



11th ITS EUROPEAN CONGRESS
DELIVERING FUTURE CITIES NOW

Glasgow, Scotland | 6-9 June 2016

Stakeholder Workshop - Educational and Professional Development in ITS

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EURECOM – ITS-EduNet



What is EURECOM?

Graduate school and research center in communication systems



school of Institut Mines Telecom



Academia



Industry and institutions



- Objectives:
 - Provide the necessary **technical and practical knowledge** required by engineers and project managers responsible for **designing ITS applications**
 - Providing a **balanced theoretical and practical expertise** required by leading industries in the ITS domain.
 - **Analysis and quantifications of the benefits** of communications for ITS on the environments and the society.
- Organization:
 - An **academic part** (project, lectures) over 9 months
 - One Fall semester, fundamentals
 - One Spring semester, getting specific...
 - A **practical internship** over 6 months
- Lecture's Samples:
 - **Basic Tools and Knowledge**
 - Mathematical Tools
 - Simulation and Emulation Methodology
 - Standardization Activities
 - **Mobility**
 - Mobility Modeling
 - Transport Planning
 - Infrastructure Planning
 - **Communications**
 - Mobile Wireless Access Technologies
 - Mobile Networking
 - Mobile application and services

Website: <http://www.eurecom.fr/en/teaching/post-master-degree/intelligent-transport-systems>

ITS-EduNet:

International Network for training, education and outreach in the field of ITS

Type of Organisation:

Registered Association

Main objective:

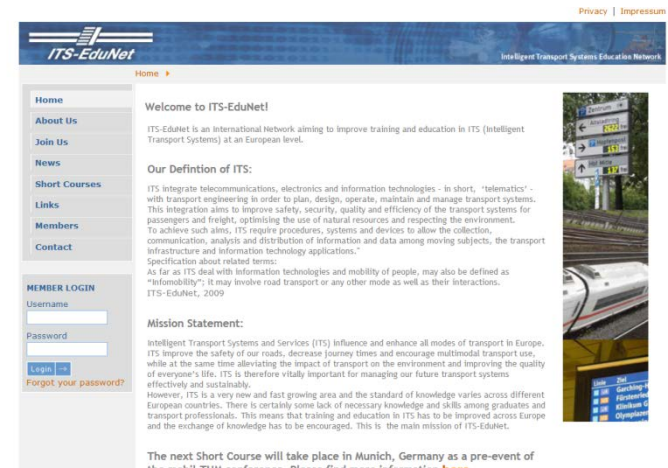
To improve training and education in ITS and allow a better exchange of ITS knowledge

Members:

- Munich University of Technology, (Germany)
- Politecnico di Torino (Italy)
- Czech Technical University (Czech Republic)
- Fachhochschule Technikum Wien (Austria)
- Linköping University (Sweden)
- Technische Universität Graz (Austria)
- Kungliga Tekniska Högskolan (Sweden)
- University of Ljubljana (Slovenia)
- University of South Hampton (Great Britain)
- EURECOM (France)
- ITS Norway (associate member)



1. Organize short training courses and webinars
2. Establish and maintain a centralised source of information regarding the network (joint website and knowledge database)
3. Exchange information concerning teaching, training courses and other related activities and events
4. Create and exchange up-to-date, standardized teaching material
5. Disseminate research results through their incorporation in education programmes
6. Mobilize the network to initialize joint research projects
7. Facilitate the exchange of teachers



Why do we need Continuous Education in ITS ??

ITS is important:

- ITS is a key aspect to improve transport efficiency, quality of travelling, safety and economy and reduce the environmental impact.
- ITS promise to influence all modes of transport in Europe and all over the world.

But...

- ITS is developing very fast, is constantly in progress. There is a current lack of necessary knowledge and skills among transport professionals and degree holders.
- Most universities do not respond to this current development in a sufficient way.
- The standard of knowledge is varying in different countries.
- ... education and training in ITS is neglected!
- ... the establishment of a European (Wold-wide) ITS education network should help!

- **Various programs/knowledge base exist (or being built)**
 - **European Master on ITS** by Czech Technical University in Prague, the Linköping University and University of Applied Sciences Vienna (<http://www.em-its.eu/>)
 - **ITS EduNet** (<http://www.its-edunet.org/>)
 - **Telecom Evolution** by Institut Mine Telecom (<http://www.telecom-evolution.fr/>)
 - **Post-graduate on Communication for ITS** by EURECOM (<http://www.eurecom.fr/en/teaching/post-master-degree/intelligent-transport-systems>)
 - **Master on ITS** by TU Munich (<http://www.transportation.bgu.tum.de>)
 - **Knowledge base by PIARC-RNO** (<http://rno-its.piarc.org/en>)
 - training to be developed during the next PIARC cycle (2016-2019)
 - ...
- **Do we need anything new ??**
 - Current programs are strongly **linked to Universities** (require registration)
 - Current programs require a **minimum pre-degree** (Bachelor or even Master)
 - Current programs require **physical presence** (mostly)
 - Current programs require **multi-months training**
- **A way to go: on-line training**
 - Very modular
 - No physical presence required
 - Powerful platforms (and players..) exist (MOOC)
 - IEEE (ComSoc & VTS) started to provide e-learning programs !!

On-line Training: Limitations and Strategies

- **Challenges behind on-line Resources**
 - How can Universities and Colleges get :
 - **Financial support** if resources are provided by them ?
 - **Quality Control** if not ?
 - Universities and Colleges have been for centuries the ‘Place to Learn’
 - **On-line resources need to be linked to them !**
 - ITS requires **practical as much as theoretical knowledge !!**
 - How can we provide practical knowledge ‘on-line’?
- **Multiple Strategies for different objectives**
 - **Full program**
 - Master program: for new type of engineers; still large focus to adapt to different ITS profile
 - **Short sessions**
 - Summer/Winter School; continuing education for current engineers; focused on specific training; can be provided by different expect universities in a network; still need logistics
 - **Full MOOC**
 - On-line materials; continuing educations (serious doubt on full master); very focuses; issue: ITS training would focus on hands-on to be ready for industry; not fully 'theoretical training'..how to conduct lab/experimental work remotely?
 - **Hybrid (ITS-EduNet approach):**
 - **Theoretical training:** on-line
 - **Practical training:** short sessions (summer school etc.)

How to make ITS Continuous Education happen ?

- **Definition of an Team of volunteers**
 - Leading and coordinating the process
 - Various background to maximize the impact and contacts
- **Build an integrated program**
 - Identify required competences from Industry
 - Balance practice and theory
- **Need a dialogue with universities / engineering schools and other training organizations**
 - Identify a list of competences
 - Identify ECTS credits
- **Need to keep it simple !!**
 - If new on-line material s are required, simple solutions preferred !!
 - Maximum re-use of already available resources
- **Need to clarify the funding model**
 - Most complex aspect – refer to the previous rule
- **Need to identify an appropriate certificate**
 - EU-wide recognized
 - Industry accepted
- **Define ITS !!**
 - Different understanding...
 - PIARC RNO-ITS important !!

- **Do we need to be certified by Universities ?**
 - Professional education is one of the tasks of the professional societies (IEEE, ACM etc..) or leading industry
 - Example: if you are CISCO certified, you are not trained by a University
- **Need a prominent Website**
 - **PIARC RNO-ITS** is a good option
 - But due to the various communities, **a federation is preferred !!**
 - Agreements with professional societies and universities to use their on-line resources & practical programs (hackathon, hands-on...)
- **Need lobbying and marketing**
 - Endorsement from prominent players !!
 - Example: EC Erasmus program, professional societies, ERTICO
- **Investigate e-learning programs from IEEE**
 - Example: **IEEE Connected Vehicle Initiative** e-Learning program
 - Starting 'soon' with several voice-overPPT 45' presentations
 - May receive IEEE e-learning credits