Stakeholder Workshop - Educational and Professional Development in ITS

Prof. Jérôme Härri
EURECOM – ITS-EduNet
What is EURECOM?

Graduate school and research center in communication systems

Academia

Industry and institutions
EURECOM Post-Graduate Program on C-ITS

• 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

What is ITS-EduNet

**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)
Main Objectives

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 (World-wide) ITS education network should help!
ITS (Continuous) Education

• 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/)
  – 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 materials 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 !!
Some Proposals & Thoughts

• Do we need to be certified by Universities?
  – Professional educations is one of the task 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 receives IEEE e-learning credits