The Master Program on Navigation and Related Applications in Torino and the JEAGAL Project: a China-Europe cooperation

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Istituto Superiore Mario Boella

Beijing - December 2006
Outline

1 – Why a Master on Global Navigation Satellite Systems (GNSS) ?

2 – Overview of the Master Program

3 – Details on the UN/Italy Fellowship Programme

4 – The first two editions

5 – The JEAGAL project

6 – Conclusions

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Why a Master on GNSS?

- **GALILEO** will be the European Global Navigation Satellite System expected to be in operation in **2010**
- New and innovative services exploiting the **positioning** information
- Skilled personnel required for the development and management of innovative **navigation-related applications**
- **Boost for research** in the field in GNSS in Europe

**need for educational programs on GNSS in Europe**
Overview of the Master Program

The Italian University system after 1999

Pre-University Education (13 years)

Laurea
Bachelor of Science (BS) (3 years)

Master I livello
Specialising Master I level (1 year)

Laurea Specialistica
Master of Science (2 years)

Master II livello
Specialising Master II level (1 year)

Dottorato
PhD (3 years)

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Overview of the Master Program

Requirements for Admission

- Students with a 5-year curriculum
- Degree on:
  - Information Technology
  - Electronic Engineering
  - Communications Engineering
  - Aerospace Engineering
  - Environmental Engineering
- Good knowledge of English language

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Overview of the Master Program

The Masters lasts 1 year:
- 12 classes over 3 quarters (50 ECTS)
- The fourth quarter is devoted to an internship to be carried out in a company (30 ECTS)
Overview of the Master Program

The Master is a joint initiative of

Politecnico di Torino

Istituto Superiore Mario Boella

with the cooperation of

INRIM Galileo Ferraris and UN OOSA

United Nations
Office for Outer Space Affairs

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Details on UN/Italy Fellowship

“Istituto Superiore Mario Boella (ISMB) and Politecnico di Torino of Italy have established a Long Term Fellowship Programme which will provide scientists and specialists from developing countries with an opportunity to receive a Master Degree in Navigation and Related Applications.”

United Nations Vienna, June 2004

The fellowship is therefore the possibility for student selected by United Nations to attend the Master
Details on UN/Italy Fellowship

The agreement among Politecnico di Torino, ISMB and UN-OOSA covers the following aspects:

- Contribution to the Master Curriculum definition
- Financial Support
- Master Organization
- Master Promotion
- Student Selection

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The agreement among Politecnico di Torino, ISMB and UN–OOSA covers the following aspects:

- Contribution to the Master Curriculum definition
- Financial Support
- Master Promotion
- Student Selection
- Master Organization

The program of the courses has been prepared by the Masters Scientific Committee and discussed with the UN–OOSA representatives. The Masters programme has been organised with the co-operation of officers of UN–OOSA.

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The agreement among Politecnico di Torino, ISMB and UN-OOSA covers the following aspects:

- **Master Organization**
- **Financial Support**
- **Master Promotion**
- **Student Selection**

The Masters and the Fellowship initiatives have been promoted through the UN web site and in all the UN Educational Centres in the world.

5 students are selected yearly by UN through the UN Regional Educational Centres.
Details on UN/Italy Fellowship

The agreement among Politecnico di Torino, ISMB and UN-OOSA covers the following aspects:

- Contribution to the Master Curriculum definition
- Financial Support
- Master Organization
- The 5 students selected by UN receive a scholarship by ISMB to attend the Master
- Student Selection

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The first two editions

First Edition: students from 9 countries trained

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The first two editions

Second Edition: students from 9 countries trained

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<td>Other</td>
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The JEAGAL Project

Joint European-Asian educational and application development programme on GALileo

• Funded by the European Commission under the Asia IT&C programme line

“…foster economic growth and understanding between Europe and Asia through better awareness, access to, and use of Information and Communication Technologies”
The JEAGAL Project

Joint European-Asian educational and application development programme on GALileo

• It aims to increase co-operation between European and Asian research institutions
• It is focused on Global Navigation Satellite Systems (GNSS)
• Main interest is in Galileo, the future European GNSS
JEAGAL Objectives

- Contribute to the **awareness** on Galileo
  - Workshops
- Spread the **knowledge** of the new European GNSS in China and Vietnam
  - Galileo Labs
- Set up long lasting **international cooperation**
- Create a **coordinated group** of European experts (research and education) on GNSS
JEAGAL Activities

First phase

• Kick-off meeting in Torino (March 2005)
• Preparation and delivery of first round of workshops in China and Vietnam (June-July 2005)

Second phase

• 10 Asian candidates attend the Master on Navigation and Related Applications in Torino (October 05 – June 06)
JEAGAL Activities

Third phase

• Galileo Labs are set up at Asian Universities premises
• Candidates elaborate their thesis project: tools to be made available to all Galileo Labs
• Open learning material prepared

Fourth phase

• Second round of workshops in China and Vietnam (November 2006)
JEAGAL Partners

Italy
• Istituto Superiore Mario Boella - Torino
• Politecnico di Torino

Spain
• Universitat Politècnica de Catalunya - Barcelona

China
• Southeast University - Nanjing

Vietnam
• Hanoi University of Technology

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Istituto Superiore Mario Boella (ISMB)

• **Mission:** Empowerment of ICT research, high level training/education and business intelligence

• **Goals:**
  – Build an ICT national and international focal point
  – Promote a strong integration between ICT operators on highly innovative programs and projects
  – Achieve synergy between university and socioeconomic system
Istituto Superiore Mario Boella (ISMB)

• Activities
  – Research
  – High Level Training and Education
  – ICT & Society

• Labs in partnership with Politecnico
  – e-Security
  – Photonics
  – Networking
  – Systems and Applications
  – Navigation
  – Wireless Technologies for multimedia
  – Nanotechnologies and microelectronics
  – Antennas and EMC
Politecnico di Torino

- The oldest Technical University in Italy (founded in 1859)
- About 24,600 students:
  - 17,900 Engineering
- Staff:
  - 863 professors & researchers
- 4 faculties in engineering with 24 curricula and degrees.
- 2 faculties in architecture with 7 curricula and degrees.
  - 18 Departments
  - 35 Doctoral school curricula
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International Curricula

2nd level Master in:
- Wireless Communications
- Optical Communications & Optoelectronics
- Navigation and Related Applications
- Management of Cultural Heritage
- Town Planning for Developing Countries

European Joint Curricula

- LIFI: French-Italian 1st cycle degree in ICTs
- French-Italian-Swiss 2nd cycle degree in microsystems and nanotechnologies
- Institut Eurecom (Sophia Antipolis)
- Italian-Spanish-French-Irish 1st cycle degree in European Business with Technology
- French-Italian 2nd level Master on plastic materials

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Universitat Politècnica de Catalunya (UPC)

- Public institution.
- 3 Campus in different cities
- 22 Schools, 40 Departments, 4 Institutes
- Faculties: 2,500
- Students 35,000
- PhD students 2,700
- 47 Doctorate Programs
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UPC offers a broad education in:

- Electrical Engineering
- Architecture
- Telecommunication Engineering
- Mathematics
- Computer Science Engineering
- Optics
- Civil Engineering
- Nautical Engineering
- Aeronautics (Air Navigation Engineering)
- ....
Southeast University (SEU) is located in Nanjing, Jiangsu Province. SEU main campus is standing at the center of Nanjing city.
The relevant Education and Research Units in SEU supporting to the Institute of Navigation, Position & Instrumentation

- **Dept. Radio Engineering**
  - State Key Lab. of Millimeter Waves
  - National Key Lab. of Mobile Communication
  - RF & Optical Integrated Circuits R&D Center
  - Signal & Information Processing R&D Center

- **Dept. Electronic Engineering**
  - Micro-electronics Eng. Center
  - Optic – electronics Eng. Center

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Established in 1956, the leading higher education institution in the field of science and technology

At present, as a key university, HUT has 1800 employees including 1500 Faculty members
25,000 undergraduate students
2000 graduate students

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Hanoi University of Technology

1. Faculty of Applied Mathematics
2. Faculty of Chemical Engineering
3. Faculty of Economics and Management
4. Faculty of Electronics and Telecommunications
5. Faculty of Electricity
6. Faculty of Engineering Education
7. Faculty of Information Technology
8. Faculty of Mechanical Engineering
9. Faculty of Metallurgy and Materials Technology
10. Faculty of Textile Engineering
11. Faculty of Part-time Training
12. Faculty of Foreign Languages
13. Faculty of Social Sciences
14. Department of Physical Education

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JEAGAL Results

Kick-off meeting

• Excellent interaction among participants
• Main guidelines for future actions elaborated
• Structure of workshops deeply analyzed

First round of workshops

• Great interest with consistent participation of academic and political authorities to opening sessions
• Large participation of students to all presentations
• Possible improvements:
  ✓ material in Chinese/Vietnamese language
JEAGAL Results

Master on Navigation
- All the students obtained the Master Degree
- One of the students received the Degree with Honour
- One of the students is now at the Oregon University (PhD)

Second round of workshops
- Held in November 2006
- Students that attended the Master delivered seminars at the workshops

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JEAGAL Results

Follow-up

• Memorandum of Understanding already signed between ISMB and SEU
• Memorandum of Understanding between ISMB and Vietnamese Partner is being prepared
• A new project proposal submitted last October

To promote common research and training activities in the coming years
Further information . . .

- Master on Navigation and Related Applications
  http://didattica.polito.it/master/navigation
  http://www.oosa.unvienna.org

- JEAGAL Project
  www.ismb.it/jeagal

- EU-Asia IT&C Phase II