

Building a future without landmines

Mines Advisory Group

The Challenge

- Save lives by clearing landmines and other unexploded ordnance in countries around the world

The Benefits

- Faster removal of unexploded devices and landmines
- Priority clearance of farmland to help alleviate poverty
- Improved safety for land clearance teams
- A more productive and efficient global organisation

The Mines Advisory Group has removed nearly 5 million landmines and unexploded ordnance from countries around the world – but millions more remain undetected, putting communities at risk. The organisation is now using a suite of solutions from Esri's ArcGIS platform to help clear land more quickly and save lives.

The Challenge

The Mines Advisory Group (MAG) aims to save lives by removing the millions of landmines, booby traps and unexploded bombs that still lurk beneath the ground in countries ravaged by years of brutal war. In Cambodia, MAG has already cleared over 74,600 landmines and 224,400 items of weaponry, but the risk to human life remains immense. Undetected landmines and other abandoned explosive devices continue to kill and injure two people every week in Cambodia, deepening the poverty suffered by thousands of families by impeding their use of the land for farming.

Traditionally, teams of specialists from MAG, working on the ground in Cambodia, relied on a series of manual processes to collect, collate and share information in the field. Observations about search areas were recorded on paper and then typed into spreadsheets and reports at the base. Senior managers could not gain an overall picture of sites until the notes were collated and analysed centrally and, as a result, they were unable to make the rapid decisions required about how best to deploy resources.

The Solution

MAG had been using Esri's ArcGIS as a corporate geospatial information system (GIS) for many years, but the technology was used purely for recording data and generating maps. "Historically, GIS was about showing, on a map, the areas of land we had cleared," says Greg Secomb, Global Information Systems Advisor, MAG. "We decided to start using GIS not only as a reporting tool, but also as an operational tool to help us improve our effectiveness in the field."

Commencing in Cambodia, MAG in collaboration with HD R and D Program began to use ArcGIS Online and Collector App for ArcGIS to collect data in the field and make it instantly available to team leaders. "I know exactly where my teams are and how much ground they have cleared, without having to wait two months to get a map," says Shathel Fahs, Technical Field Manager, Team Leader, at MAG. "It is so powerful to see the map progressing every day."

At the same time, the organisation replaced all its paper-based reporting in the field in Cambodia with Survey123 for ArcGIS. Described by Fahs as "amazing", this mobile survey app is used by 17 teams across the country to collect geo-referenced information on all unexploded ordnance (UXO) detected, in dual languages. The data collected is shared instantly via ArcGIS Online and is more accurate, as there is no risk of mistakes occurring during the re-typing of handwritten notes.



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“Using ArcGIS, MAG can cover more ground, more quickly, enabling local communities to live safer lives, sooner.”

Shathel Fahs Technical Field Manager, Team Leader, MAG



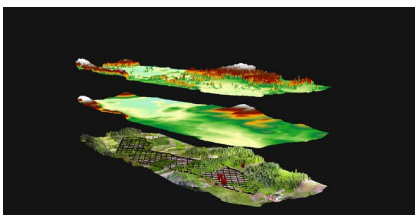
Battle Area Clearance (BAC) teams operational dashboard.

MAG now also uses drones in Cambodia to fly autonomously over contaminated areas and photograph the land, in high resolution. Using Esri's Drones2Map for ArcGIS app, it then transfers these images directly to ArcGIS Online, where the information is instantly accessible to operatives working in the area. As a result, team leaders no longer have to rely on a visual assessment of the terrain, limited to the area that is within the range of their eyesight; instead they have a detailed understanding of the entire area, including beyond hills and within dense forests.

The Benefits

Faster clearance of deadly explosive devices

MAG is now able to clear land and remove potentially deadly devices in Cambodia more quickly, as it has a far better understanding of the terrain. For instance, the insight gained from Drone2Map for ArcGIS allows team leaders to better anticipate when and where they will need mechanical clearing machinery and other specialised resources. Team leaders can also change plans and redirect their teams spontaneously, as ArcGIS Online gives them a rapid picture of the situation on the ground. “Using ArcGIS, MAG can cover more ground, more quickly, enabling local communities to live safer lives, sooner,” Fahs says.



3D Analysis of Phum Vornng site in Cambodia.

Activities prioritised to alleviate poverty

The use of ArcGIS is also helping MAG to alleviate poverty in Cambodia. If a stretch of land is photographed by drone and identified by ArcGIS Online as being suitable for farming, MAG can prioritise the clearance of this area. As Fahs says, “Instead of just relying on informants for local knowledge, we can identify potential agricultural land ourselves. We can see the whole picture.”

Improved safety for mine clearance teams

With more accurate and current information available at base and in the field, MAG can make better decisions to help protect workers. The organisation can view historical data on ArcGIS Online and see how many devices were found in other similar areas and the density of them. It can then use this information to gauge the likely level of threat and ensure everyone in the team is fully briefed on what kinds of devices to expect.

A more productive and efficient global organisation

ArcGIS has undoubtedly improved the efficiency of MAG's operations in Cambodia. Indeed, five people are now each saving up to two days effort a week because they no longer need to manually enter data into spreadsheets and databases. These productivity gains will soon be multiplied, as MAG is poised to introduce the same suite of ArcGIS products throughout its entire global organisation. “We have pioneered a new way of operating in Cambodia and are excited to roll it out to all our teams, working in over 20 other countries,” Secomb says.

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