Trace: the new transportation center at EPFL

Prof. Michel Bierlaire
Director of the EPFL Transportation Center
CHALLENGE

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
MISSION

- 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

Propose cutting-edge interdisciplinary research
MOTIVATION

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

- Reinforce present & future competences in the field

- Foster innovation

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

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
VISION

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

- 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

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

Mobility behaviour

Transport and energy

Urban planning and land use

Transport economics

Multimodality
ORGANISATION & SCOPE

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
PROJECTS

CATS

- 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
Sponsor: La Poste / Postbus

Objective: to analyze non-customers and their interest into new attractive services

PI: Prof. V. Kaufmann
PROJECTS

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
NEARCTIS

- 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

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**Warning:**
Accident at \((x, y, z)\)
PROJECTS

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
Projects

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!

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

http://transport.epfl.ch

TraCE - TRANSPORTATION CENTER EPFL
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