

**Conference**  
**High-Quality Service in Urban Transport Systems**  
**Transports à Haut Niveau de Service**  
**高品质的城市交通系统**

**Public Transport & Geographic Information  
Standards**

**Dr. Frédéric SCHETTINI**



**November 11-14, 2008**

**Shanghai - China**

# Summary

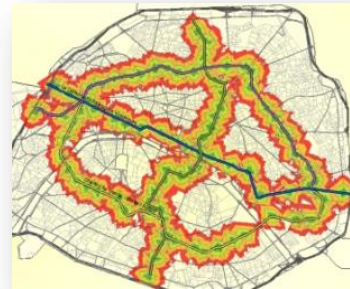
1. Presentation of MobiGIS
2. Role of standards
3. Public transport standards
4. Geographic Information Systems
5. European experiences
6. Conclusion

# MobiGIS presentation

**MobiGIS** is an IT engineering company promoting the use of Geographic Information Systems (**GIS**) technologies in public and private organisations

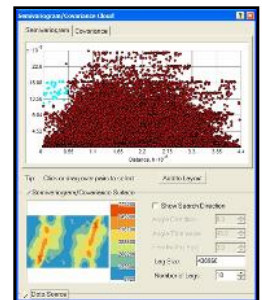
## World-class consultants in various industries

- Environment
- Mobility and travel
- Transportation
- Logistics



# MobiGIS's services

- **Business services for GIS projects**
  - Consultancy
  - Application development and deployment (desktop, mobile, server applications)
- **Innovation for sustainable development on transportation issues**
  - GIS Transportation solutions
    - Analysis, planning, multimodal routing
    - Standards and data models
  - Partnerships with world-class research centres

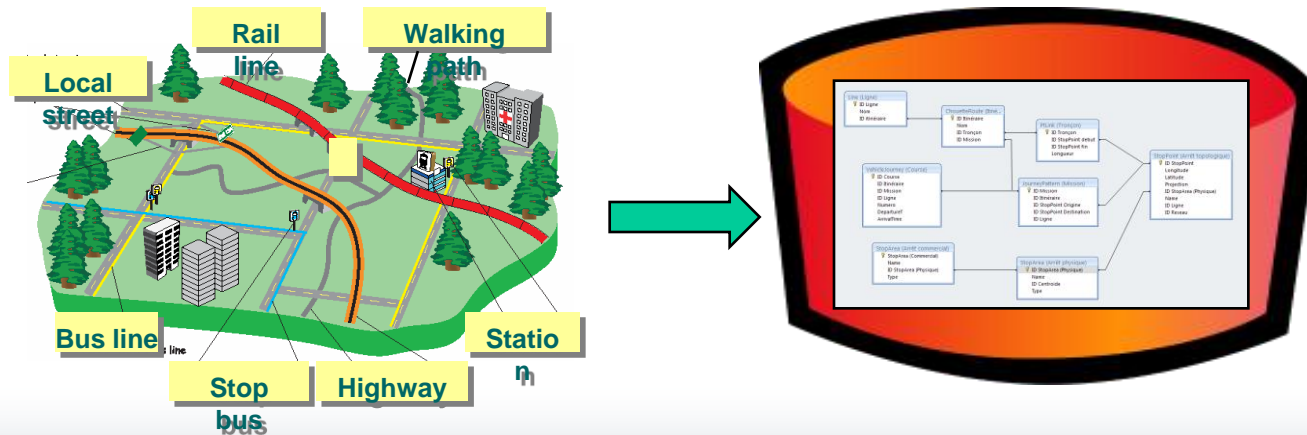


# Summary

1. MobiGIS presentation
2. Role of standards
3. Public transport standards
4. Geographic Information Systems
5. European experiences
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# Role of standards

- **Standards are important to model the real world**
  - Define the semantic and exact definitions of concepts, objects, properties, etc.
  - Describe the relationships between data, message structures, data format, etc.



# Role of standards

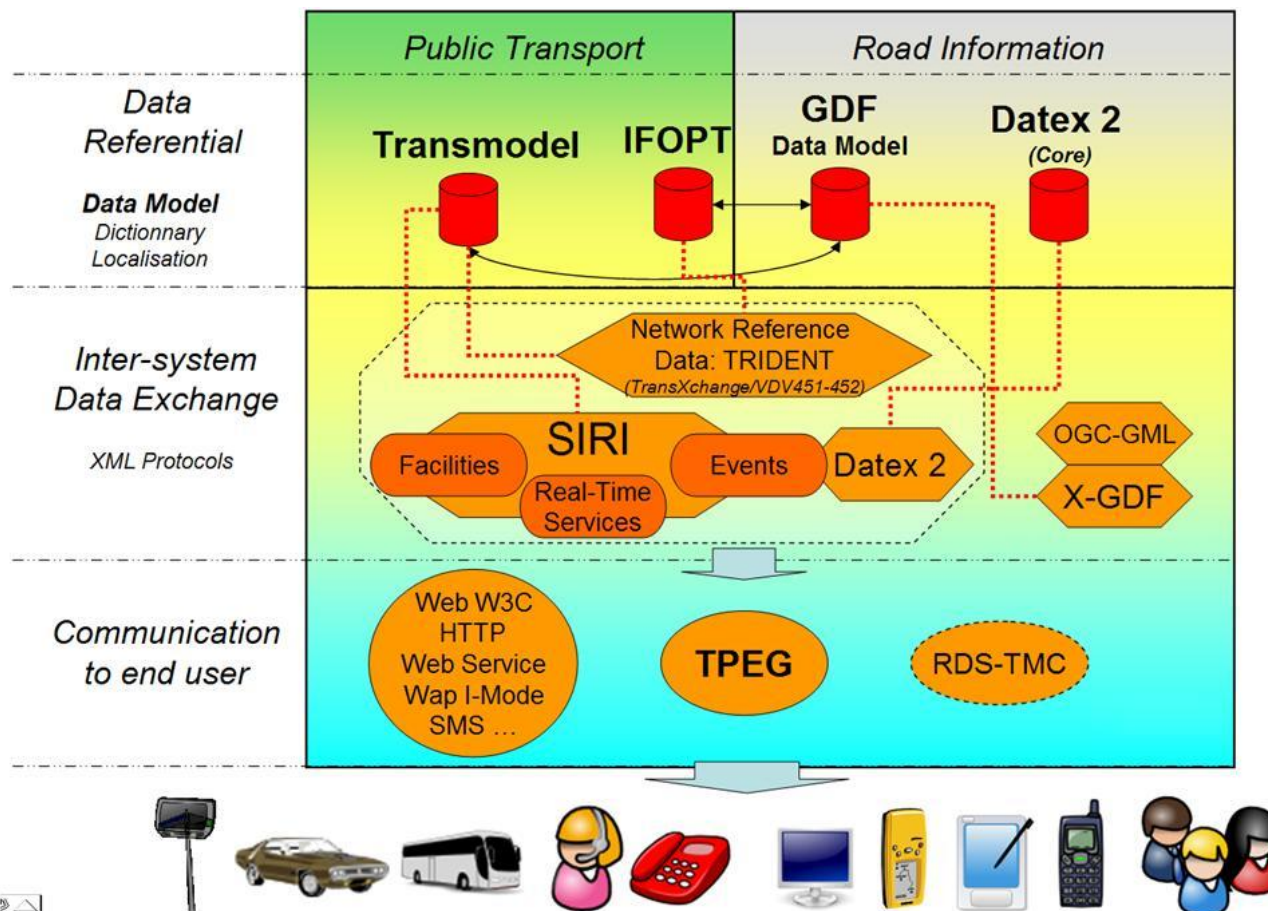
- **The world of transport gradually uses standards**
  - to ensure
    - the data supply of travel information services
    - the interoperability of systems
  - to minimize investments and save time
  - to break the too strong dependences with proprietary solutions





# Role of standards

- Standards are used at several levels

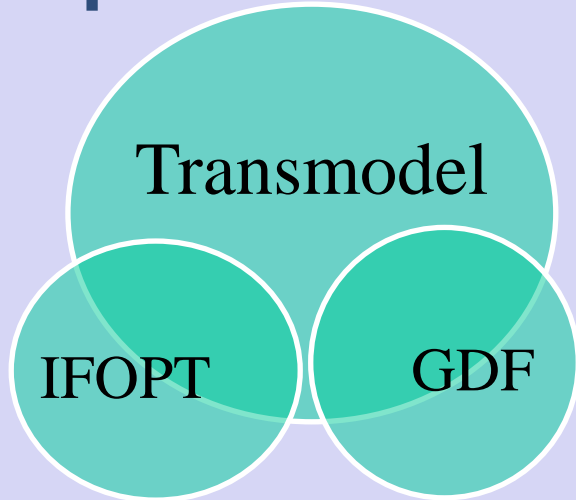




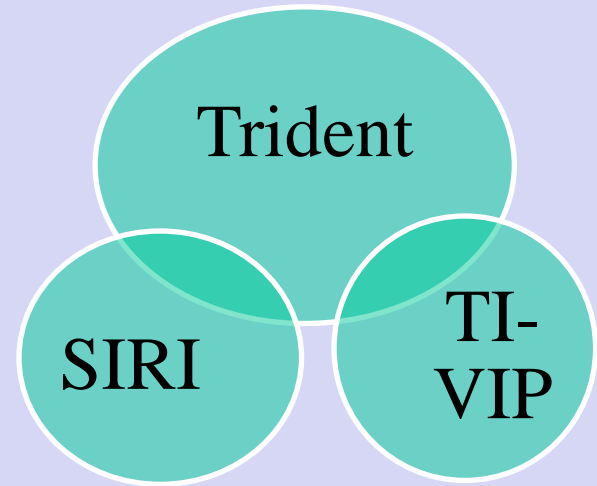
1. MobiGIS presentation
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# Public transport standards in development in Europe

## Conceptual data models



## Data exchange



- **Developed at different levels**
  - ISO (International Organization for Standardization)
  - CEN (European Committee for Standardization)
  - National projects

# Conceptual data models standards

- **TRANSMODEL v5.1 (EN 12896)**

- Reference data model for public transport operations



- **IFOPT v1.0d (CEN)**

- Model for the main fixed objects related to public access to Public Transport



- **GDF v4 (ISO/TC204)**

- Interchange file format for geographic files



# Data exchange standards

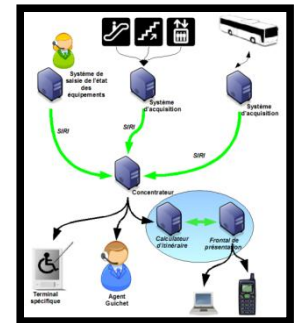
- **TRIDENT (*EU Project*)**

- TRansport Intermodality Data sharing and Exchange NeTwork



- **SIRI (*CEN/TS 15531*)**

- Standard Interface for Real time Information related to public transport operations



- **TI-VIP (*EU Project*)**

- Traveller Information for Visually Impaired Persons



# Getting more information

- **TRANSMODEL**

<http://www.transmodel.org/en/cadre1.html>

- **IFOPT**

<http://www.naptan.org.uk/ifopt/index.htm>

- **GDF**

[http://www.ertico.com/en/links/links/gdf\\_-\\_geographic\\_data\\_files.htm](http://www.ertico.com/en/links/links/gdf_-_geographic_data_files.htm)

- **TRIDENT & CHOUETTE:** [www.predim.org](http://www.predim.org)

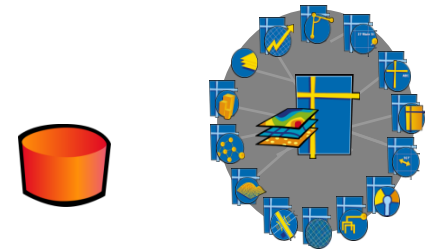
- **SIRI:**

<http://www.kizoom.com/standards/siri/>

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# What is GIS?

- **Enable to envision the geographic aspects of a body of data**
- **Store in a database a variety of data (i.e. road network, public transport network, real time data, images)**
- **Provide desktop, server, mobile, on-line solutions to perform GIS operations**



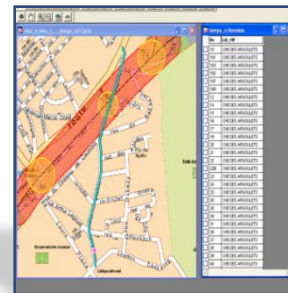
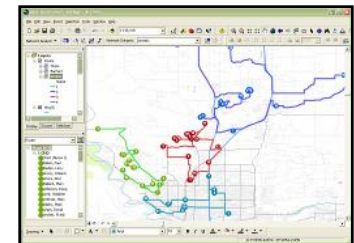
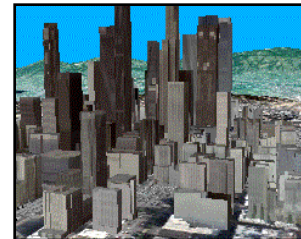
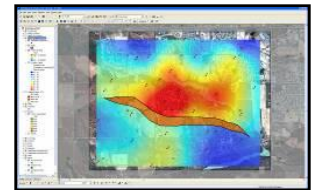
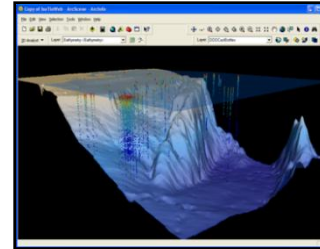
**Geodatabase**





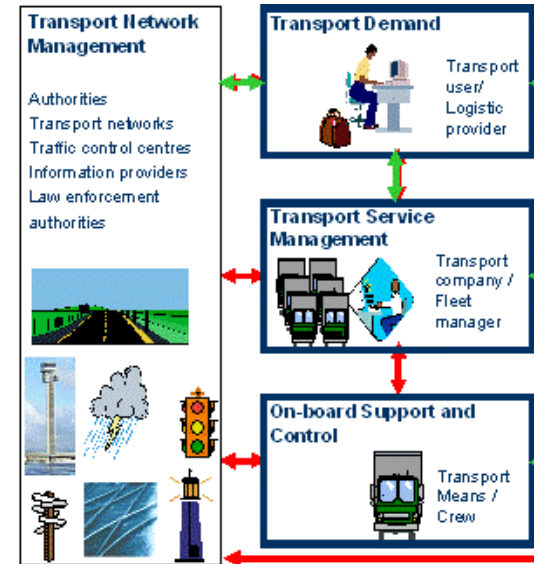
# GIS in Transport

- **GIS are widely used to**
  - Model networks
  - Analyze geospatial data
  - Transport system planning
  - Visualize analysis results
  - Communicate
  - Broadcast information to end users



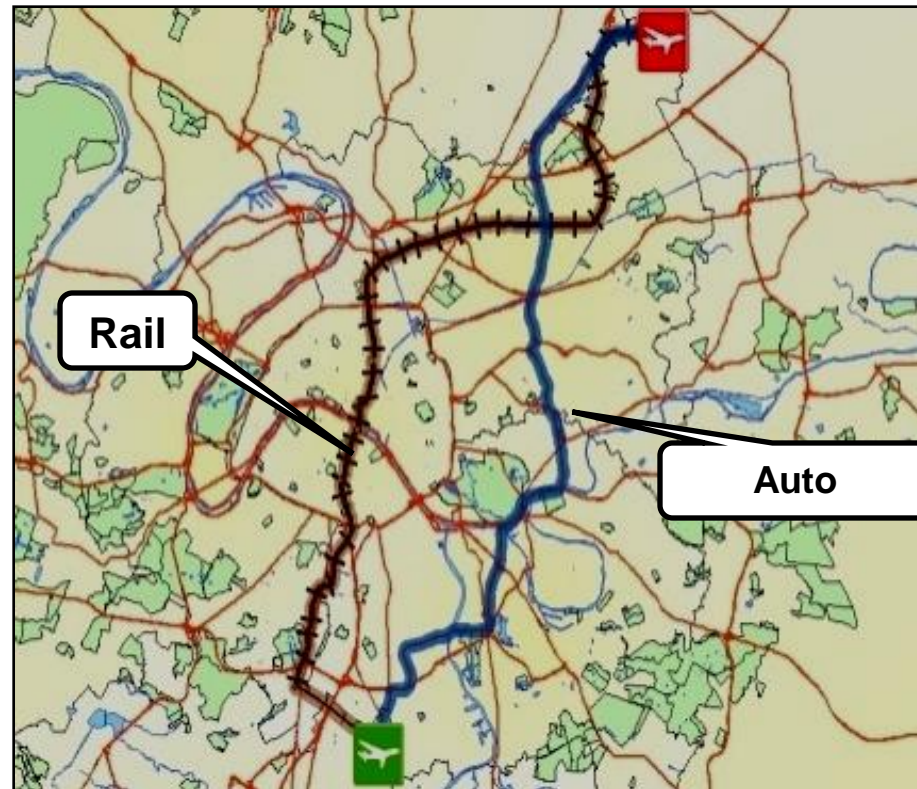
# GIS in Transport

- **GIS are widely used by**
  - Transport authorities
  - Planning offices/departments
  - Network operators
  - Consultants
  - Research centers
  - Businesses
  - End users



# GIS uses: example 1

- **Multimodal route computation and visualisation**



# GIS uses: example 2

- **Network accessibility analysis from a location**



**By car**



**Using the transportation  
system**

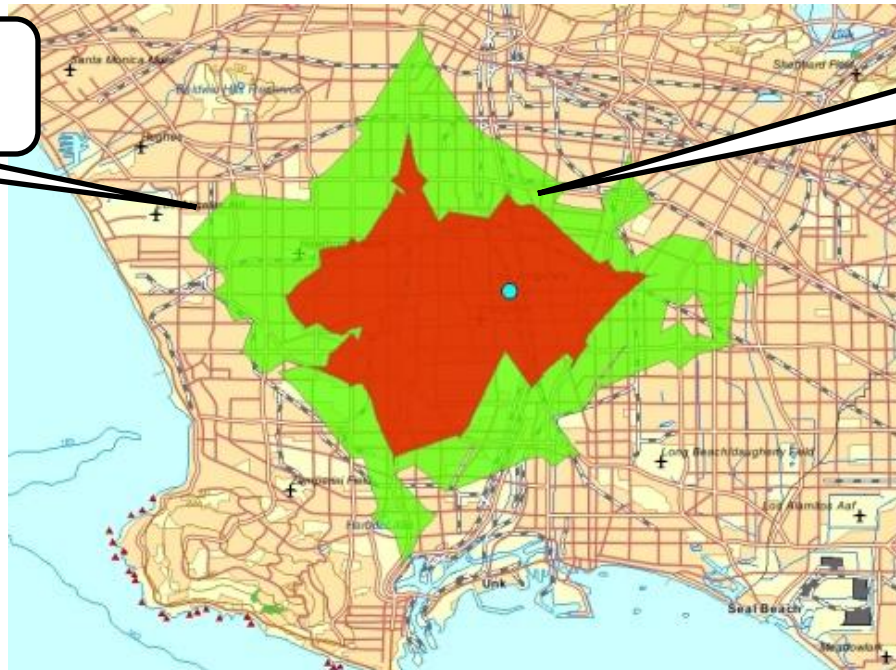


# GIS uses: example 3

- **Drive time polygon computation  
downtown Los Angeles**

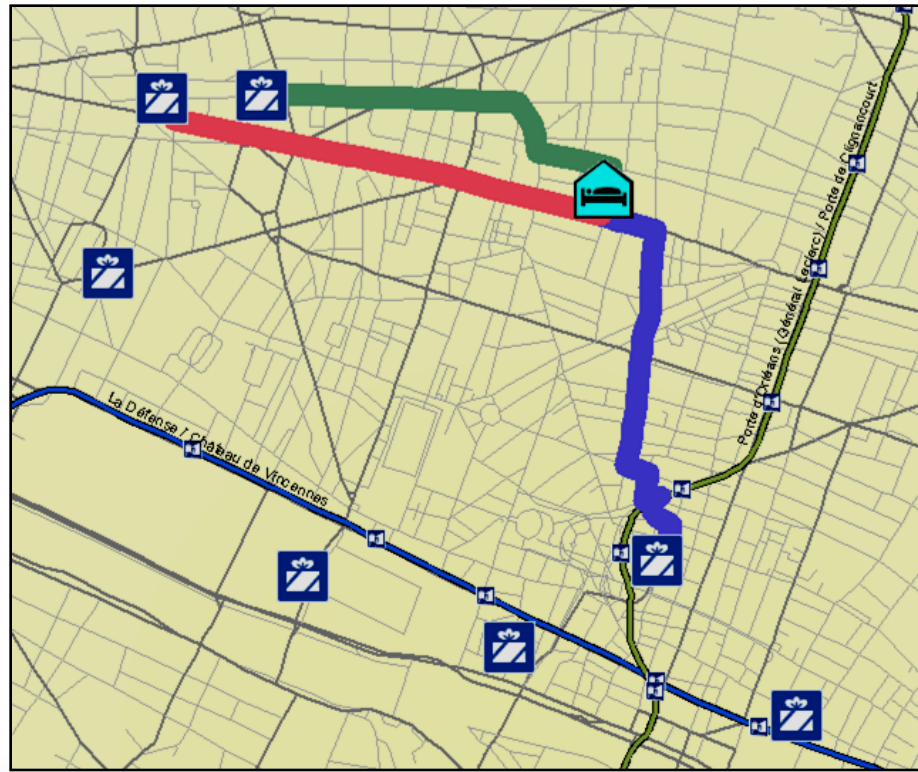
**Green Polygon**  
Normal traffic conditions

**Red Polygon**  
Peak hours



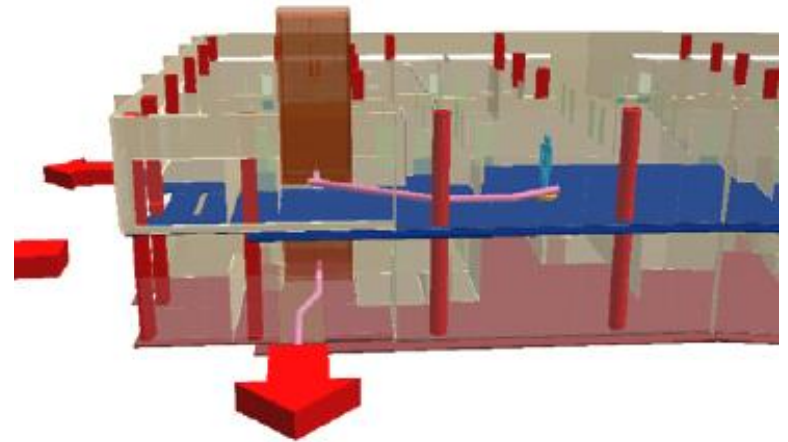
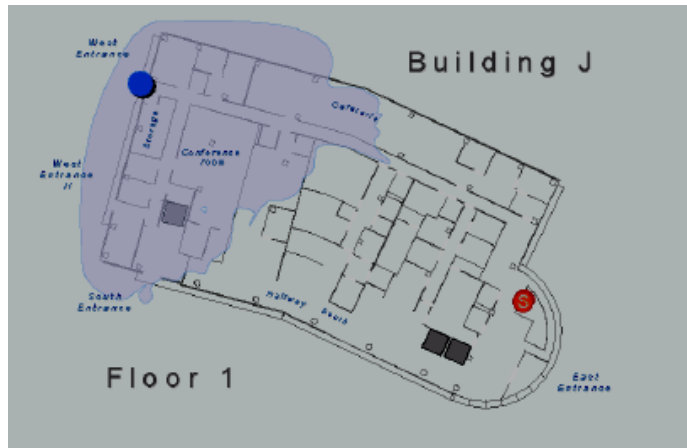
# GIS uses: example 4

- Find the nearest points of interest (i.e. stores) from a location (i.e. hotel)



# GIS uses: example 5

- User guidance in transportation hubs
- Evacuation planning using 2D and 3D views





# GIS data for Transport

- **Road network data**

- High quality data for mapping, transport planning, etc.
- Various data sources



NAVTEQ™

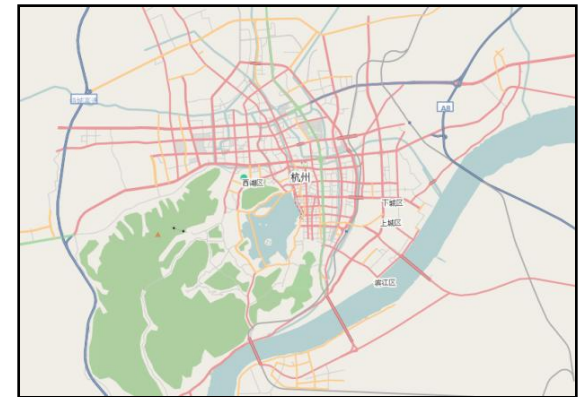


- **Public transport data**

- Often proprietary data

- **Others data**

- Points of Interest (POI)
- Population data
- Images (raster)
- Etc.



中国上海

# Open Geospatial Consortium Standards

- **Examples of approved standards**
  - Geographic data
    - Geography Markup Language (GML)
    - KML (Google)
  - Web services
    - CSW: Catalog Services for the Web
    - WPS: Web Processing Service
    - WFS: Web Feature Service
    - WMS: Web Mapping Service

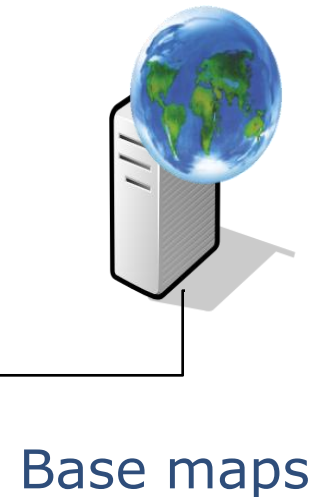
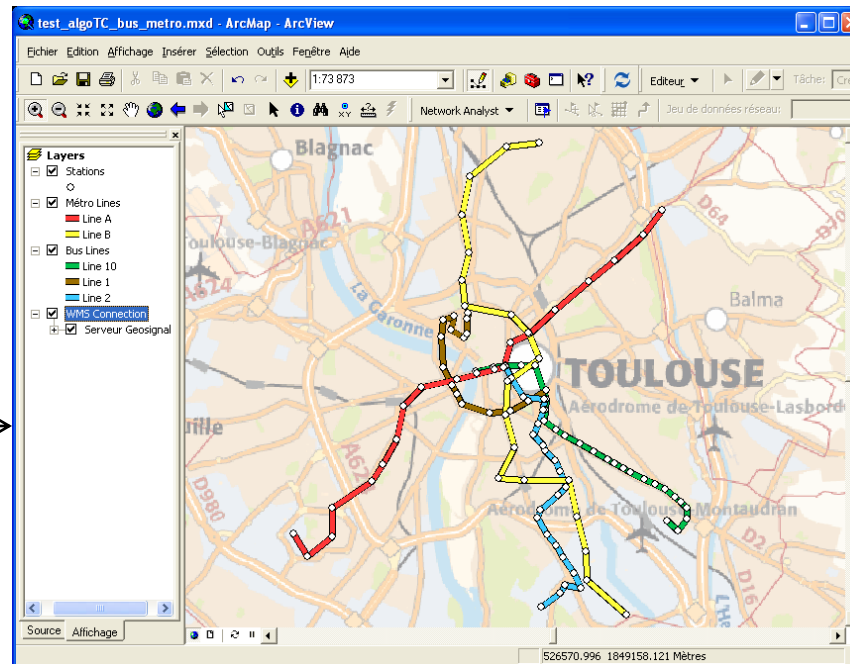
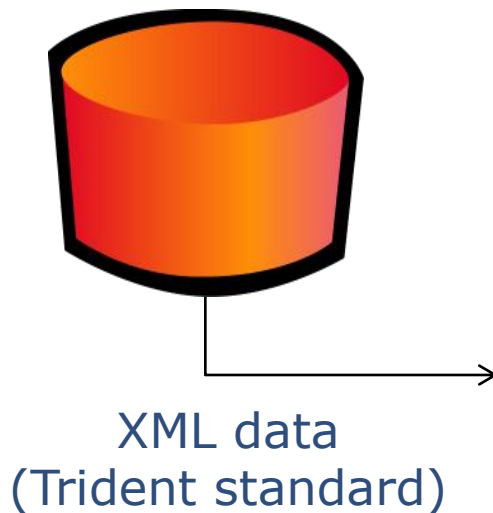


# Transport and geographic data integration

Transport  
database

**GIS software**

Web Mapping  
Service



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# European experiences

- **France**

- Regional
- Urban



- **UK**

- NAPTAN: National Public Transport Access Node database
- Transport Direct : Free online route planner for public transport and car journeys

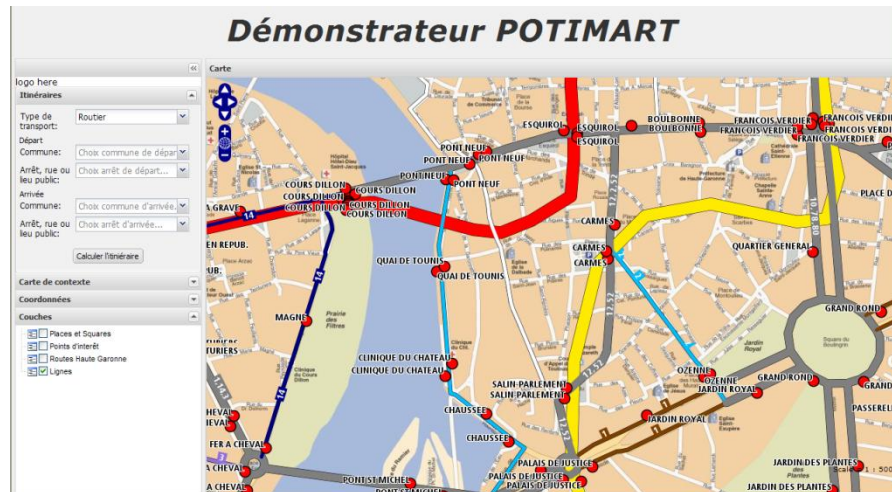


# European experiences

- **POTIMART ([www.potimart.org](http://www.potimart.org))**
  - Open Source GIS Transport Software for Multimodal Network Analysis
  - Supported by the French Ministry of Transport

Potimart

La plateforme SIG transport  
open source



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# Conclusion

- **Standards and GIS are key components for transport operations**
- **Standards and GIS**
  - uses are spreading out
  - evolve to meet more user needs

# Thank you & Questions ?

## Related training session

**Public Transport & Geographic Information Standards**

**November, 14<sup>th</sup> 2008**

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