

# Transport Transformation Research and Innovation:

Past lessons learned and prospective:

A research and innovation administrator point of  
view

Jean-Pierre Médevielle  
Green Tech Thessaloniki, 12-13 May 2011



IFSTTAR

# Content

- My **BACKGROUND** as research and innovation administrator  
Thematic - Process – Clusters – Innovation without research
- **SEVEN KEY MESSAGES**  
Knowledge Triangle – Innovation linear and non linear scheme – The Avicenne Lantern – The Diamant – Foresight, outlook and prospective – Active Stakeholders – Resources of and for excellence
- **REMARKS on the Green Urban Mobility of mid XXIst century**
  - The co modal and mobility smart and automated company
  - The co modal infrastructures connector
  - Urban and Metropolitan Mobility concern and contributor
  - The Urban Transport Transformation
    - ✓ Research and innovation infrastructures
    - ✓ Test beds, large scale demonstrations, experimentations and trials
    - ✓ New governance of the transport system
    - ✓ New governance of the research and innovation transport related systems
- **THINK and IMAGINE the mid XXIst century Urban Mobility and Transport Transformation**
  - Who is ready?
  - Who does?



# My background as research and innovation administrator (I)

## Thematic issues

- Urban development research and planning (Technologies for Urban and Housing national programmes)
- Civil engineering and urban engineering research and education (Civil and urban engineering national programmes)
- Transportation research and education and implementation Transport French, French-German and EU programmes)
- Energy research innovation and implementation (From nuclear decommissioning to wind and solar and various energies demonstrators at regional level)
- ICT research and innovation (and education) (regional and EU levels)
- Marine research and marine coastal environment planning and geospatial marine technologies (Regional and international levels)
- Agrobio food and feed research and innovation (Regional and EU levels)



# My background as research and innovation administrator (II)

## Process oriented issues (European, international)

- Creation of Institutional Networks of research operators (Transportation or RTOs (ECTRI, ...))
- Creation of Centres and European Networks of Excellence (European and international levels)
- IPR, ethical and legal issues (European and international levels)
- Human Factors Engineering

## Innovation without research (ORGWARE INNOVATION)

- The High Speed Rail Network organisation (SNCF)
- The High Speed Coach Line implementation (Rennes Pontivy)
- The Low Cost Train services, cleaner and more efficient and robust regional train services (CFTA/Veolia Carhaix Guingamp Paimpol)
- The good road carrier closing the manufacturing cycle (Vannes trucker)



# My background as research and innovation administrator (III)

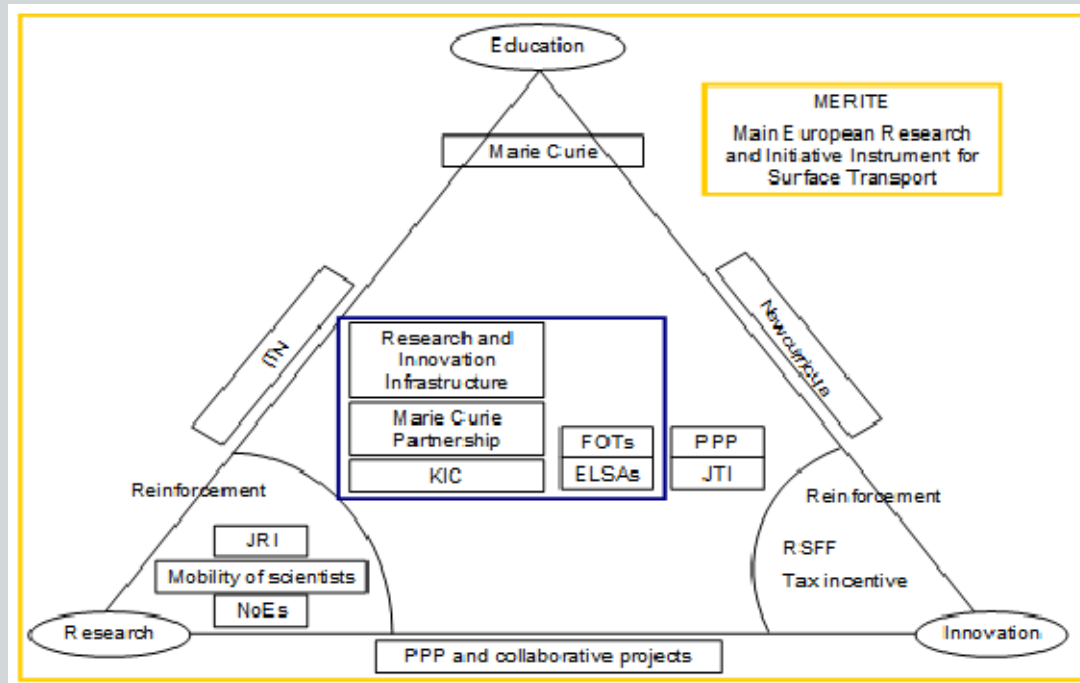
## Innovation clusters implementation (regional)

- Robotics
- Manufacturing (transfer of KH from automotive to food industry)
- Food and feed industries (vegetables, milk and meat, turkey)
- Micro electronics
- Microwaves
- Telecom and media content and process digitalisation (Digital TV, Digital Telecom, premises of Internet and premises of CARMINAT)
- Turkey genomics
- Opto electronics
- Fine chemistry
- Automotive (cars, trucks and bus – coaches) OEMs to tier 3 suppliers



# SEVEN GENERAL MESSAGES USEFUL FOR the future sustainable transformed transport systems (I)

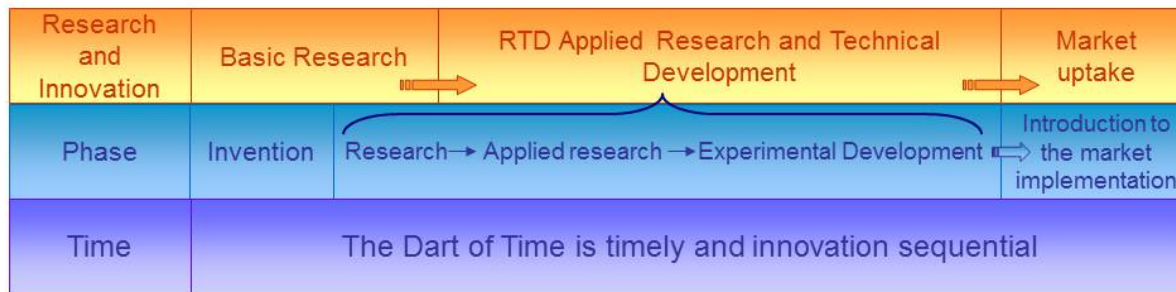
## The Knowledge Triangle concept



# SEVEN GENERAL MESSAGES USEFUL FOR the future sustainable transformed transport systems (II)

The full innovation scheme could be no more linear

Traditional Linear Scheme of Innovation



© Jean-Pierre Médevielle & Marie José Mingotaud

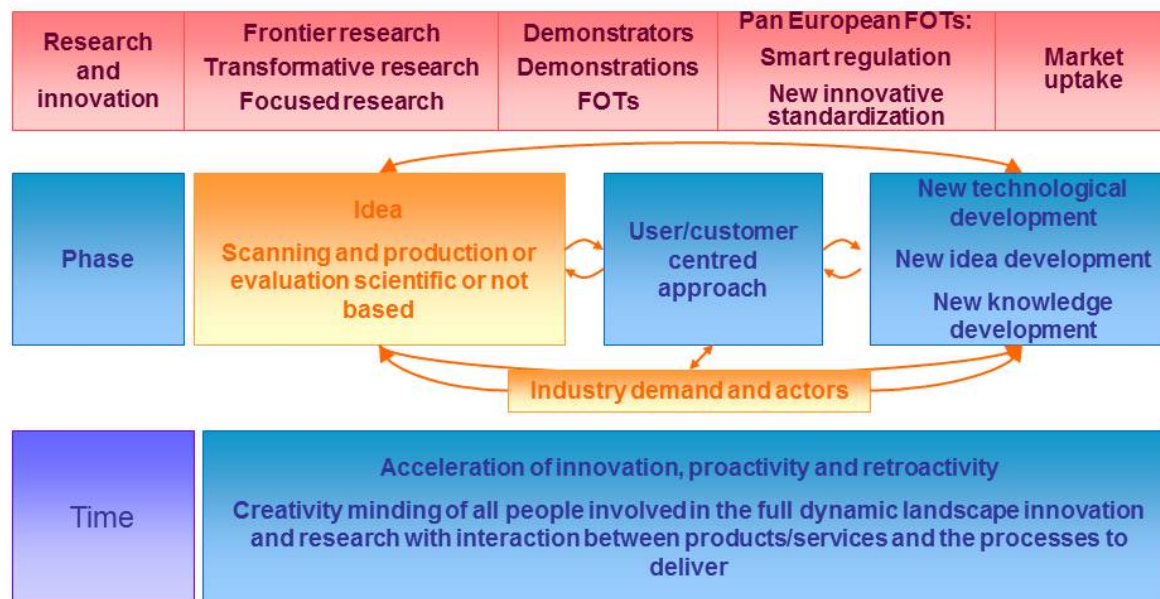
Ref. OECD Fracasti Model



# SEVEN GENERAL MESSAGES USEFUL FOR the future sustainable transformed transport systems (III)

The full innovation scheme could be no more linear

New innovation schemes including non linear schemes



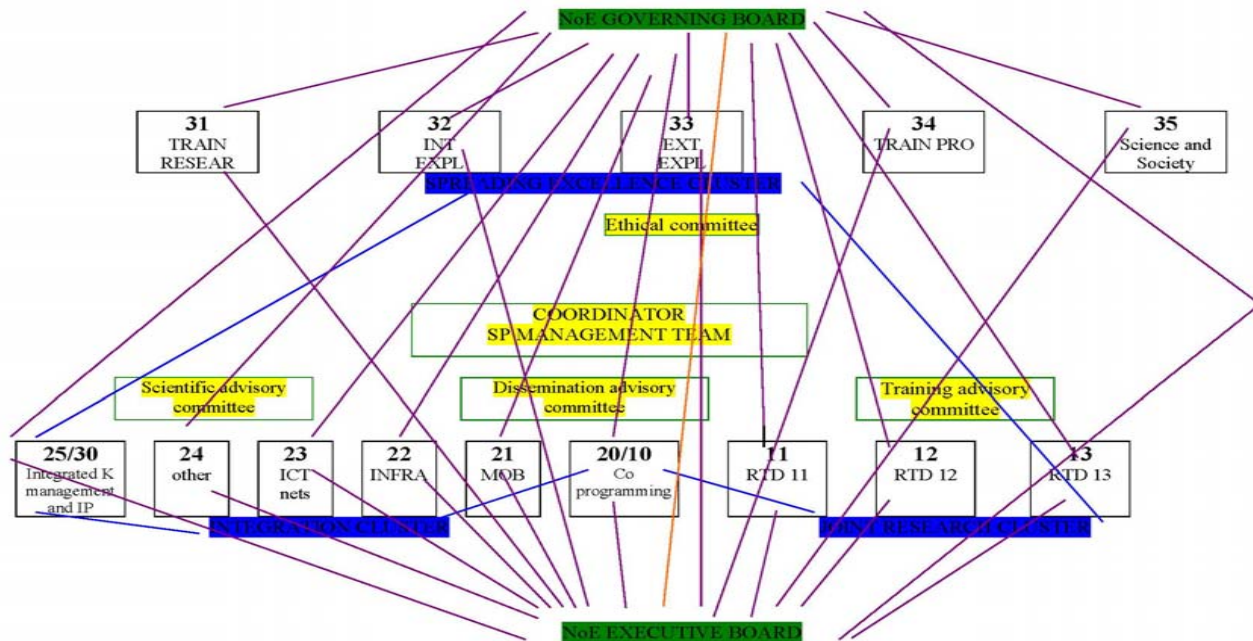
© Jean-Pierre Médevielle & Marie José Mingotaud  
 Ref. J. Schumpeter model  
 OECD – EC/EUROSTAT Oslo manual 3rd edition  
 Innovation Manual Wiley 2009





# SEVEN GENERAL MESSAGES USEFUL FOR the future sustainable transformed transport systems (IV)

## The importance of focused or transformative research: the Avicenne Lantern

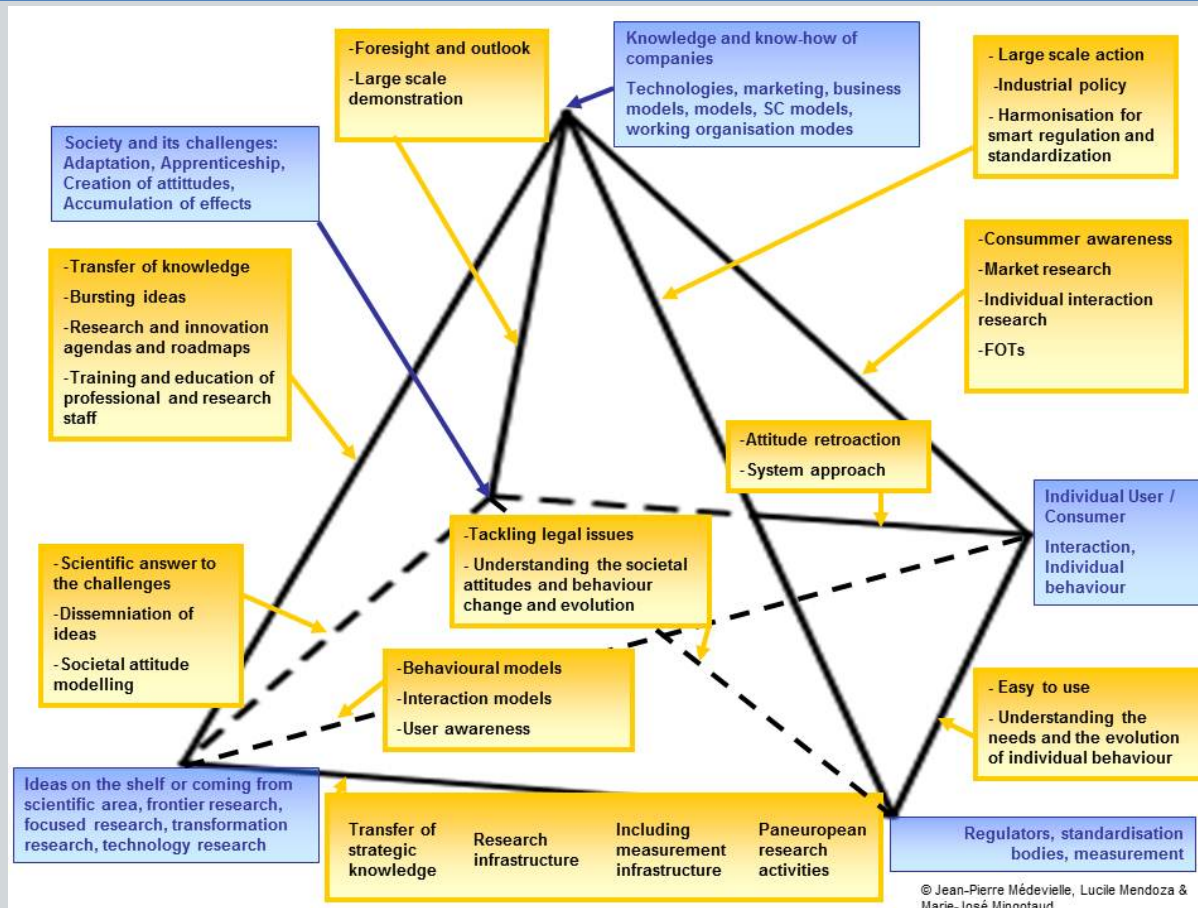


The Avicenne suspended lantern



# SEVEN GENERAL MESSAGES USEFUL FOR the future sustainable transformed transport systems (V)

## The importance of agenda driver and bursting idea drivers for research and innovation: the Diamant concept



# SEVEN GENERAL MESSAGES USEFUL FOR the future sustainable transformed transport systems (VI)

## The importance of technological foresight and prospective:

- Transport internal technological foresight and transport outlook  
Vehicles technologies, infrastructures technologies from product to system and services and reciprocally
- External technological foresight  
Energy technologies, ICT and nano technologies, clean technologies, operational technologies, human factor engineering, life technologies, marine technologies
- And science foresight  
Physics, Chemistry, Life sciences, Human and social sciences, Materials



# SEVEN GENERAL MESSAGES USEFUL FOR the future sustainable transformed transport systems (VII)

The importance to tackle with every actor or stakeholders types

<b>Economical part of the society</b>	<b>Policy makers and supervisors</b>	<b>NGOs and society</b>	<b>Academia including RTOs</b>
<ul style="list-style-type: none"><li>• OEMs</li><li>• Their suppliers</li><li>• Engineering and consultancy</li><li>• Infrastructures operators</li><li>• Systems suppliers</li><li>• Services operators</li></ul>	International level European level National level Regional level Local level		<ul style="list-style-type: none"><li>• University of Excellence (research and education or training)</li><li>• RTOs</li></ul>



# SEVEN GENERAL MESSAGES USEFUL FOR the future sustainable transformed transport systems (VIII)

## The importance to have resources of and for excellence

- People

Innovations minded people including entrepreneurs minded people (see Schumpeter clusters)

- Funding

Financing mechanisms including innovative ones **RDI Bankeable Loans, Risk Capital, Risk Development**)

- Scientists

An excellent supply side of the ERA as a attractiveness (Concept of Joint Research Initiatives)

- And visionnaires champions

**The EUROP and Trans Europ Express 1952 – 1956, the AIRBUS and ARIANE, the automated car or truck, the automated underground, the low cost car**



## Some remarks on the Green Urban Mobility (I)

- Think scenarios
- Think goods and/or people
- Think transport and mobility and urban economics,  
urban environment, urban energy
- Think of substitute to mechanical mobility
  - Virtual mobility
  - We are all pedestrians
  - Bicyclists



## Some remarks on the Green Urban Mobility (II)

- Innovative ticketing fare or pricing
- Electrification of public transport including bus, BRT, trolleybus, cable cars and other innovative solutions
- Electrification of cars and innovative business models or innovative products
- Innovative urban infrastructures
- The co modal and mobility smart and automated company  
Goods is in advance on people moving but people are the real “co modalers”
- The co modal infrastructures connector



# Some remarks on the Green Urban Mobility (III)

## Other issues

- Think Mobility Terminals at the core of urban development
- Think Innovative urban logistics
- Think that urban and metropolitan mobility is a major concern to CO2 and a major contribution to CO2 potential reduction





# Some remarks on the Green Urban Mobility (IV)

## Don't forget:

- That people and goods are concrete
- Safety and security are a concern
- Affordability and individual acceptability and societal acceptance are critical
- Other environmental constraints are yet existing parallelly to CO2



# Some remarks on the Green Urban Mobility (V)

## In short

- Think we need a transport transformation with radical or accelerated evolution
- Creation of:
  - New urban economics and wealth
  - New European leadership in the global competition
- Creation of new professionals, new business models, new regulation, new symbiotic scientists



## Some remarks on the Green Urban Mobility (VI)

But think that affordability, acceptability, acceptance, regulation and standardization needs:

- Metropolitan areas used as a test bed for large scale actions of demonstrations, trials and experimentations
- A new generation of research and innovation infrastructures including data and knowledge repositories
- A new governance of the transport systems and almost a new governance of the research and innovation transport related systems (MERITE)



# Some remarks on the Green Urban Mobility (VII)

The Task Force of the Lyon Declaration Signatories

Creating a European Transport  
Research Alliance (ETRA)

Towards MERITE  
Main European Research Initiative  
in surface Transport

November 2009



## In summary

Think and Imagine

the TRANSFORMATION of the urban mobility and transport systems for mid XXIst century

But who is ready?

Who shall be the actors and stakeholders of 2050 transformed mobility and transport systems?



## Outlook (I)

In 1994 I wrote an article about those subjects (TEC)

I was proposing a challenge for transport industry (OEMs and/or operators) including public transport or automotive

Who can produce a vehicle, an infrastructure costing 30% less, polluting less on a life cycle analysis, with energy reduction of 30% and Human centred approach?



## Outlook (II)

I had in mind:

- The low cost regional train competitive advantage
- The example of the affordability/quality dilemma of many industrial sectors

Except the acceleration of the CO<sub>2</sub> concern, all the conclusions are still valid



## Outlook (III)

### Who did?

I am only taking so called examples but my German and Greek colleagues could elaborate on.

- Veolia for its competitiveness advantage on regional train and the coverage of all urban services (FR, DE, SE, US)
- Dacia after an internal debate Renault arbitrated by the Renault CEO
- Renault Vehicle Industrials today Iribus with its Crystallis Trolleybus à Haut Niveau de Service made around a special common patent Alstom – Michelin – Renault Véhicules Industriels and an architecture developed with IFSTTAR





## Outlook (III)

### And recently:

- The new Renault Volvo Trucks Urban Light Duty Logistics Vehicles
- The Renault move to E.V. strategy
- And some other transport “entrants” (Bolloré, Dassault, ...)

And wait for the telecom operators and the energy operators with transport application of Internet of the Future and Internet of the Things and Smart Grid Transport Interaction.



## Some sites of reference:

<http://ipts.jrc.ec.europa.eu/>

<http://www.iea.org/>

<http://www.internationaltransportforum.org/>

<http://www.trb.org>

<http://www.ectri.org/>

<http://www.fersi.org/>

<http://www.humanist-vce.eu/>

<http://www.nearctis.org/>

<http://www.icarsupport.eu/>

<http://www.ertrac.org/>

<http://www.errac.org/>

<http://www.waterborne-tp.org/>

<http://www.ifsstar.fr>



# Thank you very much for your attention

## **Ifsttar**

Centre de Lyon-Bron

25 avenue François Mitterrand

69675 Bron cedex

Tél. +33 (0)4 72 14 23 41

Fax. +33 (0)4 72 37 84 24

[www.ifsttar.fr](http://www.ifsttar.fr)

[Jean-pierre.medevielle@ifsttar.fr](mailto:Jean-pierre.medevielle@ifsttar.fr)

