Developing the emerging research potential of Romanian Lidar Centre - DELICE

1. Project description

In the current period the need for top-level research in atmospheric remote sensing becomes a critical issue for EU and in the same time an important opportunity for centres like ROLICE (ROmanian LIdar CEntre). ROLICE falls under the wing of the National Institute of R&D for Optoelectronics (INOE). **INOE was single beneficiary of DELICE project.**

Being one of the most advanced centres for atmospheric research in Romania, and the only one involved in laser remote sensing at that moment, ROLICE has recognized its weaknesses related both to its scientific activity at European level, and to its collaboration with public authorities and stakeholders at national level.

To overcome these weaknesses, DELICE proposed as main objective to increase the research capacities of the National Institute of R&D for Optoelectronics (INOE 2000) by developing the remote sensing activities to stimulate its full research potential contributing to the realisation of European Research Area as a ”common market for research”.

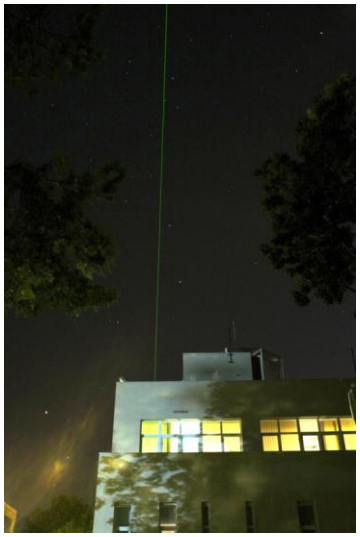
a) Unlocking the ROmanian LIdar CEntre (ROLICE) potential for better integration in specific research networks such EARLINET (European Aerosol Research Lidar NETwork, http://www.earlinet.org) and AERONET (AErosol RObotic NETwork, http://aeronet.gsfc.nasa.gov);
b) Increasing quantitatively and qualitatively the regional capacity to contribute to GEOSS (Global Earth Observation System of Systems), an initiatives of GEO (Group on Earth Observation, http://www.earthobservations.org/index.html);
c) Extending strategic partnerships with other research groups working in the domain of laser remote sensing and complementary.

2. Team members

One of the DELICE project's objectives was to develop the expertise of the team members. Contacts with several important European and global networks for atmospheric science (European Aerosol Research LIdar NETwork, AErosol RObotic NETwork, EUropean Supersites for Atmospheric Aerosol Research) were active also, but since the infrastructure was not proper, we could not provide them high accuracy results. The personnel also were not properly trained as to satisfy the standards of top-level research teams in Europe. Overall, at the moment when DELICE was submitted to FP7-REGPOT, the enthusiasm of "important players" on the market of atmospheric science towards our products was limited, although it was clear for everybody that data from this part of Europe is urgently needed

For this were organized several trainings in our institute and also at some counterparts laboratories (*National Technical University of Athens, Laser Remote Sensing Unit, Université Lille in Villeneuve d’Asc - France, Research at Laboratoire d'Optique Atmosphérique, Ecole des Mines de Douai, Département Chimie et Environnement- France, Leipzig Institute of Tropospheric Physics - Germany*). This need arise from the fact that, up to DELICE, no other laboratory in the country had access to such modern instruments, and therefore nor the knowledge or the

expertise was available at local institutions. Both existing and newly employed personnel were trained via secondments to counterparts laboratories, in their specific area of expertise.



3. Research Infrastructure

Another important objective of DELICE project was to improve the existing research infrastructure by purchasing new up-to-date scientific equipments, install and test them and upgrading the most important existing ones.

Using around 45% of DELICE's budget, was purchased state-of-the-art instruments (microwave radiometer, sodar, aerosol mass spectrometer) and upgraded the existing ones (multiwavelength Raman lidar, scanning eye-safe lidar) so that our laboratory is today one the most advanced and complex remote sensing centres in Europe. At the end of the project, all the instruments are operational (new equipments purchased, existing equipments upgraded).

4. Human resources

Regarding human resources we had in view two objectives: to develop the expertise of the existing team members and also employment of supplementary personnel. Employment was done in order to strengthen INOE's research capacity to face new challenges by making use of experts (including from Diaspora), young researchers (MSc and PhD St.) and strengthening the non-research activities. Two experienced researchers and 1 engineer were hired for the duration of the project, and 2 young researchers, 1 research manager and 1 marketing specialist received permanent positions.

5. Results

The main DELICE results: ►All the instruments are operational (new equipments purchased, existing equipments upgraded); ►A Market-liaison office functional, with 2 specialists employed; ►3 new researchers are working now at INOE, their research is focused on instruments optimization, satellite imagery, database and programming; ►Both parts of the training (at counterparts laboratories and at ROLICE) for team members are done, including by participation to validation campaigns (9 people trained); ►ROLICE proved its potential (infrastructure and human resources) to external partners, and as consequence it was accepted to provide transnational access to the infrastructure inside ACTRIS project, is leading the planning and recruitment board of the Marie Curie ITN project ITARS and is representing Romania to EG-CLIMET COST action; ►The election of DELICE's coordinator as ICLAS (International Coordination-group on Laser Atmospheric Studies, http://iclas.hamptonu.edu/index.html) member, starting July 2010; ►New consortia formed, new proposals submitted to various funding agencies, new collaboration with private sector and national public agencies (Ministry of Environment, National Authority for Scientific Research, ROMATSA, National Administration for Meteorology) started; ►Collaboration with 6 Romanian experts from Diaspora started, in different ways, and the number of communications to international conferences, and papers published in peer-review journals has increased significantly; ►The web site and web portal are launched and updated regularly, while promotional materials were designed, executed and distributed**;** ►Several promotional actions

were organized, both scientific (OTEM 2009, 2010 and 2011 workshop, final conference, communications at international conferences and papers published), and for the public (official opening of a new centre (synergy of funds), stand at ROMENVIROTEC 2010, 2011, brochures, leaflets and presentations, mass-media interviews).

6. Impact over Romanian scientific community and society

DELICE was indeed a boost for atmospheric remote sensing in Romania from many points of view. First, it proved is possible to get support and become a high-tech facility if the motivation is strong enough. Second, it demonstrated to "old players" in atmospheric research they can count on state-of-the-art laboratories and well-trained staff in Eastern-Europe too, and by consequence our centre was invited to participate in several large-consortiums and networks. DELICE is not only about us. DELICE has deep implications in 4 other research centers in Romania, since we already started the transfer of expertise towards the newly set up Romanian Lidar Network. This involves a long-term commitment to provide data at national scale and to contribute to main European databases (http://inoe.inoe.ro/RADO). Moreover, DELICE created the frame to extend the activity in other East-European countries such as Croatia, Serbia and Slovenia. New projects were developed together with partners from within and outside Romania, to support them building laboratories and/or train the personnel in view of participating directly to GEOSS.

7. ROLICE team integration into international research groups and networks

In order to develop the expertise of the team members was organized specialized trainings with the help of our counterparts. Also, ROLICE continued its work under the agreements with EARLINET and AERONET. Moreover, part of the human resources professional development actions were carried out under the umbrella of these strategic partners. What is really important and proves that we fulfilled our objective in DELICE, is that our group was invited as partner to the 2 most significant projects at the moment dealing with atmospheric remote sensing: ACTRIS - FP7-INFRASTRUCTURES-2010-1, 262254 (coordinates an European ground-based network of stations equipped with advanced atmospheric probing instrumentation for aerosols, clouds and short-lived trace gases), and ITARS - FP7-PEOPLE-2011-ITN, 289923 (setting up a common school for young researchers, focus on remote sensing techniques, but also take into consideration synergistic use of various methods and techniques, in line with ACTRIS objectives).