ForLab Final Report: Potential Impact

As defined in the work programme, the expected impact of the topic SEC-2011.1.3-2 is the following

“To help law enforcement agencies in their analysis and to deal with explosive events in a common European approach”

ForLab has delivered a novel systematic methodology for optimizing the process of evidence collection and analysis. We aspire that our approach shall maximize the speed, reliability and accuracy of the process and ultimately make a significant step forward in the battle against terrorism reducing the time needed to identify the authors of the attack and increasing the effectiveness of the response of the Security Forces.

Today a new concept on the fight against the terrorism is widely accepted. This concept is based in the idea that the explosion of and IED is the final step in a chain of events driving any IED based attack:

1. The attack must be planned and financed
2. The people to perform the attack must be recruited
3. The IED must be prepared, a supply chain is necessary to support the construction of the IED
4. The IED must be emplaced
5. Finally the IED must be detonated at the desired time.

As we approach the step five, the chances to prevent the attack are reduced. Every time that there is an explosion of an IED it is of vital importance to retrieve as much information as possible about the inspirers of the attack, the materials used for the preparation of the device, the specific characteristics of the attack (emplacement, amount of explosive, etc) any clue that may reveal information about the previous steps that may lead to disrupt the chain of events of the next terrorist attack.

The time of reaction is a critical aspect of the fight against terror, the sooner the security forces can gain the knowledge about the author, the greater the chances of success. The information retrieved from the scene must be ready to be shared with Security Forces of friendly countries so that the terrorist and their support chain can be pursued beyond the border of the country suffering the attack.

The objective of the ForLab project is to reduce the time of response of the Security Forces by improving the existing capabilities for the analysis of the post-blast scene of an IED attack. This objective can be achieved based on the following aspects:

- Providing the investigations with tools to help on the localization of potential evidences
- Providing the investigators with tools for the objective evaluation of the quality of the evidences collected.
- Making information available immediately and in comprehensive way in the Command and control centre, making possible information sharing with other security body.
- Allowing expert investigators to guide less experienced investigators on the field form the remote Command and control centre.
- Proposing a new concept to approach the investigation of the scene based in full availability of the information gathered from the scene in real time to drive the investigation, and combine this information with the available information from previous events of similar

characteristics. The success of this approach will be multiplied the proposed solution matches the procedures in use by Security Forces of different countries of Europe.

Focussed development of existing technologies from different countries in Europe to help Security Forces in the selection and localization of the evidences and the coalition of Security Forces from several countries with industry is only possible in the context of a European programme. ForLab is a good example o this cooperation giving as results some tools highly tailored to the common need of European security forces.

In particular, the achievements of the project in detection of traces of explosives will have very positive impact on the work of the laboratories of analysis in the investigation of a post-blast event:

- on the economic aspect : to be able to discriminate on the field between the elements and to select some of them more relevant, allows more effectiveness but also avoid to make a great number of expensive (and useless) analysis in laboratories thus reducing the costs and saving valuable time.
- Although all the results get on the field must to be confirm by a police (or a specialised) laboratory: the "analytical-field-discrimination" allows to concentrate the first effort on some relevant samples which gave positive answer (about traces of explosives) on the field. If a first and relevant selection of the elements is made on the field, it allows to avoid the "jam effect" for the forensics laboratories. Indeed, if too much samples arrived at the same time to the labs with no priority given, we have a risk to "paralyse" the system, particularly in case of multiple attacks

Although ForLab was very focussed on the post-blast scene, during the execution of the project we have seen that most of the technologies and concept developed in ForLab can be applied to other crime scenes. Making a exhaustive description of the possible application of ForLab it is out of the scope and extension of this document, but we can just outline a few of those applications.

- The concept of making the electronic report on the collected evidences is exportable to virtually any crime scene.
- Te concept of creating the 3D model and 2D map of the scene and place the evidences on the map is already used in different crime scenes, but ForLab allows doing it in real time
- Getting the position of samples in an automated way (even not having the 3D model) will save a valuable of time in investigations with huge amount of evidences
- The LIBS and Raman systems have the capability to detect (or identify) virtually any substance, and the concept of a portable and reliable equipment can be exported to other crime scenes involving, to mention just a few, drugs, gunshot residues, chemical agents...
- In a similar way the LIF technology is applicable not only to the detection of polymeric debris, and the concept of analysing a an area from a standoff distance can be exported to other scenarios
- The command and control centre has been designed as an open architecture, making easy the integration of new tools that the security forces may be using in the future.

In particular, we must highlight that as a result of the project, two companies (Airbus Defence and Space and Indra) have ongoing projects to bring to the market a 3D modelling tool for forensic applications and a portable LIBS system for forensic applications with expectative to get them available within the next year.