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It will be soon 10 years that I have been working in Eutelsat SA [1] in Paris, France. When I arrived, in January 2002, the company had recently turned in a private French company, after several decades as an inter-governmental organization (IGO). The heritance from that previous status was a multicultural environment, counting 25 different nationalities among the 380-person staff.

▲ Roberta in an experimental vehicle in Japan

It was exactly what I was looking for from my 1st job experience: I graduated in my hometown in Italy and, although I have always been attracted by foreign cultures and languages, I had no occasions to go for abroad student programs during my studentship. The first months were totally dedicated to the discovery: a new city/country, new colleagues, and, last but not the least, the new "space" environment as working for a satellite operator.

As I graduated in Computer Science as Software Engineer, I had not a deep knowledge of the satellites domain, not even as a user of DTH TV (direct-to-home satellite television). I was recruited in a R&D team that had started developing a platform for an ancestor of today's triple-play offers (TV/phone/internet). It was the Opensky Team, named after the service OPENSKY™, offering live TV channels on streaming + high speed internet + multimedia contents datacast, on a common PC equipped with a satellite adapter card and connected to the satellite dish at home.

The system made use of Ku-band on the forward link, and the telephone line for the return link. I worked firstly on the part dealing with the file transfers: we defined a proprietary protocol for handling the files to be transferred, as well as the API (application program interface) and the GUI (graphical user interface) for both server and client side. The Push application (this was its name) was used in both B2C (business-to-customers) and B2B (business-to-business) scenarios. Then we added a new feature for sending to the clients also alerts and news messages, sort of instant messaging in broadcast. The system used the DVB over IP and the programming was done in Java, Python and mySQL/PostgreSQL.

Launched in the early 2000s, the Opensky service had a remarkable success in Europe, North Africa and Middle East, at a time where the terrestrial broadband (ADSL) was not yet largely deployed. A few hundreds of devotees still use today the service, although it will be officially closed in the next months, after the migration of the clients to the brand new tooway™ service operating in Ka-band – but this is another story / another working team in Eutelsat!

Once the definition and development of Opensky accomplished, my team moved to other R&D activities and became the Innovation Team, operating, among others, in the mobility field. I worked in many collaborative projects with foreigners companies that allowed me to travel abroad for meetings and not only. One of these projects was the MOWGLY project [2], completed in 2007, for satellite broadband access to aircrafts, trains and vessels, still in Ku-band but this time using the standards DVB-S2/DVB-RCS, and whose trials led me to experience test aircrafts and high-speed trains.

Then it was time for a new frequency spectrum, the S-band at 2GHz assigned to Mobile Satellite Services (MSS) in Europe. With a wavelength of approximately 15cm, the S-band satellite signal can be received with small omnidirectional antennas and it is suitable for vehicular and handheld reception. As Eutelsat was going to launch (Q1-2009) the first S-band satellite in Europe, named W2A, in collaboration with

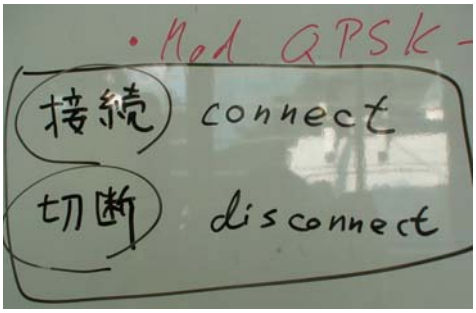
the European Space Agency (ESA) and other partners we set up the J-Ortigia project [3]. The mission of the project was to prepare the way to the commercial deployment of MSSs in Europe based on the DVB-SH standard at that time under-definition. The mobile TV on vehicles and handhelds was seen as a rising opportunity for Solaris Mobile, the joint venture created between Eutelsat and SES-Astra, but everything was still to be created: antennas, receivers, modulators/demodulators, etc. We therefore joined our efforts with hardware manufacturers and researchers to develop the first prototypes. And, as the prototypes needed to be validated in a real environment, we moved everything to Japan for 2-week trials with the ETS-VIII satellite, having the same characteristics of our satellite under-construction. During the autumn 2008 I spent 10 days in Tokyo, perfectly hosted by NICT engineers in their premises in Koganei, together with a team of J-Ortigia engineers coming from Germany, Italy and Spain. Even if we worked very hard 7days per week to overcome the difficulties and take the maximum advantage from the mission, that journey was a very nice introduction of the country and the people in Japan.

▲ NICT's experimental vehicle

Now we are working on increasing the potentiality of the mobile broadcasting by adding a return channel based on non real-time short messages (the E-SSA protocol [4], under standardization process at ETSI), and opening the way to new interactive broadcast services.

After 10 years, Eutelsat is Europe's leading satellite operator and the third largest globally with its fleet of 27 geostationary satellites reaching two thirds of the world population, and counting now more than 500 employees of 32 nationalities.

During these (almost) 10 years I have had the opportunity to work within the same team, in which we have together developed new skills and boosted our know-how; however, the fact we have touched to several innovative sectors multiplies my job experiences and makes me feel as I have been working in several different companies. I am grateful to Eutelsat for that, and I hope that in the next 10 years I will continue collecting opportunities and experiences as up to now. The satellite communications still have many unknown sides for me: having used as far the space segment as the transport channel for delivering contents and services, I am always impressed and fascinated when watching a satellite modeling or the launch of a new satellite.■



▲ For better mutual understanding during QSPK trials

▲ Staying at NICT, autumn 2008.

***REFERENCES***

[1] Eutelsat SA, http://www.eutelsat.com

[2] MOWGLY, MObile Wideband Global Link sYstem, http://www.mowgly.org/

[3] J-Ortigia, S-band Satellite Broadcasting Experimentation Campaign through NICT ETS-VIII satellite, http://telecom.esa.int/telecom/www/object/index.cfm?fobjectid=29990

[4] E-SSA, Enhanced Spread Spectrum Aloha. O. Del Rio Herrero, R. De Gaudenzi, "A high efficiency scheme for large-scale satellite mobile messaging systems", in the Proc. of the 10th International Workshop on Signal Processing for Space Communications, SPSC 2008, 6-8 Oct. 2008, Rhodes Island, Greece, pp. 1-9.

***GLOSSARY***

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| ADSL | Asymmetric DSL |
| API | Application Program Interface |
| B2B | Business to Business |
| B2C | Business to Costumers |
| DTH-TV | Direct-To-Home Television |
| DVB | Digital Video Broadcasting |
| DVB-RCS | Digital Video Broadcasting – Return Channel via Satellite |
| DVB-S2 | Digital Video Broadcasting – Satellite 2nd generation |
| DVB-SH | Digital Video Broadcasting – Satellite services to Handhelds |
| ESA | European Space Agency |
| E-SSA | Enhanced Spread Spectrum Aloha |
| ETSI | European Telecommunications Standards Institute |
| GUI | Graphical User Interface |
| IGO | Inter-Governmental Organization |
| IP | Internet Protocol |
| MSS | Mobile Satellite Services |
| NICT | National Institute for Information and Communication Technology |
| R&D | Research and Development |