Humanitarian Demining Research:

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 (RTD) programme, available on several of the EU websites, which are listed below.

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Legislative policy on landmines is determined by the European Council and 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 (RTD) 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 mine action can be found at: http://europa.eu.int/comm/external_relations/mine/publication/index.htm.

In July 2001 the Council and the European Parliament adopted two Regulations on the Reinforcement of the EU response against AP landmines: the first one covering developing countries and the second one covering other countries; the regulations lay the foundations for a European integrated and focused policy. The majority of the RTD spending was delivered in support of the Information Society Technologies (IST) programme administered through the Directorate General Information Society (DG-INFSO) http://www.cordis.lu/ist/ka1/environment/projects/clustering.htm#cluster3 . Other Directorates General also played important roles in humanitarian mine action RTD, notably the Joint Research Centre.

The EU contribution 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 developments 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 dual-use technologies. This is a very different R&D environment from many military programmes which are 100 percent funded and thus do not have the same commercial drive and commercial constraints. The EC is also seeking results in the short to mid term in order to aid compliance with the goal of APL clearance by 2010. Academic partners and Support Measures aimed at providing a service to demining RTD can be funded at up to 100 percent of additional costs.

Detailed information about past and present EU co-funded RTD can be found on the Eudem2 website (http://www.eudem.vub.ac.be). Follow the route *Technologies - Research & Development Projects - EU-Financed Projects*. Eudem2 is itself a project funded by the EU and Swiss government to provide an information service and technology watch programme to the humanitarian demining research community, and Eudem2 builds on the success of its predecessor, Eudem. The current RTD projects focus on new sensors and multi-sensor data fusion and range from artificial dog noses based on biotechnology to improved Area Reduction using advanced airborne sensors and data fusion.

The Joint Research Centre of the European Commission also supports HD research through a number of actions, principally through its Institute for the Protection and Security of the Citizen (IPSC) http://humanitarian-security.jrc.it/index.html. The JRC runs the ARIS network for demining research http://demining.jrc.it/aris/, and the main website about EU humanitarian demining http://eu-mine-actions.jrc.cec.eu.int/demining.asp. The IPSC Institute also hosts the secretariat of the International Test and Evaluation Program for Humanitarian Demining (ITEP) http://www.itep.ws/.

European Union R&D in the Coming Years: Framework Programme 6 (2002–2006)

The EU organises its RTD activities in multi-annual "Framework Programmes" which typically last five years. Framework Programme 5 (FP5) is just finishing and FP6 will last from 2002 to 2006, inclusive. The Framework Programme defines the purpose and overall goals for all RTD throughout the EU and describes the working practices and methods, which are known officially as "instruments." The instruments cannot be specifically focused on the needs of any one area; humanitarian demining's needs are not necessarily identical to those of the much larger RTD programmes in such areas as telecommunications and transport, which also use the same instruments within the same framework programme.

There is going to be a very large difference between FP6 and previous framework programmes. The gap is so large that it has been described as a "paradigm shift." Participating in RTD in FP6 using the new "instruments" will be very different from any previous EU research. Within the structure of the Framework Programme, HD R&D will be carried out in particular through the Priority 2 "Information Society Technologies" activities, under the first building block "Focusing and Integrating Community Research." Test and evaluation activities will continue to be supported by DG JRC. It might be anticipated that the proposed budget for HD RTD will be about the same as in recent years.

The European Research Area

The new European Research policy emphasises the fundamental position of the concept of the European Research Area (ERA) by stating that "The framework programme is structured in three main blocks of activities: focusing and integrating community research, structuring the European Research Area and strengthening the foundations of the European Research Area," the first and the third of which, as regards indirect actions, "should be implemented by this specific programme" (http://europa.eu.int/eur-lex/en/com/pdf/2002/en_502PC0043_01.pdf).

The thinking that lies behind FP6 is based on the need for the member countries of the EU to be more competitive with other advanced countries, notably the U.S. and Japan. In proportion to the size of their national economies, both of these countries currently spend substantially more on advanced technology R&D than European states, and the European work is more fragmented due to the number of different countries involved. FP6 aims to address this, and has proposed new "instruments" to make collaborative EU-wide research both more structured and more viable, thus allowing for a more efficient use of its resources. In the ERA, the added value gained by different programmes working together and achieving "critical mass" will, it is foreseen, significantly advance research goals.

"In its communication 'Towards a European Research Area' of January 2000, the Commission outlined the objectives and the scope of a new strategy. The vision of having a fully developed, functioning and interconnected research space, in which barriers would disappear, collaboration would flourish, and where a functional integration process would take place, was thus clearly expressed." http://europa.eu.int/comm/research/pdf/com-2001-549-en.pdf

In recent humanitarian demining meetings and conferences (e.g. IST Programme HD cluster meetings held in Brussels in November 2001 and June 2002, a conference organised by the Royal Military Academy of Belgium in April 2002, and an IST meeting to introduce FP6 to potential partners in May 2002) there has been a clear expression of a desire to improve Europe-wide co-ordination and move towards a more collaborative approach to solving the technical problems of mine action. The concept of the ERA appears to have been well received by the European HD research community.

Existing and New Instruments

Not all the existing "instruments," which have been used in previous framework programmes, will be abandoned immediately. Targeted Research Projects, similar to the current FP5 style research projects with very specific technical goals, will still be used where appropriate. A range of supporting Accompanying Measures, which provide services to researchers, will also continue. However, there will be a great deal of focus on the new instruments of Integrated Projects and Networks of Excellence.

The main website for information about the RTD programme is http://www.cordis.lu, though navigation through this large site is not always straightforward. For information about the future direction of RTD, a suitable starting point is http://www.cordis.lu/rtd2002/ which also has useful links to "Instruments," "Roadmap," "Budget" and "Background documents." The page on Instruments also leads to the site of the Directorate General for Research about the future of RTD under Framework Programme 6 (http://europa.eu.int/comm/research/fp6/networks-ip.html). This page gives access to extensive information about the new instruments, which organisations interested in participating in RTD funded by the EU in coming years may find useful.

The two most important new instruments are Integrated Projects (IPs) and Networks of Excellence (NoE).

Integrated Projects (IP)

IPs will be larger in scale and ambition than previous research projects; a high degree of ambition and hence some increase in associated risk are essential for IPs. A number of different ways of working are suggested, which range from complete definition of all participants and goals from start to finish, through to defining the goals and the core team, but working out the precise details no more than 18 months ahead and adding or dropping participants and work packages along the way. This opens one potential route for the participation of Small and Medium Enterprises (SMEs) who could be brought into an IP consortium to use their specific expertise, and who would then leave the consortium again as the work moved on to another phase, for example, test and evaluation of a prototype system.

The size of IPs is expected to be considerably larger than projects under previous framework programmes. "The value of the activities integrated by a project is expected to range up to many tens of millions of Euros. However, there will be no minimum threshold, provided of course that the necessary ambition and critical mass are there. Integrated projects are expected to have a duration of typically three to five years. However, there will be no maximum, so a longer duration could be accepted if it is necessary to deliver the objectives of a project." (http://europa.eu.int/comm/research/fp6/pdf/ip_provisions_070502.pdf)

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://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 hundreds of researchers. Others may be of a much more limited size, provided that they pursue ambitious goals and mobilise the critical mass needed to ensure their achievement."

The proposed method of funding NoEs will be in the form of a one-off grant towards the cost of integration, paid per person joining the network. The key item 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 NoEs. 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 "consortia" 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://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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