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Mine Action Technologies: Problems and Recommendations

M. Acheroy
Department of Applied Mechanics Royal Military Academy

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Mine Action Technologies: Problems and Recommendations

Mine action research and development (R&D) is an ongoing process that has yielded many insightful and invaluable technologies. Future mine action R&D will require the collaboration of end-users, donors and technologists in order to develop equipment and tools based on real needs rather than assumed needs.

Thanks to the International Test and Evaluation Programme (ITEP), much work has been undertaken to test and evaluate equipment, systems and methods against agreed standards. Nevertheless, more must be done to increase and coordinate cooperation among end-users, donors and technologists in order to develop and bring to the field equipment and tools based on real needs rather than assumed needs.

Introduction

In 1997, at the workshop accompanying the signing of the Ottawa Convention, concern was expressed at the lack of international coordination and cooperation in mine action technology. It was noted that there were no universal standards for technology, no common view on whose resources should be directed, and inadequate dialogue and understanding existed both within the R&D community and as well as with the other actors in mine action.

Even if there is still a lack of international coordination and cooperation in mine action technologies, especially among the end-users, the donors and the R&D communities, a lot of work has been done and some success stories can be reported. Significant progress has been made in the following areas (see the appendix for more details):

- Metal detector and handheld dual sensor performance, which combines metal detectors with ground penetrating radar (GPR)
- A mechanical device use and development
- Development of applications based on information technologies, such as the Information Management System for Mine Action (IIMSMA)
- Personal protective equipment (PPE) and prosthetic limb development
- Training of users to detect landmines
- PPE suitability and cost

Mine Action Technologies: A Very Difficult Problem

A lot of factors are slowing down real progress in technology and the fielding of new technology. The most important among them are the following:

- The lack of a procurement path makes fielding a technology very difficult. Consequently, developers are faced with a dead-end even when R&D, prototyping and testing and evaluation (T&E) validation (if any) are successfully accomplished.
- Mine action solutions are not universal and are often country/region-specific (soil type, climate, vegetation, socio-cultural environment, etc.). A "systems approach" needs to be used.
- Mine action technologies are diverse (e.g., ITEP recognizes six different categories: survey, detection, mechanical assistance, manual tools, personal protection and reclamation).
- Requirements for technologies are not easily defined, or easily satisfied.
- Some major advances have not been well appreciated; for example, the significant improvements in metal detectors, PPE and information technology support tools.
- Donors need to insist that clearance contracts include, where appropriate, participation by demining organisations in testing new technologies (costs repaid by donors).
- In order to solve the problem of the absence of a large enough market for humanitarian demining equipment, donors should envisage:
  - Dual-use technologies
  - The "leverage" of military technologies
  - The incremental improvement of existing tools
  - The most likely vendors of new technologies are probably already existing manufacturers of demining equipment (e.g., metal detector manufacturers). Therefore, a technology proposal should include a staff education package that takes into account the socio-cultural environment as well as a long-term training package for the maintenance and repair of equipment.

Donor Responsibilities

Clearly, donors have a key role to play, especially in supporting the introduction of new technologies that offer potential long-term cost savings to the field. This introduction of new technologies must be based on faster operations, saving lives and saving money. Technologists need donor support to establish a sound procurement process for fielding new technologies in order to have more cost-effective mine action.

Donors need to be responsible for the following points:

- Donors must now consider investing in new technology to get future gains in efficiency (thus saving money).
- Donors need to insist on steady improvements in efficiency from demining organisations.
- Donors need to insist that clearance contracts include, where appropriate, participation by demining organisations in testing new technologies (costs repaid by donors).
- In order to solve the problem of the absence of a large enough market for humanitarian demining equipment, donors should envisage:
  - Dual-use technologies
  - The "leverage" of military technologies
  - The incremental improvement of existing tools
  - The most likely vendors of new technologies are probably already existing manufacturers of demining equipment (e.g., metal detector manufacturers). Therefore, a technology proposal should include a staff education package that takes into account the socio-cultural environment as well as a long-term training package for the maintenance and repair of equipment.

End-users need to have a pro-active role and to be understanding and open regarding the process of introducing new technologies in the field. New technologies could save human lives and increase mine action efficiency.

Donor Responsibilities

The marker for mine action equipment is not large enough by itself to support the cost of bringing products to market.

- Both donors and demining organisations are naturally conservative especially regarding safety.
- Donors need to understand users' real needs. Appropriate technology must correspond to appropriate needs. Mine action funding is not necessarily just a platform for selling the donor counter's products.
- Donors must realise that clearing mined areas more quickly and efficiently may be seen as leading to unemployment for local deminers, who may thus reject new technologies. Support for improved clearance technologies must be complemented by assistance to local deminers to help them to integrate into the local productive economy when clearance is completed.
- Contract and understanding must be improved between donors and technologists.

Recommendations to End-Users

Demining organisations (or Mine Action Centers [MAC]) need to analyse which are the best technologies for their geographic, social, cultural and UXO situation. The "bottlenecks" can then be addressed (and the areas where problems do not exist should be left alone, e.g., better detectors do not help in areas with UXO in heavy vegetation).

- End-users should make use of the opportunities offered by the ITEP members for asking specific questions on technology performance and for receiving information about "tried and tested tools."2
- End-users should help technologies to understand the real needs of deminers. For example, by asking them to go to the field ("Nothing is more important than understanding the working environment.").

Recommendations to Technologists

Technologists must keep in mind that nothing is more important than understanding the working environment. In order to better serve the end-users:

- Technologists need to spend time and effort to understand the end-users' needs.
- Technologists must go to the field.
- Technologists must be aware that field users will only accept sophisticated technologies if it is simple to use and affordable.
- ITEP needs to open to end-users' questions and has a key role in providing information about "tried and tested tools" with clear information about where, why and when they are useful.
- Technologists need to understand that detection is not the only important task, but there is also a need for improved technologies for:
  - Area relocation (as to know where the mines are not)
    - Strategic planning using information technology tools
    - Programme management
  - Other key areas of mine action

Conclusion

The Convention states that "each State Party undertakes to facilitate and shall have the right to participate in the following possible exchange of equipment, material and scientific and technological information in connection with the implementation of the Ottawa Convention." This implies that such an exchange is an important undertaking to assisting States Parties in their obligations.

It is in the spirit of this provision of the Convention that all actors are urged to apply the recommendations in this document. Donors need to understand that technologies need their support to establish a sound procurement process for fielding appropriate technologies in order to have a more cost-effective mine action programme. For their part, end-users need to be pro-active, understanding and open to the process of introducing new technologies ("Nothing is more important than understanding the working environment.").
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3. Defined in this paper as affected communities, mine action operators, national authorities, regional/international organizations and donors.

4. As the shapes of the SHOs are unknown, circles were used to demonstrate the reduction of arcs in a consistent manner. Circles also represent the minimum reduction of any polylines which would show even greater reductions.

5. Designating this can be by using the "Dangerous Area" component of DMSMA.

Contact Information
Marc Achery
Signal and Image Centre
Electrical Engineering Dept.
Royal Military Academy
Avenue de la Renaissance 30
B-1000 Brussels
Tel: +32 2 375 67 40
Fax: +32 2 375 67 42
E-mail: achery@ec.rma.ac.be
Website: www.rma.rma.ac.be

Mines Action Legislation

Mine action legislation is an important, but often overlooked, part of a country’s response to UXO contamination. Consideration of the elements presented in this book will help create a framework to benefit and support mine action on the ground. The adoption of comprehensive legislation for mine action can proceed effectively and efficiently, and meet the requirements of the broader MAC. This will help facilitate the rapid removal of UXO and help reduce the long-term impact of a past conflict.

The full details of the handbook are available on the GiCHD website at www.gichd.org, or hard copies can be ordered from the Centre (see contact information below). The GiCHD is also in a position to provide training or arrange workshops on the development of legislation for mine-affected countries.

Other News

Just prior to the 5th Meeting of States Parties to the AP MBC, the GiCHD also launched another publication, called "A Guide to Mine Action." Over the past decade, mine action has rapidly developed as a humanitarian and development discipline. For a newcomer to the subject, however, the disparate nature of the sources sometimes makes it difficult to understand the complexities and inter-relationships of the different mine action components and activities. Moreover, specialists in one area of the discipline may not be aware of developments in another.

"A Guide to Mine Action" has been prepared by the GiCHD as a basic grounding to the diploma, degree, lawyer,