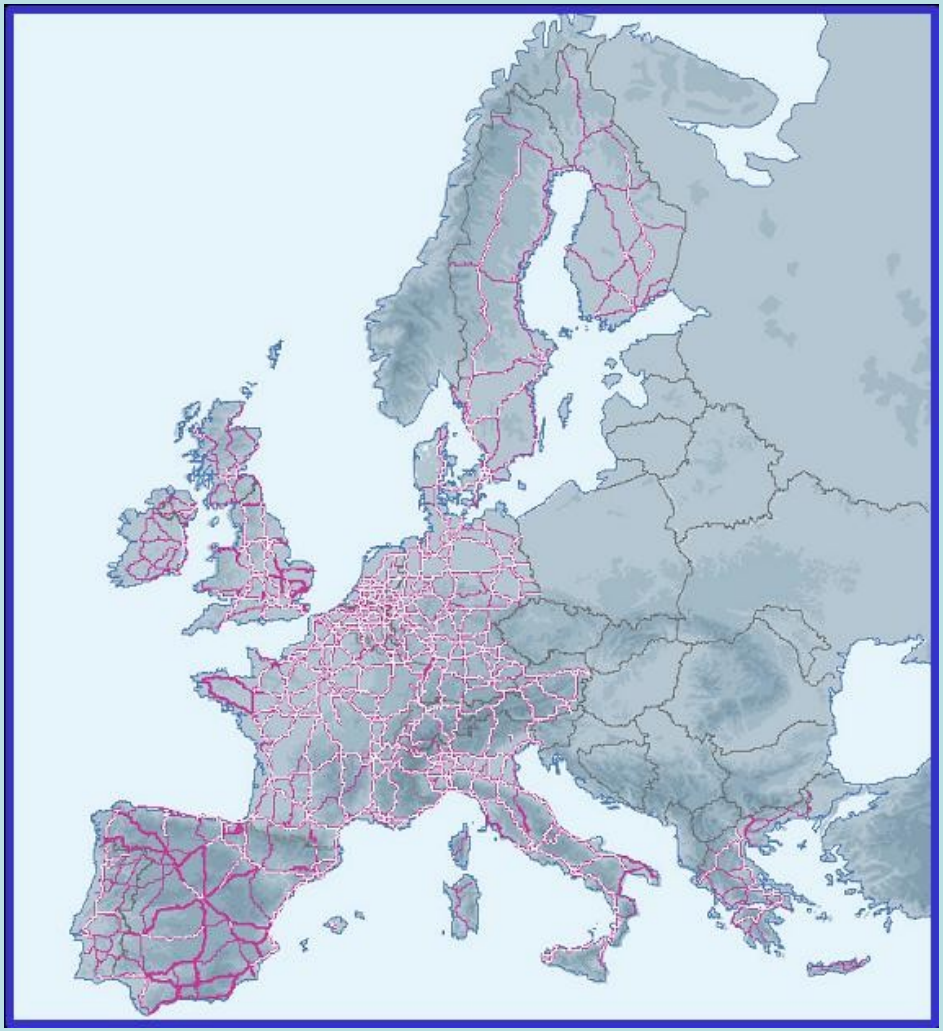
The Trans European Road Network

2005 : **60.000 km**

In France : **10.000 km**

Turnpike : **7896 km**



ASF at a glance

Autoroutes du Sud de la France

A subsidiary of **Vinci Group**

2568 km

1st network in France
2nd in Europe

37% of the French toll network

1.5 Million daily vehicles

2005 turnover :
€ 2.47 Billion
+ 3.6 % compared to 2004

The ASF network

Autoroutes du Sud de la France

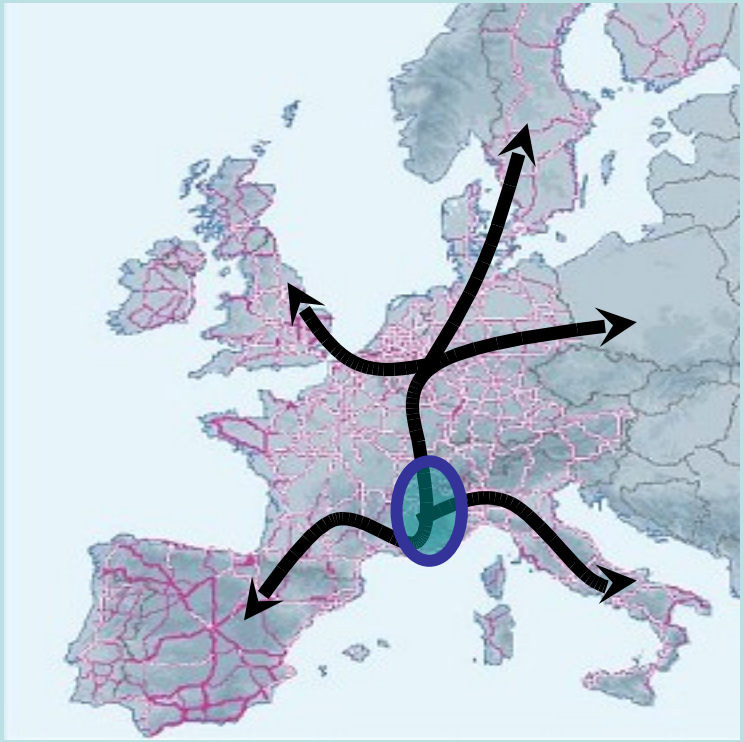
Heavy traffic sections (> 30.000 veh/day)

2 cross-border areas

3 North/South corridors

The A7 motorway : some figures

- A major international link between northern and central Europe towards southern European countries



- One of the intercity motorways with most traffic in Europe

- A 2x3 lane motorway flowing :
  - 75 000 veh/day (AADT)
  - 115 000 veh/day (ASDT)
  - 165 000 veh/day during peak days
  - 20% of HGV (AADT)
  - 30% of foreign drivers notably during summer

The A7 motorway : a saturated route

- Traffic constantly increases over the last years : +3% per year
- No possibility in a short-term to enlarge this motorway
- Alternatives routes (secondary network) with low capacity

➔An increased disturbance for road users

➔A greater difficulty for ASF to manage daily traffic

Act right away

- **ASF has engaged itself in a voluntary approach to enhance its methods and operations' tools**

- **Many potential solutions have been identified to contain the saturation level of the A7 motorway :**
  - **Ramp metering**
  - **Banning of overtaking for slow vehicles**
  - **Toll modulation**
  - **Speed control**

The experimental background

- Objective

To evaluate the performance and feasibility of a life-size speed control system on the A7 in the Rhône river valley

- Principle

A homogeneous and adjusted flow runs better

- A technical challenge

- Create a suitable algorithm that can activate the start-up of the experimentation in real time

- Apply efficiently a dynamic speed limit by stages (110, 90, 70 km/h), during heavy traffic periods

- Implement an effective « information diffusion system »

- Gains expected

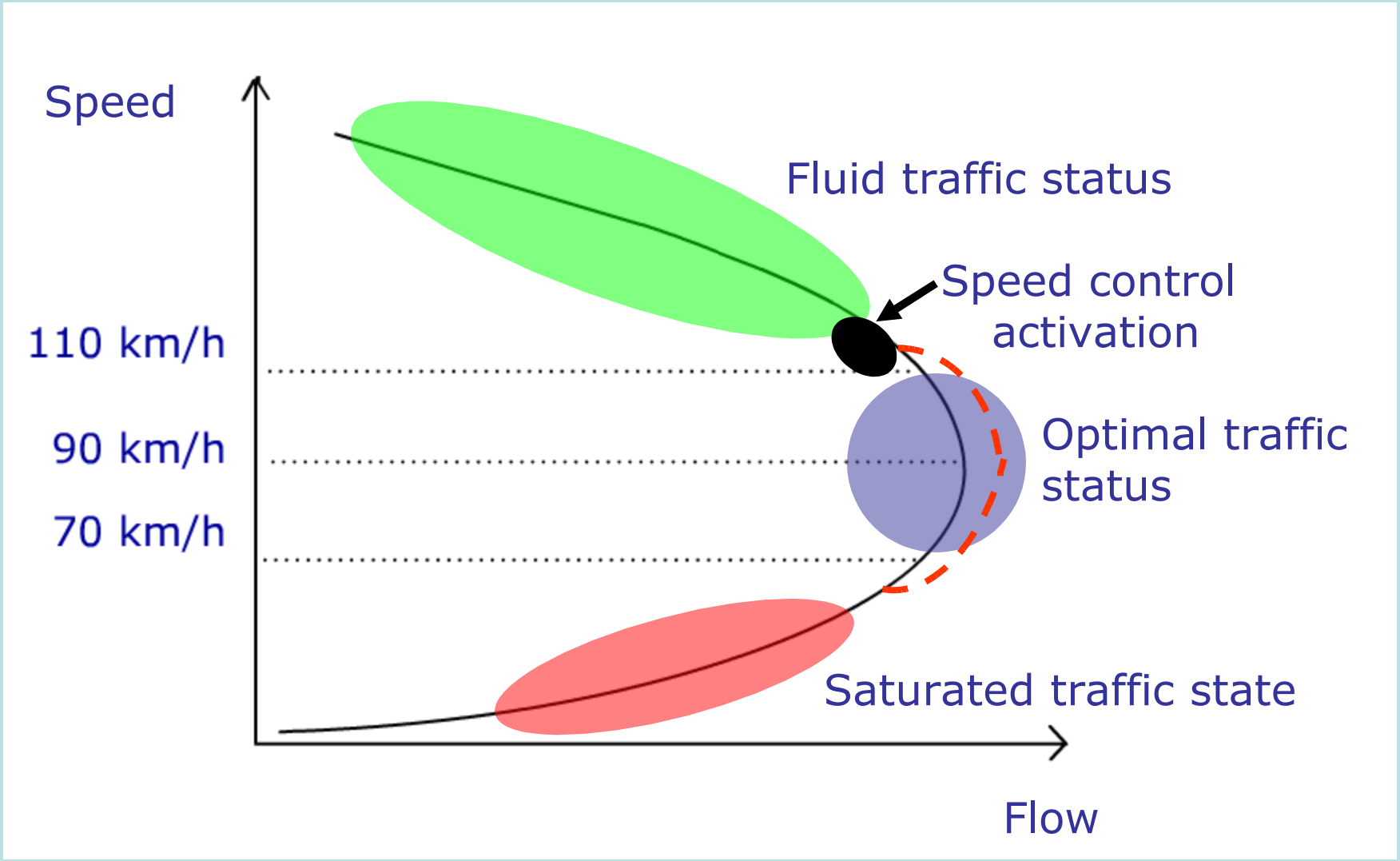
- A gain in traffic capacity

- A gain in safety, through a "standardisation" of speeds :

- ✓ **Less lane changes, less risks of rear-end collisions**
- ✓ **A direct gain for drivers but also for ASF's personnel**

- A gain in driving comfort (less stress and fatigue linked to "accordion driving")

Optimizing the traffic flow



The speed control algorithm

- **Input**

real-time traffic data (vehicle classification, traffic volumes, average speeds and lane occupancy rates) **coming from double-loop sensors instaled every 5 km on the corridor**

- **Main functionalities**

  - **Anticipation (at 30 to 45 minutes)** of the appearance of destabilisations in the traffic flow

  – **Generation of traffic alarms** associated with "speed orders"

  – **Command of on-site diffusion equipments**

Information strategy

- The « speed control » information strategy has been defined in coordination with public authorities

- To obtain higher efficiency, the display is not a recommendation, but is compulsory

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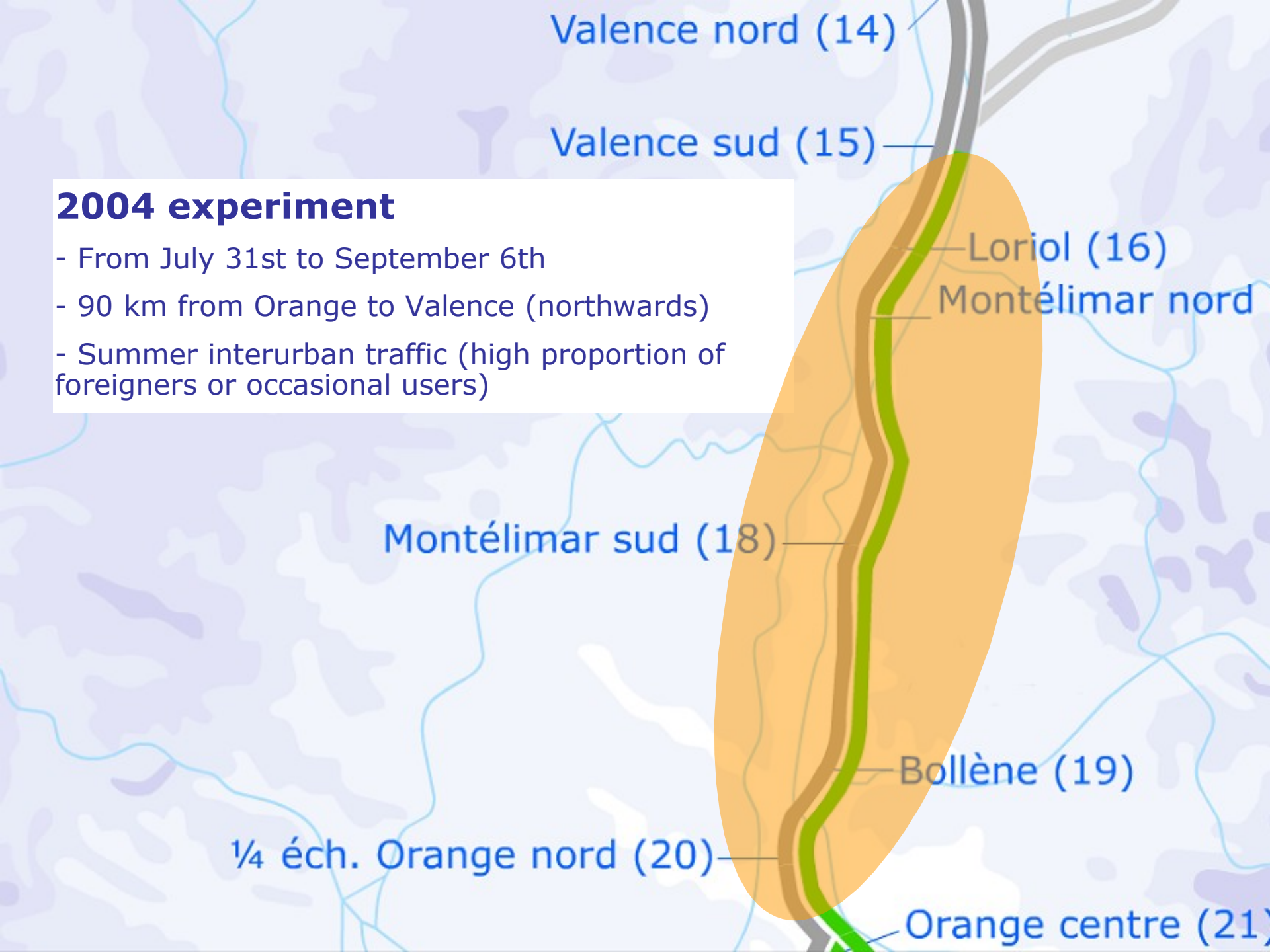
A comprehensive "information diffusion" system

- On-site displays of the current « speed limit » through :
  - **1 information sign every 10 km :**
    - **6 VMS (on overhead gantries) : text + pictogram**
    - **5 additional info signs (on motorway bridges) : pictograms only**
  - **Use of toll entry VMS to warn entering customers**
- Leaflets and posters at the level of plazas, in order to best explain the experiment
- Intensive use of the ASF dedicated information radio (107,7 FM) :
  - **1 message every 7-8 minutes**



2004 experiment

- From July 31st to September 6th
- 90 km from Orange to Valence (northwards)
- Summer interurban traffic (high proportion of foreigners or occasional users)

Reminder of 2004 results

Respect of the speed orders :

- 110 km/h order is respected by 80% of drivers
- 90 km/h order is respected by 30% of drivers

Customer satisfaction survey :

- 75% think they benefited from the operation (75% in 2004)
- 77% find the operation not restraining (77% in 2004)
- 61% considered that the speeds displayed were mandatory
- 87% find the operation useful or very useful

Reminder of 2004 results

- **Congestion volumes**
  - **Decrease of congestion volumes by 16% during the speed control activation :**
    - **30 000 hours of congestions saved corresponding to € 1.3 Million of socio-economic gains**
- **Number of accidents :**
  - **Decrease of the total number of accidents by 48% during the activation of the measure on a light sample however (20 accidents)**
- **Use of the system :**
  - **Activation 31 days in summer (mianly in August)**
  - **Average time of activation : 4h00**
  - **110 km/h speed instruction activated 75% of time**
  - **More than 530 000 vehicles concerned by the measure**

The 2005 project

- Follow-up to the speed control on the A7 motorway northbound

- **Extension of the measure to the A7 southbound**
  - **Deployment on a 160 km-long section with the same operational principles (=> 1 information point every 10 km)**
  - **Launching in July 2005**
  - **Activation from 7/1st to 4/9th**

The 2005 project : First evaluation results

Southbound results :

- **Respect of the speed orders :**
  - **95% of respect for the 110 km/h order**
  - **40% of respect for the 90 km/h order**

- **Customer satisfaction survey :**
  - **80% think they benefited from the operation (75% in 2004)**
  - **83% find the operation not restraining (77% in 2004)**
  - **68% considered that the speeds displayed were mandatory (61% in 2004)**
  - **The operation is considered useful by :**
    - **80 % of drivers at the start of the journey on the A7**
    - **84 % at the half-way stage**
    - **91 % at the finish**

The 2005 project : First evaluation results

Southbound results :

- **Congestion volumes**
  - **Decrease of congestion volumes by 38% during the speed control activation :**
    - **200 000 hours of congestions saved**
- **Number of accidents :**
    - **Decrease of the total number of accidents during the activation of the measure on a light sample however (20 accidents)**
- **Use of the system :**
    - **Activation 1 day out of 2 in summer**
    - **Average time of activation : 6h30**
    - **110 km/h speed instruction activated 85% of time**
    - **More than 850 000 vehicles concerned by the measure making up nearly 25% of the total summer traffic**

The 2005 project : First evaluation results

Northbound results :

- **Confirmation/Improvement of the major trends observed in 2004 :**
  - **Decrease of the total number of accidents**
  - **Decrease of the congestion volumes**
  - **Increase of the traffic flowed during peak-periods**

- **Respect of the speed order**
  - **86% of respect for the 110 km/h order (80% in 2004)**
  - **43% of respect for the 90 km/h one (30% in 2004)**

- **Increasing use of the system :**
  - **Time of activation : 6 hours (4 hours in 2004)**
  - **110 km/h used nearly 90% of time (75% in 2004)**

Global analysis of the results

Very positive results

- The speed control system **improves the level of service** of the axis
- A measure **very well understood and appreciated** by customers :
  - Positive effects on driving comfort
- Confirmed **gains in terms of capacity and safety** :
  - Decrease and homogeneity of speeds
  - Decrease of the number of accidents
- **Positive effects on the peak traffic flows**
- **Interesting savings in terms of congestion volumes**

Prospects

- **2006 : Operational running of the measure in both directions**

- **2007-2008 : Studies for the extension of the measure to other highly trafficked parts of the ASF network**

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Thanks for your attention