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The G-Train Project: Supporting GNSS Education in Europe



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G-TRAIN Objectives

- Based on the EC FP6 ERIG (Education, Research and Innovation in GNSS) project recommendations on education, the G-TRAIN objectives are to:
 - Strengthen **top level education** in the field of GNSS
 - Set up a **framework** for higher education by addressing different educational initiatives as well as networking activities in GNSS education
- The project addresses second and third-level **higher education (MSc, Specializing Master and PhD)** and encompasses both initial and continuing education



G-TRAIN Objectives

- G-TRAIN framework:
 - 3-year project started in Jan 2010
 - Provides a combination of **short term actions** and the set up of a **long term framework** for GNSS education
 - Initiates the **coordination of some already existing initiatives in Europe**
 - Ensures **compliance to the Bologna process**



Outline

- **Creation of a European Master of Science in GNSS**
 - Lead by ENAC in collaboration with ISAE
- **Support to the Polito Specializing Master**
 - Lead by Politecnico di Torino
- **Support to PhDs**
 - Lead by University FAF Munich (IFEN)
- **Creation of a SatNav University Network (SUN)**
 - Lead by University FAF Munich (IFEN)



1 - Creation of an MSc in GNSS

Overall Objective

- Fulfil ERIG recommendation stating that “there is a lack of education in GNSS fundamental techniques” by contributing to the education of young staff ready to be operational in GNSS companies or research centres

Set-Up of the MSc

- Starting date: Sept. 2012
- One location: ENAC, Toulouse, France
- 2-year collaborative MSc, in English in order to attract international students, and compliant with the Bologna process
- Partners: ENAC, ISAE, Politecnico di Torino and Univ. FAF Munich
- MSc accredited by the French Ministry of Higher Education



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1 - Creation of an MSc in GNSS

MSc Structure

- **First 3 semesters:** academic training based on
 - fundamental and advanced courses in the scientific and engineering fields surrounding GNSS and telecom. (math, signal processing, estimation, signal propagation, antenna, receiver design, system engineering, etc.)
 - detailed courses on GNSS and its applications including their requirements and specificities (civil aviation, geodesy, pedestrian and vehicular positioning, LBS, etc...)
 - classes in business, project management, IPRs, etc.
- **4th semester:** 5-6 months internship in a company or a lab to prepare the students to their professional life.



1 - Creation of an MSc in GNSS

Collaboration between Partners

- **At the teaching level:** blocks of 1-week courses provided by the academic partners other than ENAC
- **At the internship level:** by welcoming students in their labs during their internship and make them benefit from their relations with industrial partners.
- **At the institutional level** by a collaborative agreement between partners

Other important points

- **EC/GSA Grants:** EC/GSA will provide **nine** 4000-Euros grants to European (FP7) students to enroll in the MSc in 2012
- Currently strengthening **industrial support** to the MSc
- Possibility for **students exchange programs**
- More info on <http://www.enac.fr/en/menu/master-gnss-1> (currently being updated)



2 - Support to the Polito Specializing Master

Objectives

- Leverage on existing 1-year Specializing Master in Torino - Master in Navigation and Related Applications (MNRA) - by proposing at European level a Specializing Master on GNSS (3rd level education in Bologna)





2 - Support to the Polito Specializing Master

International Activities for Students

- Promote mobility of MNRA students through 2 internships/year spent in Toulouse and Munich

Syllabus Enrichment

- Enrich the current syllabus exploiting the expertise of the partner ENAC (“WAAS/EGNOS and Air Traffic Management”)
- Based on ERIG recommendation, creation of a dedicated short course on Business in GNSS.



2 - Support to the Polito Specializing Master

Cooperation with Companies

- Organization of workshops aiming at providing students with linking opportunities with companies
- To offer companies with the opportunity of hearing from students about their Pilot Projects
- Promotion of MNRA as long term training for professionals
- Remark: the Polito MNRA is already part of the "UN/Italy Long-term Fellowship Programme on GNSS and Related Applications"



3 – Support to PhDs

Objectives

- To counter-balance ERIG results highlighting that the number of PhDs in Europe is less than the number of PhDs in US or China
- Propose actions aiming at supporting PhD students during their thesis providing advanced training and supporting them at an early stage to network with other PhD students, young researchers and known professionals as well as discuss their research ideas and results.

3 initiatives created within G-TRAIN

- GNSS PhD Summit
- GNSS PhD Training
- PhD Grants



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3 - Support to PhDs

GNSS PhD Summit

- 1-day event aiming at fostering the networking skills of PhD students:
 - Open to young researchers or PhD candidates
 - Offers an international platform to discuss their PhD topic and research results with recognized academic professors and other participants.
 - Provides the possibility for networking at an early stage of the career.
 - Possibility to apply for a travel grant
- 2 events so far (2010, 2011): 24 participants from 7 countries.



3 – Support to PhDs

PhD Days

- 3-day event addressing PhD education by providing fundamental and advanced lessons given by recognized specialists.
 - Open to PhD students
 - Offered once a year in a different location
 - Possibility to apply for a travel grant
- First event in Munich, Germany, in May 2011: 23 participants from 9 countries
- Next event in May 2012 in Toulouse, France



3 – Support to PhDs

PhD Grants

- Offers support to PhD students attending relevant GNSS conference, workshops and summer schools.
- PhD students can apply for a grant to attend one of the following events (2011)
 - ION GNSS conferences
 - ICL-GNSS Conference
 - GNSS PhD Training
 - GNSS PhD Summit
- 2011: up to 8 students per year were selected on the basis of meritocratic criteria.





4 - Creation of a SatNav University Network (SUN)

Objectives of the SUN

- to link universities and providers of higher education on satellite navigation,
- to improve the educational process and curricula,
- to propose new strategies for education in GNSS to fulfil the needs in the design and development of GNSS systems and related applications,
- to give advice to and be a point of contact for national and international authorities regarding GNSS education,
- to be a link to existing groups and providers of GNSS education,
- to promote GNSS education,
- to raise awareness, promote and disseminate information on higher education opportunities in the field of satellite navigation,
- to support students already enrolled in GNSS studies.



4 - Creation of a SatNav University Network (SUN)

Current state

- Founding members are the G-TRAIN consortium members.
- Draft partnership agreement has been prepared to include new members and partners
 - Applicants for **membership** should be providers of higher/academic education in GNSS
 - Applicants for **partnership** should be organisation related to GNSS
- Two working groups currently active:
 - **legal and institutional matters** related to establishing joint educational offers
 - **dissemination and communication**



4 - Creation of a SatNav University Network (SUN)

- Current website: www.gnss-sun.eu
 - Application forms as members or partners
 - Information about upcoming GNSS events
 - Available GNSS education for students and professionals
 - Job and PhD postings
 - ...

→ Join in if you are interested!



Conclusions and Contacts

Project Outcomes and Continuation

- G-TRAIN is entering its last year
- Initiatives based on concrete actions have been successful and promising
- These initiatives will continue beyond G-TRAIN

Contacts

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