

Wien 2004

# Enhancing Data Quality

**Domitille NOURY (SAPN)**



# Quality of Information

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# Context

## SAPN : Paris-Normandy Motorway Company

- 367 km motorway network
- high traffic volume
- access to several urban areas and ports
- weekend destinations :  
Deauville, Honfleur, ...,  
from April to November
- regular traffic jams on Sunday evenings



# Context

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## Why dealing with data quality ?

- Quality for Road Network operators
- Quality for end users (clients)
- A great quantity of raw data to process
- No more manual control of the information
- End users traffic information services more and more effective
- A large diversity of medias (VMS, internet, Wap, IVR, ...)
- End users begin to pay for traffic information
- Traffic information services requiring quality (travel times, forecast, etc.)

# Road operators' needs

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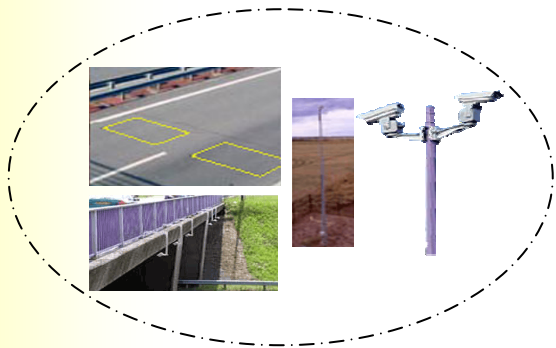
## Quality all along the "Chain" (Collection, Treatment, Dissemination) !

- Quality for raw data
- Quality for processing information
- Quality for traffic management tools
- Quality for traffic information services elaboration
- Quality for dissemination
- Etc ...

# SAPN Objectives

## SAPN Information network

### Collection



### Treatment

Common platform



SSA



### Dissemination

Communication centre



# SAPN Objectives

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- to improve the quality of raw data
- to secure processing
- to guarantee the availability of traffic management tools
- to guarantee the availability of end users traffic information services
- to evaluate the quality on the whole « Chain »
- to work with every type of data and to provide all types of services with only 1 system

# SAPN Objectives

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## SAPN actions for quality implementation (1)

- **To improve the quality of raw data :**
  - SAPN had established a common platform for collecting traffic and weather data, thus reducing the number of disparate systems and data formats, with simplifying maintenance tasks
- **To secure processing**
  - SAPN uses automatic processes and tries to standardise them

# SAPN Objectives

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## SAPN actions for quality implementation (2)

- **To guarantee the availability of traffic management tools**
  - SAPN had completed the resilience and robustness of the core of its traffic management system.
- **To guarantee the availability of end users traffic information services**
  - SAPN has a common and secure dissemination platform
- **To evaluate the quality on the whole « Chain »**
  - All information elaborated for different media are tracked (backups, tracks)

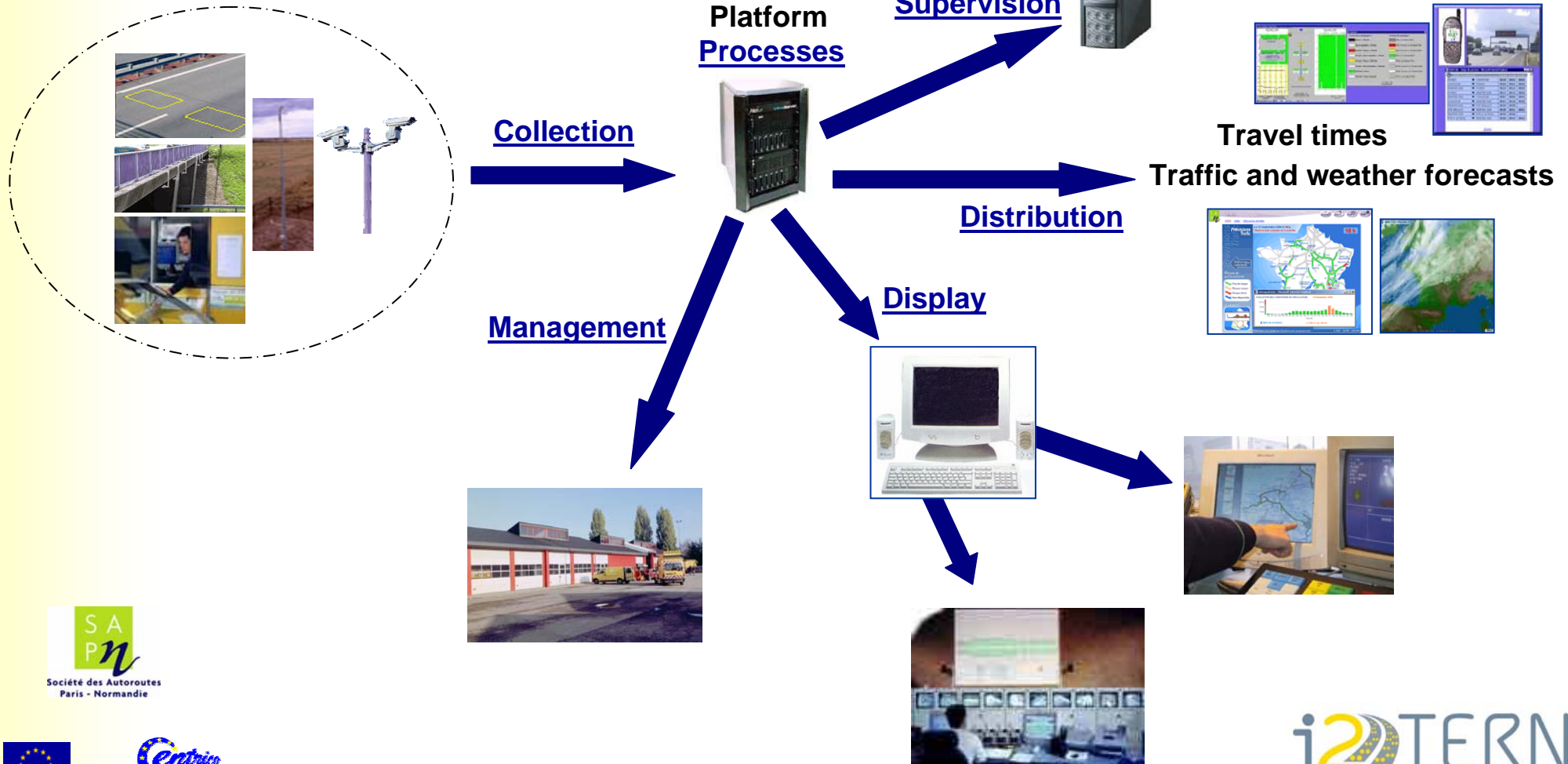
# SAPN Common Platform

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## Organization of this tool

- **Collection** of all data coming from different motorway roadside systems, regardless of their nature (Traffic, Weather, Tolls).
- **Processes** applied to raw data from roadside systems in order to guarantee the quality.
- **Distribution** of data from a unique platform to « users client applications ».
- **Supervision and management** of roadside data collection systems.
- **Display** of raw information under a single format for different users.

# SAPN Common Platform



# SAPN Common Platform

- **Roadside Systems:**

- Loops Traffic collection
- Radar Traffic collection
- Weather collection
- Toll collection
- .....future facilities



- **Raw information:**

- Raw data (speed, temperature, number of vehicles, etc.)
- Roadside equipment status
- Alerts from roadside equipment
- .....

# SAPN Common Platform

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- **Platform Users:**
  - Maintenance teams responsible for roadside facilities
  - SAPN Traffic Information Centre
  - Road Maintenance Centre
  - Toll exploitation
  - Statistical team
- **Material architecture :**
  - Roadside equipments
  - « Frontal of communication » (normal / backup)
  - Real time server / deferred time server
  - H.M.I « light client » application

# SAPN Common Platform

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- **Functionalities :**
  - **Collection of traffic and weather raw data every 6 minutes**
  - **Qualification :**
    - 8 different filters for detecting the invalidities
    - Filters are passed in a precise order
    - Comparison to a threshold, comparison of a couple of data in relation to a threshold, comparison of two-two time.
  - **Spatial aggregation consists in calculating complete data for one direction from data of each lane**

# SAPN Common Platform

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- **Functionalities (2):**
  - **Calculation of fictitious data to elaborate data where there is no real station**
  - **Reconstitution of traffic data (incorrect, missing or hand inhibited qualified data)**
    - Very important element ensuring the quality of service delivered from the raw data
  - **Calculation of the tendency (Traffic and Weather)**
    - Steady
    - Increasing
    - Decreasing

# SAPN Common Platform

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- **Functionalities (3):**
  - **Calculation of traffic conditions (fluid, pre-saturated, etc.)**
  - **Alerts :**
    - Traffic Exploitation
    - Toll Exploitation
    - Weather
  - **Real time storage on the data base**
  - **Management of alarms :**
    - Technical alarms from land facilities
    - Alarms from platform interface
    - Alarms from platform process

# SAPN Common Platform

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- **Functionalities (4):**
  - **Deferred time treatments for 1 hour and 1 day aggregation**
  - **User client applications dissemination**
  - **Visual display (dynamic synoptic, curves, charts)**
  - **Administration / management / maintenance of all platform elements**

# SAPN Common Platform

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## Advantages

- Checking : less erroneous raw data arrive in SAPN « chain »
- Reconstitution functionality avoids lack of data and allows delivery of more reliable services
- Any problem occurring in one component of the data collection system chain is detected quickly and a clear alarm is generated
- Open platform where it's possible to add a new type of raw data and new « users client applications ».

# Conclusion

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**S.A.P.N “Common Platform” is a first step for enhancing data quality**

- availability
- reliability
- correction
- checking

The need of quality is very important for Road Monitoring Infrastructure  
Quality is one topic from data collection to data dissemination

**Quality must be a continuous work**

# Enhancing Data Quality

*Thank you for your attention !*

*For more information :*

[d.noury@sapn.fr](mailto:d.noury@sapn.fr)