



TraCE - TRANSPORTATION CENTER EPFL

June 25, 2009

ÉCOLE POLYTECHNIQUE  
FÉDÉRALE DE LAUSANNE

[michel.bierlaire@epfl.ch](mailto:michel.bierlaire@epfl.ch) French-Swiss Workshop CCEM/Pôle «Véhicule du Futur»

# Trace: the new transportation center at EPFL

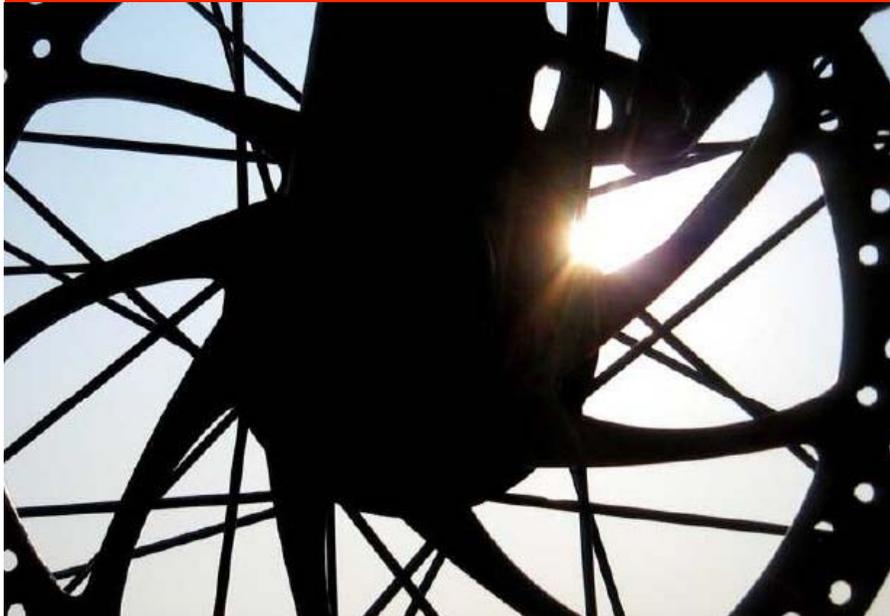
**Prof. Michel Bierlaire**  
**Director of the EPFL Transportation Center**





## Address increasing mobility needs

- Advances in technology and communication
- Changes in mobility practices
- Overall increase in transactions at the global level
- Exponential growth of multimodal transport (passengers and freight)
- New sources of energy
- Sustainability



**Propose cutting-edge interdisciplinary research**

- Invent and develop new paradigms in transportation
- Promote multi-disciplinary approaches
- Move from concepts to solutions
- Percolate the ideas to the industry and public authorities





- Create added value from EPFL's strength and resources in both fundamental research and engineering applications

« With more than 250 laboratories and research groups on campus, EPFL is one of Europe's most innovative and productive technology institutes »

- Reinforce present & future competences in the field
- Foster innovation



## Targeting the best in... research

- Federate EPFL's scientific activities dealing with transportation issues and provide excellent visibility
- Identify strategic research topics and promote associated projects
- Develop the networking of researchers both inside and outside EPFL
- Facilitate consortiums for efficient reactions to international calls



## Targeting the best in... teaching

- Strengthen and coordinate the supply of transportation courses offered at EPFL
- Develop continuing education programs designed for professionals
- Teach the interdisciplinary nature of transportation and its interfaces with other fields such as energy, environment, information and communication, basic sciences, management, economics, etc.



# STRATEGIC TOPICS

8



« The strength of EPFL is to develop transdisciplinary research that enhances a unique knowledge foundation to the world of mobility »

- Analysis and prediction of mobility trends
- Transportation demand modeling
- Network and infrastructure design
- Planning and urban development
- Innovative infrastructure construction
- Evaluation and supervision of policies
- Environmental and energy impacts
- Intelligent transportation systems



Transport and environment

Transport and energy

Mobility behaviour



Transport economics

Urban planning and land use

Multimodality



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# ORGANISATION & SCOPE

10

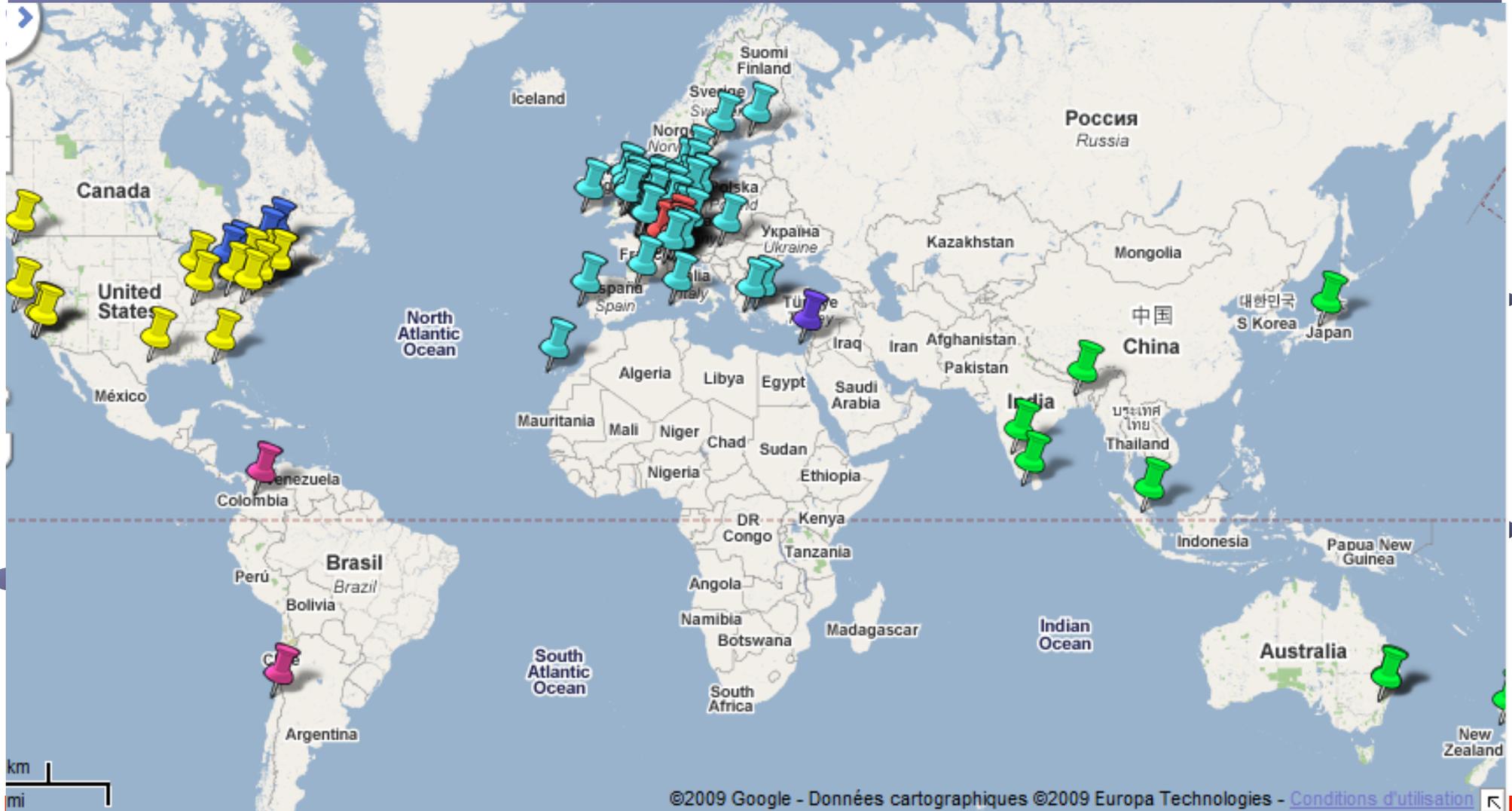
31 laboratories

- **ENAC**  
School of Architecture, Civil and Environmental Engineering
- **BS**  
School of basic sciences
- **I & C**  
School of computer & communication sciences
- **CDM**  
College of Management of Technology
- **STI**  
School of Engineering
  
- Partnership with ETHZ IVT  
**Institute for Transport Planning and Systems**

« All of the EPFL's 5 schools, are involved in the Transportation Center »



# INTERNATIONAL NETWORK OF ACADEMIC PARTNERS





- **Sponsor** FP7
- **Objective** to develop a new urban transport service based on a new generation of vehicles, designed for both individual use and collective transport
- **International Collaboration**  
LOHR Industrie (France)
- **PI** Prof. V. Kaufmann

# PROJECTS

## OPTIMA

13



- **Sponsor** La Poste / Postbus
- **Objective** to analyze non customers and their interest into new attractive services
- **PI** Prof. V. Kaufmann



# PROJECTS

14

## Smartphone mobility data and models



- **Sponsor** NOKIA
- **Objective** investigating how to perform an appropriate fusion of data from smartphones in order to predict the mobility behavior of a given individual
- **PI** Prof. M. Bierlaire



# PROJECTS

## NEARCTIS

15



- **Network of Excellence**  
Advanced Road Cooperative  
Traffic management in the  
Information Society
- **Sponsor**  
European Commission
- **Objective** to strengthen an  
academic network of  
competence
- **PI** Prof. A.-G. Dumont



# PROJECTS SEVECOM



- Sponsor  
FP6
- Objective to reinforce security in car-to-car communication systems

PI Prof. J.-P. Hubaux  
Dr. P. Dimitratos

Warning:  
Accident at (x,y,z)



# PROJECTS

17

## Context-aware intelligent vehicles



- **Sponsor**  
European Commission
- **Objective** to improve driver safety and overall traffic fluidity using both an embedded intelligent sensory system and communication with other vehicles
- **PI** Prof. A. Martinoli



## Network coding



- Sponsor SNF
- Objective to optimize communications between vehicles and between vehicles and stations
- PI Prof. Ch. Fragouli





- **Visibility**
  - Position EPFL as a major player in transportation research
  - A single face to the “customers” (in and out)
- **Multidisciplinarity**
  - ENAC, SB, I&C, STI, CdM, SV
- **Business development**
  - Attract more industrial partners
- **Research consortiums**
  - UE, Volvo Foundation, NCCR



# THANK YOU !

20



- Looking forward to
- your comments & expectations
  - existing and foreseeable collaborations

<http://transport.epfl.ch>



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