Humanitarian Demining Research: The Future Role of the European Union

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FEATURE

Research and Technology

Humanitarian Demining: The Future Role of the European Union

This article aims to give an introduction to the information about the European Union’s (EU) Research and Technological Development (R&D) programme, available on several of the EU websites, which are listed below.

by Russell Gasser, Project Officer, Humanitarian Demining R&D

Legislative policy on landmines is determined by both the EU Council and the European Parliament, which have strongly supported the Ottawa Process and the elimination of all AP landmines within ten years of ratification of the treaty; this includes the political decision to fund mine action. The EU Research and Technological Development (R&D) programme for Humanitarian Demining (HD) is administered by the European Commission (EC). In 2000, the European Union (EU) contributed €125 million to the fight against AP landmines through both member states’ donations and funding administered through the EC. Further details of EU funding can be found at: http://europa.eu.int/commission/external_relations/mine/publication/index.html

In July 2001 the Council and the European Parliament adopted two Regula­tions on the Reinforcement of the EU Research and Technological Development (R&D) programme: the first one covering developing countries and the second one covering other countries; these are regulated by the foundations for an European Integrated and focused policy. The majority of the R&D spending was delivered in support of the Information Society Technologies (IST) programme, administered through the Directorate General Information Society (DG-INSFO) http://www.cordis.lu/index/ist/environment/projects/projectscustering.htm#clusters. Other Directorates General also played important roles in humanitarian mine action R&D, notably the Joint Research Centre.

The EU contributed to research and development, through the IST programme, is generally in the form of a maximum of 50 percent matching funds for developing demining technologies. The remainder of the funding comes from participating industrial partners. The programme is therefore oriented towards the development of prototypes, which can be turned into commercially successful outcomes so that the participating businesses can recover their R&D costs from future sales of demining equipment, or other equipment in the case of dial­"..."
Networks of Excellence

Networks of Excellence (NoE) in FP6 will be substantially different from the Thematic Networks in earlier framework programmes—the use of a similar name does not imply the same primary goals or structures. The document at http://ec.europa.eu/int/comm/research/fp6/pdf/noe_0705021.pdf clearly sets out the purpose of this new instrument: "Networks of excellence are designed to strengthen scientific and technological excellence on a particular research topic by networking together at European level the critical mass of resources and expertise needed to provide European leadership and to be a world force in that topic.

Networks of excellence are therefore an instrument designed primarily to address the fragmentation of European research. Their main deliverable consists of a durable structuring and shaping of the way that research in Europe is carried out on particular research topics. Though it is not their primary purpose, networks of excellence will generate knowledge on the topic through the support they provide to enable excellent teams to work together. It is important that these networks do not act as "closed clubs", concentrating only on strengthening the excellence of the partners inside the network. Each network will therefore also be given a mission to spread excellence beyond the boundaries of its partnership. Training will be an essential component of this mission.

"It is expected that larger networks may involve several hundred of researchers. Others may be of a much more limited size, provided that they pursue ambitious goals and mobilise the critical mass needed to reach their achievement.”

The proposed method of funding NoE will be in the form of a one-off grant towards the cost of integration, paid per person joining the network. The key term of a NoE is the Joint Programme of Activities, which goes far beyond current activities like Internet Forums and can even include proposals for exchange of personnel between institutions for extended periods.

Impact of FP6 on Demining Research

The new instruments pose some challenges, as well as offer some real opportunities for HD research and development. Many participants in HD research in Europe are already welcoming the potential structuring effect and increased co-ordination that could arise from one or more NoE. For example, improved co-ordination of the many test facilities located throughout Europe could bring immediate benefits both in terms of comparing results and also in promoting a complementarity which allows individual sites to focus on their specific key areas of competence. Similarly, developing areas of common interest in research could not only reduce duplication of scarce resources but also allow faster progress towards the goal of eliminating mines. Managing the requirements of common-interest collaboration between competing commercial companies remains a major challenge, which has to be addressed in a realistic manner in FP6.

Integrated Projects also offer some challenges, as well as opportunities, to develop key technologies in areas such as airborne area reduction as well as tools and equipment used during individual mine detection and elimination. It is now clear that attempts by individual organisations to work alone and develop new equipment in isolation are no longer an option. European wide collaboration on a large scale is required, the necessity to form groupings or "consorcia" is now urgent and this is especially true for SMEs who wish to participate in FP6. Given the proposed scale of activities in IPs, it seems likely that the market for humanitarian demining equipment may, by itself, not offer a viable return on investment for companies investing 50 percent of research costs to match the 50 percent paid by the EC. Increasing attention is being given to dual-use and multiple-use technologies to help resolve this issue; for example explosive vapour detection has potential applications in humanitarian demining, civil security (e.g. airports), range remediation and military purposes.

Within a single IP it is envisaged that there will be integration from developing the concept with "principal stakeholders, including users" through to transfer of the finished technology, demonstration and training, and also integration across the applications of dual and multiple-use technologies, see http://ec.europa.eu.int/comm/research/fp6/pdf/ip_provisions_070502.pdf. Overall, the goal of the EU remains to deliver the new tools and equipment that humanitarian deminers urgently need and want.

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Driving the HD Machine in the African Bush

Almost every country in Southern Africa has a mine problem and most of these countries have a tradition of solving their own problems. Because the region is famous for its mine-resistant vehicles, this paper concentrates on innovative mechanical technologies—but it could just as easily have concentrated on PPE or testing facilities where Southern Africa also leads the way.

by Andy Smith, AVS Mine Action Consultants

R&D in Southern Africa

If you measure research and development (R&D) success by the presence of the equipment somewhere in the field, then a lot of useless equipment can be called a "success." This is because those who supported the R&D want to be able to claim success so they "give" equipment to field users. Sometimes this is a direct gift, sometimes it is formally a "lease" or is tied to further funding. This equipment would often be wholly uneconomic for the users to buy—because its utility is far too limited to justify the expense. Sometimes it is not even wanted, but "political" concern lead to it being accepted. If you measure R&D success in terms of the equipment being purchased, then the number of R&D successes falls dramatically. Moreover, most of the R&D that has achieved this success was "home-grown." It did not originate in the inventor and defence research centers of the developed world. Most of it was also very low cost. Often it was the result of inspired lateral thinking that led to improving existing technology and methods.

The most famous—and successful—mechanised mine-detection system ever was the Pinkie, developed in Zimbabwe (then Rhodesia). Unfortunately it was only good at locating large steel-cased mines recently buried on roads, but that was what it was designed to do and it saved many lives. With its low-weight, "V"-hull, sacrificial wheels and high-frequency VHF detector pans it was truly revolutionary in the 1970s.

Mechanical Assistance

When looking for more sophisticated mines laid a long time before they are cleared, the use of machines has to change. Old minefields in many parts of the world tend to be overgrown, and the vegetation must be cut to allow the Pinkie a single-seat mine-resistant mine-detection vehicle.

Steel Wheels and Rollers

Using machines to "do what the vegetation began with MECHEM's steel-wheel and rollers in the early 1990s. The tracks and rollers were attached to AVS mine-resistant vehicles developed during South Africa's involvement in the Angola and Mozambique wars.

The wheels and rollers "crushed" the undergrowth, which tended to spring back up unless the machines were followed up by deminers immediately. Deminers had to follow up because the wheels and rollers left mines and ordinance behind. The system pushed a cushion of vegetation over the mines making it less likely that the wheels would initiate them. In the first half of the 1990s, several deminers were severely injured or killed while following this kind of machine preparation. These examples are recorded in the DDIV/DIDAS introduced in another paper in this journal.) Civilians were also injured in areas supposedly cleared by these machines. As a result, the use of a steel wheel and roller methods

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