

Master Program in Navigation and Related Applications in Torino

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ICG Bangalore 4-7 September 2007

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M. Boella
ISMB
Istituto Superiore Mario Boella

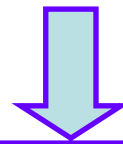
Outline

- 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 – Conclusions**



Why a Master on GNSS ?

- **GALILEO** will be the European Global Navigation Satellite System expected to be in operation in **2012**
- **Boost for research** in the field in GNSS in Europe
- Skilled personnel required for the development and management of innovative **navigation-related applications**



need for educational programs on GNSS in Europe

A joint initiative on education

The Master is a **joint initiative** of

Politecnico di Torino



Istituto Superiore Mario Boella

with the cooperation of

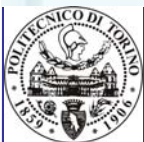
INRIM Galileo Ferraris

and UN OOSA



United Nations

**Office for Outer
Space Affairs**



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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



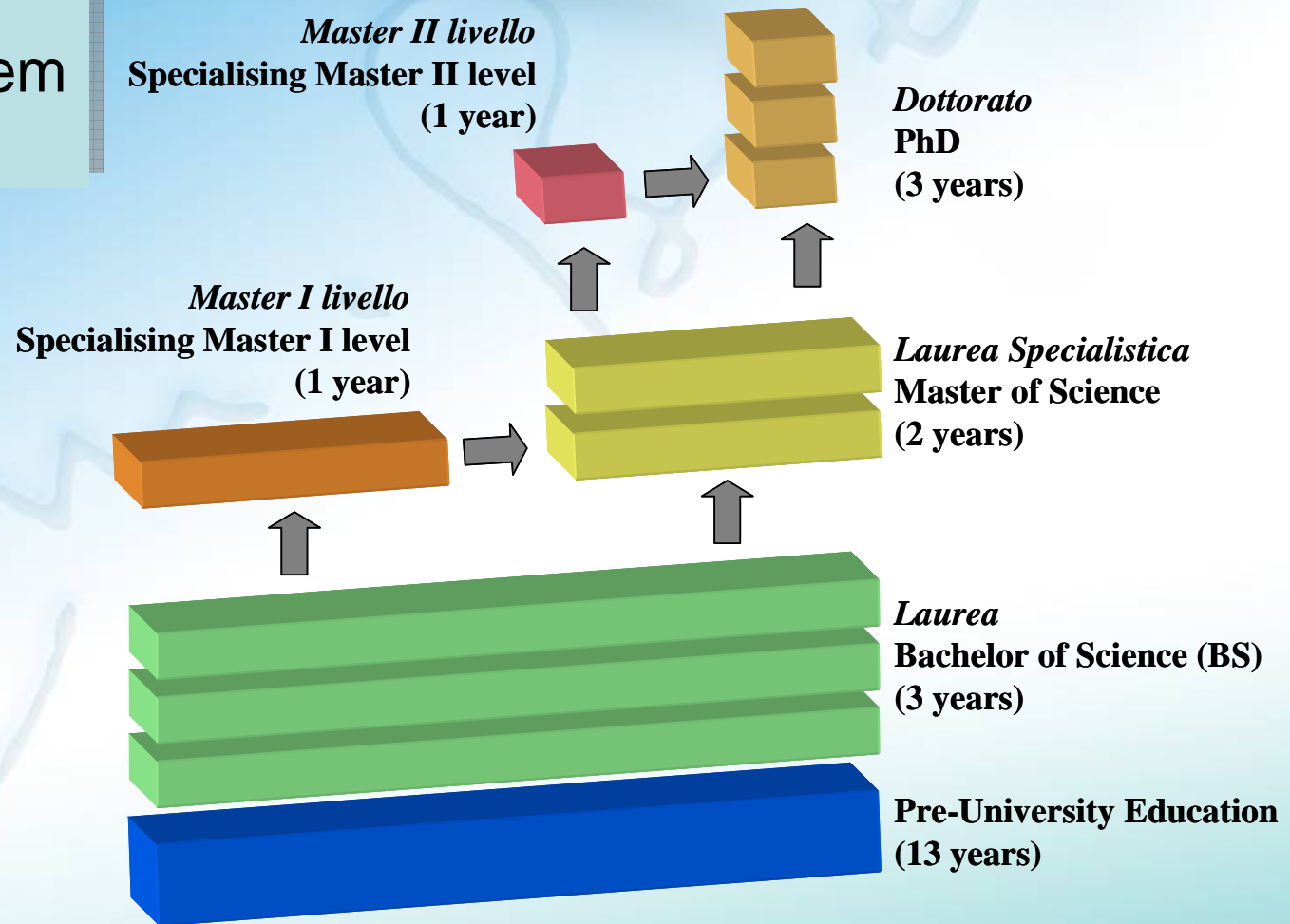
Istituto Superiore Mario Boella (ISMB)

- Non-profit research institute
- **Mission:** Empowerment of ICT research, high level training/education and business intelligence
- **8 Labs** in partnership with Politecnico
- **Goals:**
 - Promote a **strong integration** between ICT operators on highly innovative programs and projects
 - Achieve **synergy** between university and socioeconomic system



Structure of Education in Italy

The Italian University system after 1999



Overview of the Master Program

Requirements for Admission

Students with a **5-year** university curriculum

Degree on:

- ❖ **Information Technology**
 - Electronic Engineering
 - Communications Engineering
- ❖ **Aerospace** Engineering
- ❖ **Environmental** Engineering

Good knowledge of **English language**



Overview of the Master Program

The Masters lasts 1 year:

- 12 classes over 3 quarters (50 ECTS)
- The fourth quarter devoted to an internship to be carried out in a company (30 ECTS)



- GNSS introduction
- Timing in navigation systems
- Timescales in GPS and Galileo
- Software radio receivers
- GPS and Galileo Receivers
- Synchronization (PLL, carrier phase, etc..)

12 ECTS

Navigation systems and DSP
 signal processing
 Geomatics and orbits
11 ECTS

- Integration between satellite and cellular localization systems
- Environmental

16 ECTS

- Algorithm and instruments for timescale generation
- Synchronisation and automatic measurements

16 ECTS



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 ***students 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:

The program of the courses has been prepared by the Masters Scientific Committee and discussed with UN-OOSA representatives.

The 5 students selected by UN receive a scholarship by ISMB to attend the Master.

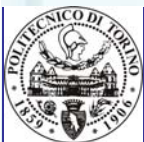
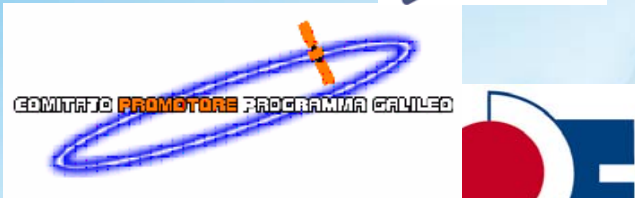
The Masters programme has been promoted through the website and in all the UN offices of UN-OOSA.

Students are selected yearly by UN through the UN Regional Educational Centres.



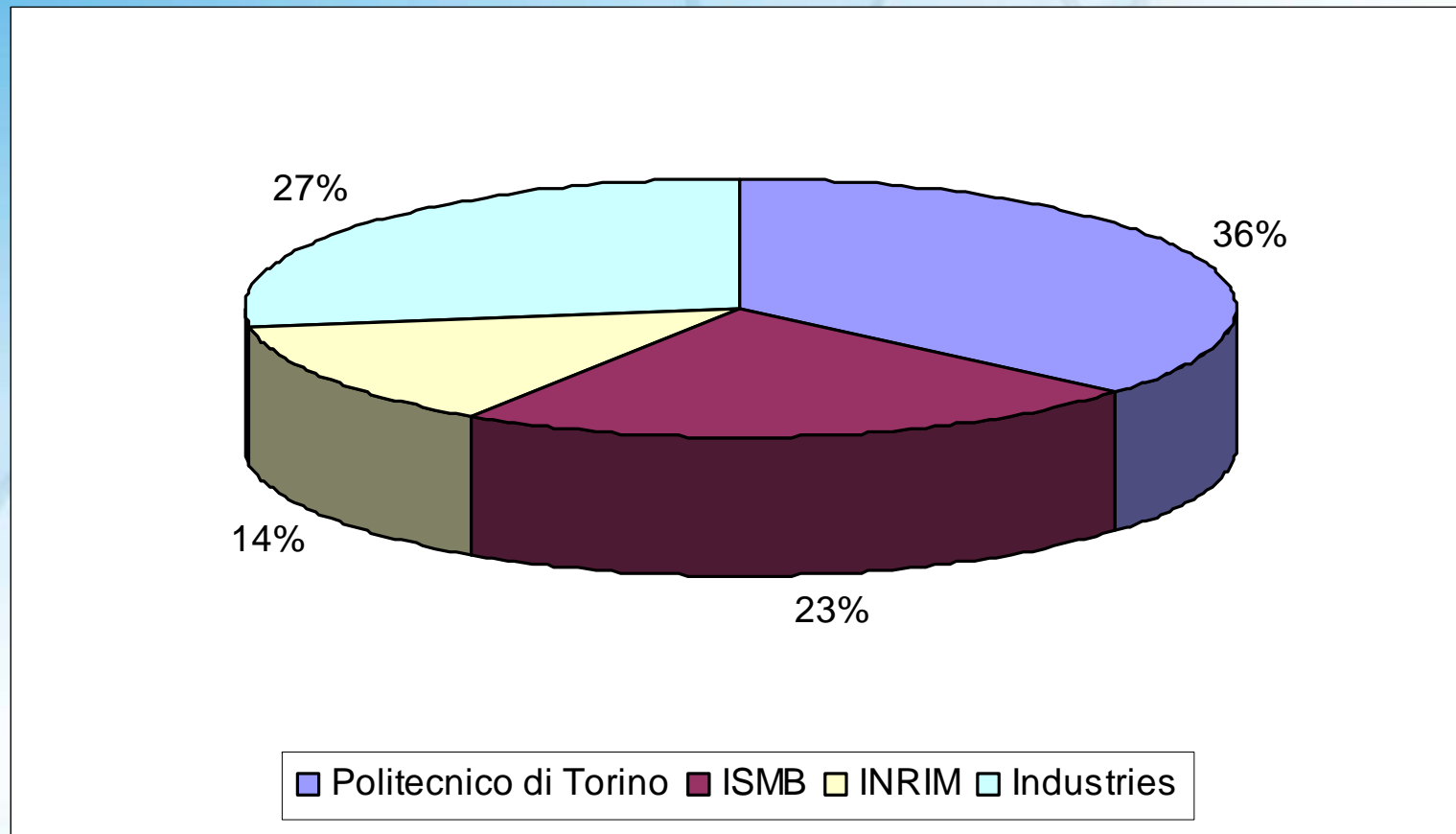
The academia-industry interaction

But also industries and international bodies contribute to the Master with scholarships, lessons, and seminars:



The academia-industry interaction

Teachers' affiliation



The first three editions

UN/ISMB Project

Country	Students/ Edition
Pakistan	2/1,3
Sri Lanka	1/1
Jordan	1/1
Ghana	1/1
Iran	1/2
Algeria	1/2
Nigeria	2/1,2
Georgia	1/3
Vietnam	1/3
Mexico	1/3

ALPIP Project

Country	Students/ Edition
Argentina	1/1
Brazil	1/1
Ecuador	1/1
Mexico	1/2
Colombia	1/3

ASIAN Project

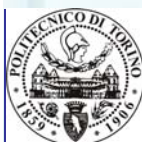
Country	Students/ Edition
Indonesia	1/1
Vietnam	1/1

National funds

Country	Students/ Edition
France	2
Italy	13/1,2,3

JEAGAL Project

Country	Students/ Edition
China	6/2
Vietnam	4/2



Final comments

- Students **actively participate** to the course activities
- Seminars offered by industries and international bodies were **enthusiastically welcome** by the students
- Students obtained **good results** in their examinations
- Students coming from so different countries and cultures succeeded in **interact and integrate** their experience with very **positive results** in intellectual and cultural exchanges
- About all the graduated students are now **working** in the field



Information on:

<http://didattica.polito.it/master/navigation>

<http://www.oosa.univienna.org>

Email to:

Master.universitari@polito.it





Thank you!



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