What is the GENSO Task Force

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1   Introduction

The Global Educational Network for Satellite Operations (GENSO), is a student project coordinate by the European Space Agency (ESA) Education Office under the auspices of the International Space Education Board (ISEB). This board consists of representatives from the education departments of CSA, CNES, ESA, JAXA and NASA.

The GENSO Task Force (GTF) is a workgroup addressed to students of the University of Valladolid, strongly oriented to students from Telecomm Engineering, due to the nature of the project.

The GENSO Task Force will participate in the deployment of a radio-amateur satellite tracking ground station in the Telecomm College of the University of Valladolid. Among its objectives, it is worth mentioning the set up of Terminal Node Controller (TNC) hardware and antenna systems and the development of JAVA applications in coordination with ESA Education Office. Those applications are aimed to improve the functionalities of the tracking station system and to increase the educational benefits of the system.

This is a cooperation project with ESA and being in a preliminary stage at the Telecomm. College of Valladolid, there are several issues to address. Despite the starting difficulties, this document tries to explain some questions that are arising during this initial set up.

1.1   What can you expect from GTF

During the last five years, some students from this college got interested in ESA Education programs. They took the risk and applied for different projects and grants, doing the work by themselves. To the best of my knowledge, some of them are now working in:

- ESA – ESOC: European Space Operation Centre / Darmstadt (Germany): 2 Telecomm Engineers from this college.

- VEGA Space / Darmstadt. 1 Telecomm Engineer from this college.

- ESA – ESTEC: European Research and Technology Centre / Noordwijk (The Netherlands). 2 Telecomm Engineer from this college.

Thus, the GTF is intended to be an introduction to ESA activities. The benefits you can get depend absolutely on you. There are no grants and no academic credits available, but of course, you can try to solve these issues by yourself for your benefit. You can use your work to start a master thesis ('career project') or to reduce/tradeworkload in related academic subjects, but again, it will depend on your commitment, the quality of the work you are performing and the evaluation of the corresponding professor once you have demonstrated your abilities during the work in the GTF.

The good point is that if you perform a professional work, you will have an experience with ESA, you will get new contacts (networking)… and of course, there are some more benefits, like the possibility of travelling abroad but they really depend on you.

1.2   As a student, what is expected from you

You must manage by yourself: you won't get much assistance, just coordination from the head of the

GTF. Most of the effort will come from you, and you will have to be able to work in a multinational team, with people with a different cultural background and that you have probably never met face to face. It is quite possible that you will never meet them during the course of the project. And of course, English language skills are really recommended: last small satellite project in which students from this university were involved (YES2) required information exchange with Russian participants, so… what do you prefer, to speak English или говорить на русском языке? Thus, all documents will be issued in English as it is the working language that everybody uses in the projects and is the only way to ensure knowledge transfer after someone leaves the project. You wouldn't like to get a pile of documents in Danish when you start in the project, would you?

If you feel identified with the statement: "*Engineering skills and a 'technical touch" we are looking for you.* This means that among your hobbies there is some stuff related to applied engineering, i.e., you enjoy programming games or applications just for fun, hacking or setting up computer devices, even at a low level (assembler, device drivers). Maybe you like fixing electronics or maybe you have met with friends to set up a radio-amateur system. Maybe you are a fan of space technology, you now what the ATV is and you follow the news about the ISS. See the *Dilbert movie* included in the document and links section to get the point. If you are able to accept a challenge by yourself, not depending on other people we might have one for you.

Remember: when studying a degree, some people just pass over it and some people enjoy what they are studying and try to get more out of it. It's hard to do the effort with all the subjects, but at least it must be done with some of them. At the laboratory, some students are able to tackle a problem never addressed, research, and solve it after putting in some hard work or even go deeper inside. Some other students just rely on their partners, take their data and just solve the task following strictly what was requested to do. Both attitudes are useful in life, but GTF cannot afford the latter one.

1.3   To take the risk

As the reader can realize, there are great expectations, but no direct reward in the short term: this is just a personal question. Therefore, if you take the risk, you are welcome, but this means commitment and putting things into work. If you are used to put things into work, you know what I mean: patience, troubles, headaches and a great reward when succeeding. If you don't understand this point, think carefully about the convenience of joining the GTF. Be honest with you and your expectations.

2   Workgroups

Again, this is a preliminary stage, but after direct communication with ESA personnel, at first glance these tasks are available. So the teams (one-person of multiple persons) should address the following questions, extracted from the *Call of Proposals* document:

- GTF-Radio. It will address the installation of the hardware, antennas, transceivers required to set up the satellite tracking station.

- GTF-1. Adding modem support (TNC). For RX/TX packet data from and to a spacecraft.

- GTF-6. Software Modem implementation in JAVA.

- GTF-9. Hardware configuration (graphical drag'n'drop).

- GTF-15. NAT-Traversal, in order to reduce the network configuration effort required by the end user.

- GTF-26. Teaching exercises. Topics on satellite communications: JAVA implementation.

3   Getting up to date

The hosting webpage for the GTF documents and ads is at the Telecomm. College webpage: http://www.tel.uva.es/~trii/genso.html

4   Congratulations and good luck!

If you still feel capable to join the GTF, great! Worthy things require brave people and this is a quest to find such people in times in which people are used to short-time rewards and looking for fast success and showing no patience. But don't forget to be honest with you and your expectations.

All the best,

Dr. Ramón de la Rosa Steinz – GTF-Head.