

# A PRIMER OF TELEGEOMONITORING

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TeleGeomonitoring  
=  
GIS + Telecommunications

## Acknowledgements

- Azedine BOULMAKOUL
- Sylvie SERVIGNE
- Tullio TANZI

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- Description of some applications
- Computer architectures
- Possible future directions of research

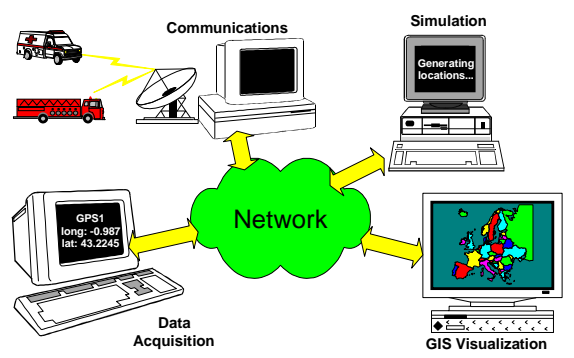
## APPLICATIONS

- Fleet management
- Motorway traffic management
- Hazmat transportation
- Monitoring of pollution along rivers
- Monitoring of major risks
- etc.

## Fleet Management

- Rapid delivery vehicles
- Police, firemen, rescue
- Ambulances, taxis
- Boats, sub-marines, aircraft, rockets
- Trains, tramways, metros
- etc.

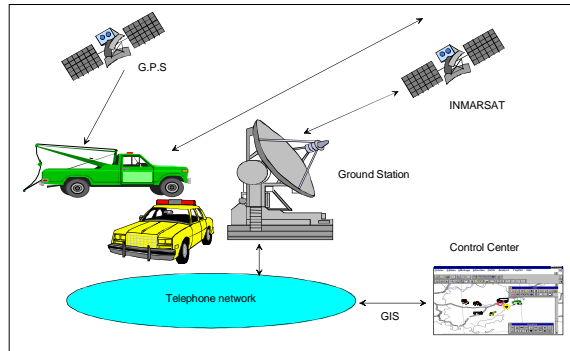
## Architecture for fleet management



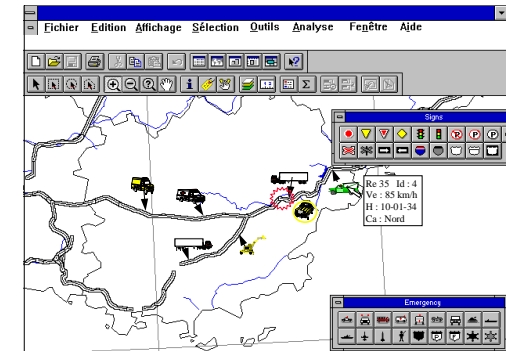
## Fleet Monitoring



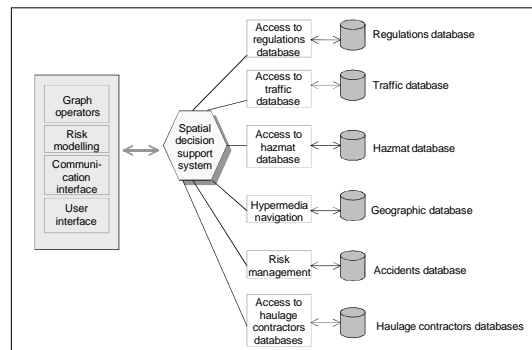
## Motorway Traffic Management



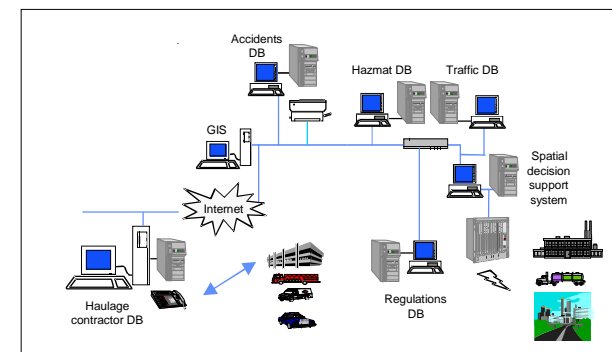
## Example of GUI for the Monitoring of Motorway

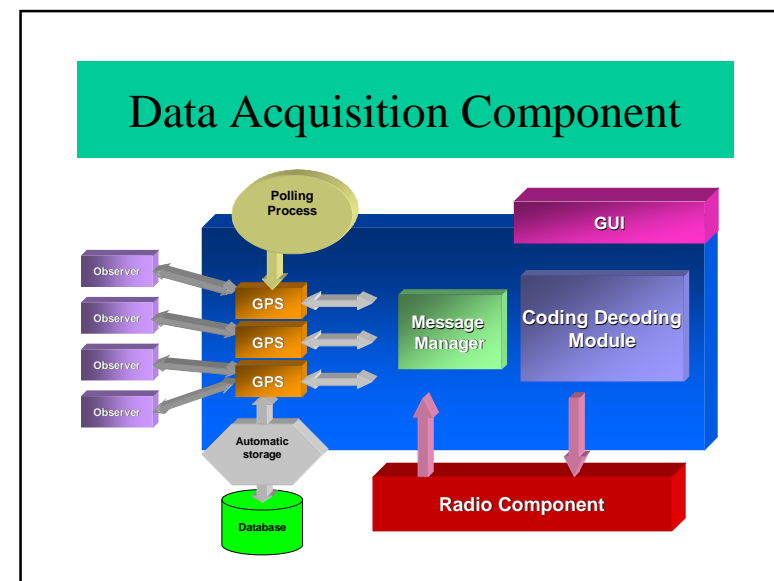
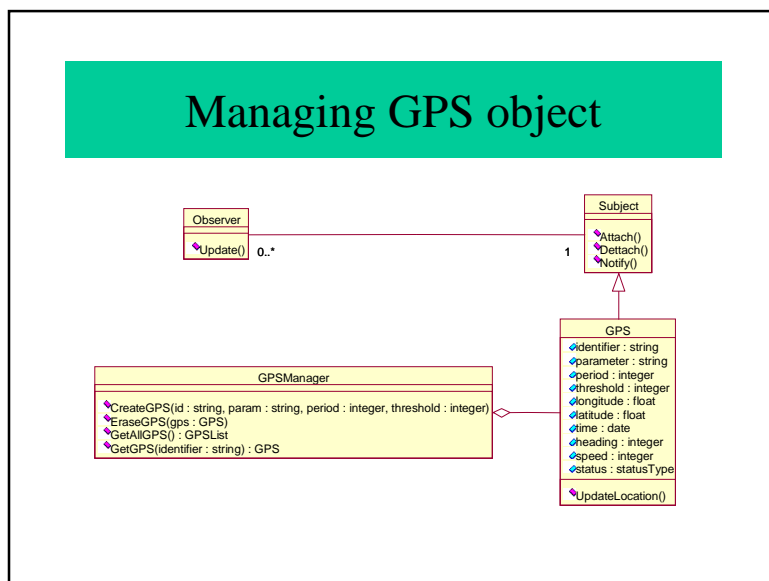
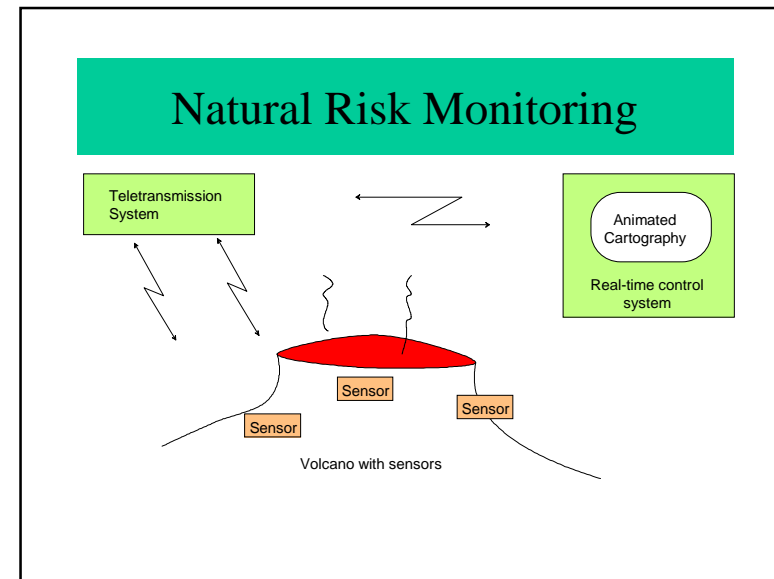
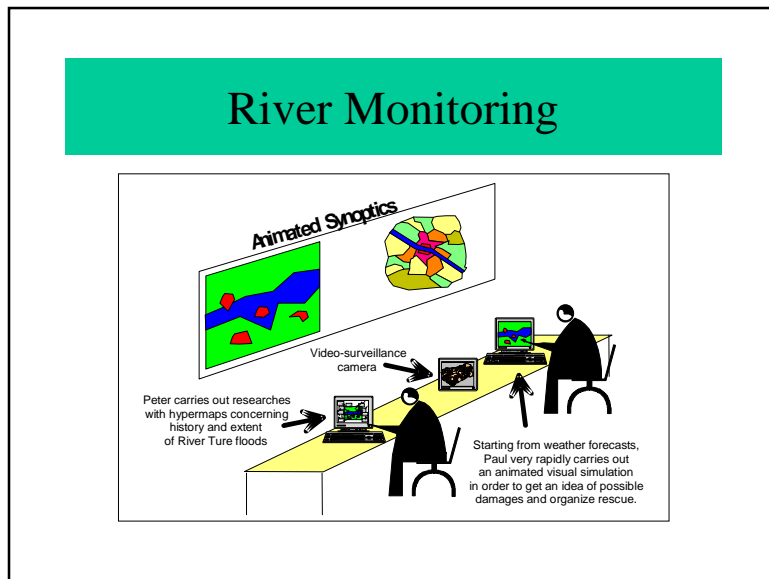


## Hazmat Transportation (1/2)



## Hazmat Transportation (2/2)

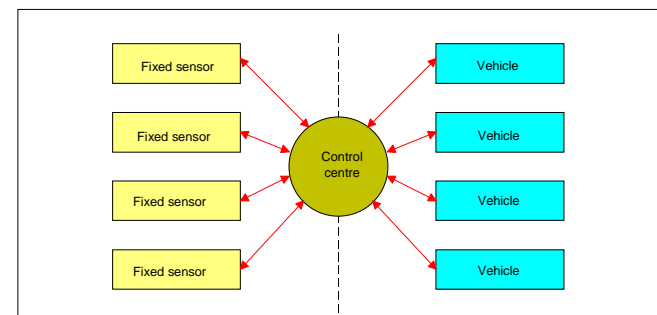




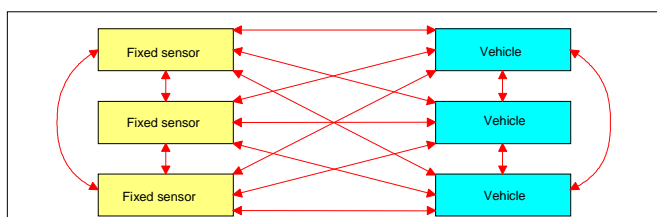
## ARCHITECTURES

- Centralised Architecture
- Cooperative Architecture
- Federated Architecture

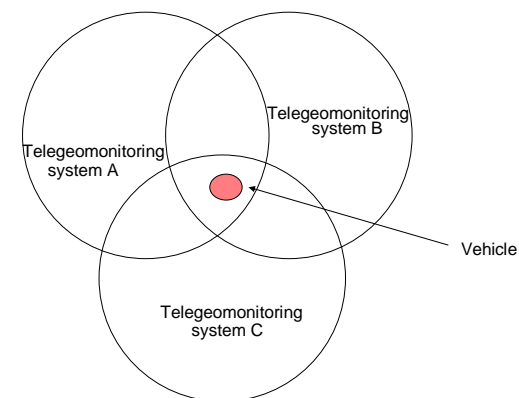
## Centralised Architecture



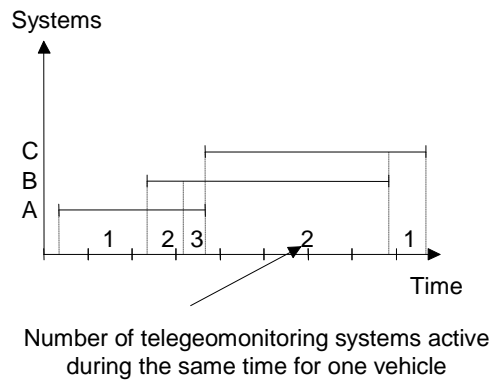
## Cooperative Architecture



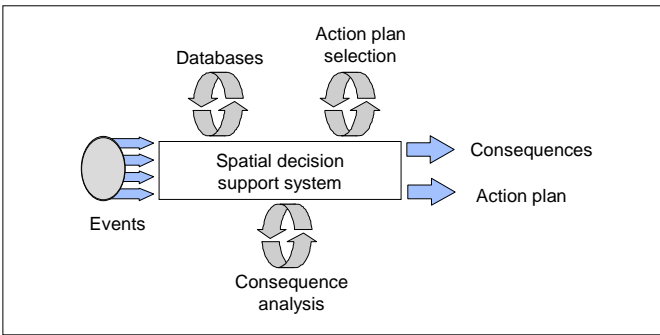
## Federated Architecture (1/2)



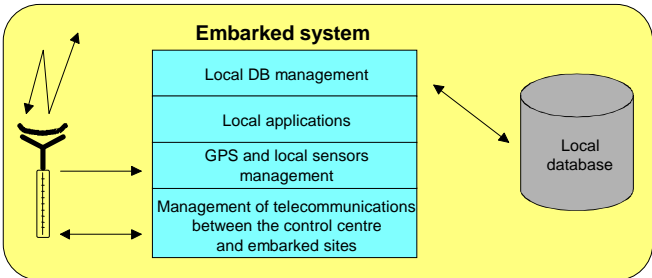
## Federated Architecture (2/2)



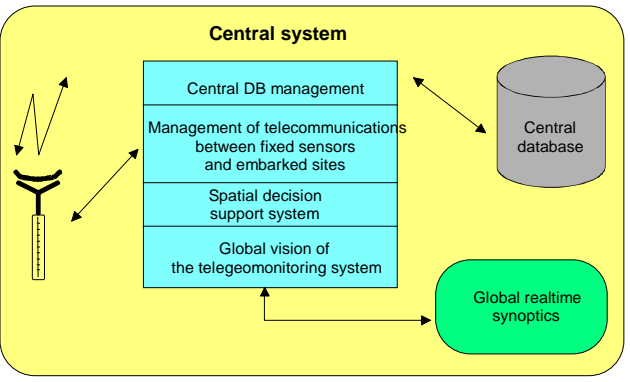
## Decision Support System



## Functional Architecture Embarked Site



## Functional Architecture Central Site



## Table of Comparison Computer Aspects

- Utilisation of GPS
- Fixed sensors
- Mobile and embarked components
- Real-time DB
- Data sharing through telecom
- Control Centre

## Table of Comparison Functional Aspects

- Decision Support System
- Anticipation by simulation
- Animated cartography

## DIRECTION OF RESEARCH (1/3)

- **architectures of telegeomonitoring systems** including several sites and embarked components; characteristics, advantages drawbacks,
- **architecture of control centres**
- **architecture of mobile components**
- **architecture of systems without central site**

## DIRECTION OF RESEARCH (2/3)

- **Design of synoptics** for real-time synthesising and generalisation
- **Real-time fusion** of geographic data coming from different multimedia sources

## DIRECTION OF RESEARCH

(3/3)

- **Design of real-time GIS databases**, spatio-temporal and multimedia indexing
- **Interoperability** of several telegeomonitoring systems
- **Cognitive aspects** for real-time spatial decision making
- **Byzantine situations** when sensors or vehicles are sending erroneous information
- **etc.**

Thanks for your attention