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Mine Action Technology Now and In The Future: Is it realistic to expect great leaps forward in technology?

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Mine Action Technology Now and In The Future: Is it realistic to expect great leaps forward in technology?

In order to realistically predict the future of demining technologies and techniques, past and present technology must first be examined and critiqued.

The term "mine action" comprises a series of related activities, all aiming to minimize the problem of landmines. Mine action is no longer a simple mine removal process reserved for a few specialized demining organisations. It is a complex process of activities undertaken by many different commercial and non-commercial organisations - both national and international. When I began my career in the early 90s, we didn't worry too much about the scope and complexity of the mine problem. We focused on slow and steady removal of landmines. Each village or road cleared was a victory. The appreciation shown by people who were able to come back and cultivate their land without risking being maimed or killed was sufficient for us to feel that we were doing something useful. Today, most researchers better understand the scope of the landmine problem and there was a build-up of funds and interest to combat them. Research organizations, many of which were already involved in related research, jumped on this wave of public opinion and found easy access to funds. While exploiting this opportunity, they argued strongly among themselves that 1 have attended, I have met ignorant experts. How ever, there have been some targeted and seemingly successful research efforts. We therefore have to ask where those results are, and why those technologies have not appeared in the field.

Researchers test ideas and develop concepts. Their role may not include product development and field-validation. In addition, equipment development is costly and requires a defined user "market". The demining "market" is unlike other industrial markets in many ways. Specifically, it is small and highly artificial, with market forces driven by other than economic agendas. For example, the prospect of increased efficiency and reduced costs are not always enough to ensure the purchase and use of the equipment. This may be a result of four factors:

1. A demining program is planned by the program manager in-country, and is individual in approach. Many program managers have limited understanding about the size of the user market and internal mechanisms controlling the acceptance of new technology into the field. There is a distinct difference between what researchers, manufacturers and donors believe is the user market, and what it actually is.

2. The demining industry is small, and there are limits as to how many members of different organizations are required to fund national efforts sometimes in excess of $300 million (U.S.) has been spent on research and development of new technologies. Current demining contractors, companies and organizations - both national and international, have shortfalls in current technology had been pointed by the lack of progress. In 1994, when it became clear that current technology had been pointed by the lack of progress. In 1994, when it became clear that current technology was inadequate, and we have aimed for great leaps forward. More than $300 million (U.S.) has been spent on research and development of new technologies. Current demining companies and organizations were jumping on the bandwagon to win the post-cold war re duction in orders. Donors became more responsible, as more and more organizations or specialists who sought advice and reported on the progress. We have come to understand that the demining technology is not realistic to expect great leaps forward in technology?
The Future of Mine Action

Technology At a Glance

Twenty three years after the first internationally assessed landmine camps, in Afghanistan, small-scale demining efforts still take place in that country. The problem has, however, been reduced to a minimum, and will soon reach an "acceptable" level. The global humanitarian mission has been challenging, but there is still a medium-term demining effort in front of us. The Mine Ban Convention has now modified its goal to reducing the landmine problem to a tolerable minimum by 2020.

Currently, the Convention has more than 200 signatory states. Machines have found a definite role in mine and UXO clearance and area reduction. Norms have been established on how to apply mechanical support, and the required level of quality control behind them. Mechanical mine clearance machines are integrated into most demining programs. The machines are smaller and cheaper, and decreasing organizations are more skilled at clearing landmines. Due to the size of the problem, the mechanical mine clearance machines are remotely controlled, thus reducing the risk of being an ornament of cabins. Each machine type has been placed in a clearance category and there are terms and standards on how to use machines from the different categories.

Vapour detection has become one of the most important detection technologies. Vapour detectors are low cost, efficient, and have been used on battlefields. However, vapour detectors do not work effectively in climates where the vapour does not easily dissipate. In practice, this means that vapour detectors are only effective in areas where it is tolerable for humans and animals to be exposed to the vapour.

The Remote Explosive Scent System (REST) has been recognized as a very cost effective area reduction tool. It is far more efficient than any other approach. However, it has proven to have limited application in avoiding combat areas due to the presence of UXO and contamination from bomb/missile explosions. Many organizations use the system now, although there are only a few specialized filter analysis centers. This has proved to be more cost effective than establishing analysis centers in each demining theatre.

Metal detectors are more sensitive and have a better discrimination rate. They are still preferred in some areas, and are especially within national programs in countries with low labour costs. Every demining program has a manual demining component, but it is typically small.

The Ground Penetrating Radar (GPR) technology has been developed but field deployment is still slow. The detectors are more expensive and require different technological approaches. Recognizing this, researchers and manufacturers have targeted the two requirements differently. Area reduction has been given the highest priority by the governments but the highest immediate impact on people's life due to the large amounts of land released.

The number of organizations involved in demining, both commercial and non-commercial, has increased. In 2002, the trend was still positive, and the number of organizations has continued to grow. However, in recent years, the number of organizations has decreased. The number of organizations involved in demining has also decreased. In 2002, the trend was still positive, and the number of organizations has continued to grow. However, in recent years, the number of organizations has decreased.

What About Existing Technologies?

Managers must beware of showing a passive attitude towards further development of current technology since the short, medium and even long-term effects may be much greater than that from new technology. There is a potential for improvement within most current technologies.

Managers are highly professional within the context of used and proven technologies, but feel less confident in the context of new and untested methods. Some professional managers often receive credit based on the performance of their chosen technology rather than on how cost-effective the technology is. The professional minimum clearance is often done with a better discrimination rate. This is a great success, maintaining the professionalism. Ten year funding commitments have also been limited in obvious way than current vapour detection technology. Mechanical mine clearance is also faster, but most machines are either unreliable, impractical or both. These "old" approaches can be improved and this may be a more sound approach than investing all our funds in something new. We can use vapour detection as one example as, in my opinion, it is one of the most promising technologies.

Managers must be aware of the potential for improvement within most current technologies.

Managers with the most advanced technology will have a clear advantage in the future.

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