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Information-management Activities at the GICHD

by Daniel Eriksson [GICHD]

Two years have passed since a new strategy was adopted for the information-management section at the Geneva International Centre for Humanitarian Demining. A significant amount of work was completed since then, and the support and quality of the Information Management System for Mine Action has improved. The new focus on information management in a broader sense, not just limited to databases and software, has enabled country programs to collect relevant information for more effective demining operations. Although much work remains, a few key developments deserve mentioning.

The need for information-management training is a recurring mine-action concern. In feedback from past courses, students often remarked that comprehension levels in the class were too diverse, resulting in more advanced students not being challenged enough and therefore learning less. Similarly, when providing support to country programs, it was often hard to accurately assess the skill level of their information-management staff. On occasion, this resulted in countries embarking on projects too complex for their staff.

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In response, the information-management section of the GICHD developed a qualification schema. This schema, called the Mine Action Information Management Qualification Schema (MIQ), defines the standard roles in mine-action information management and outlines responsibilities with anticipated expertise. In 2010, the GICHD began conducting all its information-management training according to this schema. Although the schema lists various administrator skill levels, most countries collect relatively small amounts of complex information and can suffice with only one or two individuals trained at the administrator level.

The MIQ helps to convey the role of information-management staff in contrast to regular end users. End users are commonly those who casually browse and print maps and reports for use in their work—operations, risk education or victim assistance. With the MIQ course outline, end users can participate in training in their own language and are therefore better able to use forms that apply to their individual programs.

IMSMA is currently installed on an estimated 1,200 computers in more than 52 countries with an average of one new installation per working day. The most recent additions to the user countries are China and Palau. Considering the rotation and expansion of staff and the increased usage of important hardware and software, it can be assumed that 15 to 30 individuals need training as basic administrators every year. Including the higher training levels, the GICHD will train about 35 to 50 students annually. Only Level A1 students are selected based on their aptitude to ensure that they will benefit from the course, while other, lower level students do not need this testing. Each course requires experience in

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information systems, and is administered in Geneva, Switzerland once a year for lower level courses and twice a year for A1 programs. The courses are concluded with a written exam to determine if the student has reached the desired level of understanding.

The MIQ has increased the efficiency of the training delivered and has improved the GICHD's ability to customize information-management development to target an overall organization's goals.

Documentation and Teaching Materials

In 2010, the IMSMA New Generation manual[1] was reviewed to emphasize the relevance of appropriate information management instead of focusing on the software tool. The manual is intended for separate groups of users and administrators. The reference guide provides a quick overview to those who are not very familiar with IMSMA or how to perform certain standard procedures in IMSMA, such as printing a map or entering data. The administrative guide provides a comprehensive introduction on how to set up and manage a country system that delivers the correct decision support to the organization's managers. The traditional end-user "how-to" manual is becoming less relevant as the majority of programs adjust their IMSMA installation to their specific needs, thus making the interfaces, steps and functionalities different for each country. Although the how-to manual will be maintained, it will be used more as a general guide, since it is impossible to create a specific manual for every way the software can be installed.

A central document in development is the information-management exercise book.[2] This book aims to enable self-study for all IMSMA users at all levels. It will provide students with scenarios on which technical exercises are built, ranging from how to develop new forms to how to browse and print maps.

In addition, an online course for the use of geographic information systems in mine action will launch in the summer of 2011. It will expand on some of the more technical aspects covered in the higher level classes, guiding experienced users through the process of using tools in advanced map making and spatial analysis in IMSMA. The GICHD has developed a mine-action toolbar for Esri®ArcGIS®[3] that enables users to conduct common operations with data, lowering the threshold for users to explore advanced functionality that is too complex or costly to include in the regular IMSMA[NG].

New Technologies

With the information-management capacity of countries growing, requests for the use of advanced information technology increase. Tools that in the past were seen as too complicated are now becoming viable in an increasing number of country programs. These tools include aerial photography, satellite imagery, remote sensing in hyper-spectral or non-visible spectrums, post-processing and conventional differential GPS, three-dimension analysis of surface areas, spatial analysis, online data hosting,[4] and mobile data collection. None of these technologies are completely foolproof, and all require that a country program has a solid foundation of sound information-management practices. This includes an organized and well-maintained country database. Technology does not replace understanding of information management, and if an organization does not have the capacity to conduct proper information management using simple tools, advanced tools will only cause more errors at a higher cost.

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Nevertheless, for a mine-action program with a well-organized information-management cell, increased use of information technology is likely to be an effective way to increase efficiency. In 2010, the GICHD partnered with the European Space Agency to provide advice on an ongoing feasibility study launched in March 2011. In its first phase, it will examine the feasibility of using space technology to enhance mine-action programs. This includes navigation technology such as GPS or differential GPS technology, communication technology such as satellite phones and remote sensing such as baseline imagery for topographic maps.[5] The ESA has selected three competitive consortiums to conduct the feasibility study during 2011. If deemed successful, the prospective studies will lead to the development

of prototypes applicable to mine-action and country programs The mine-action community's involvement in this process is important to ensure that suggested uses of this technology are relevant to our work and realistic in terms of development cost and time. Tools should only be considered if they can be produced cost-effectively and used in the field within a few years.

Mobile Data Collection

A technology much closer to earth is IMSMA Mobile. It was introduced simultaneously with IMSMA^{NG}. It allows users to fill in forms directly on GPS units or phones, combining it with data from built-in GPS and range-finding sensors. The completed form is then transmitted to a regular IMSMA^{NG} installation where it is verified and submitted to the database, cutting down on the data entry and reducing some of the potential causes for inaccurate data in databases. A few countries use this application—most notably Chile. It is, however, in need of an overhaul because Microsoft$^{®}$ will no longer support the Windows CE$^{®}$ operating system—the platform IMSMA mobile uses. The GICHD is exploring various solutions to this problem, including redeveloping the software to make it compatible with Windows Mobile. However, GICHD suggests that doing so would be much too costly. A more viable option is using IMSMA Remote Entry, which provides a slimmed down and simplified version of IMSMA for data entry in rural offices. This software works on mobile phones and allows the user to submit data to IMSMA forms. Unfortunately, it does not include direct integration of sensor data as does IMSMA Mobile, meaning that measurements from a GPS or other measuring equipment require manual entry in the electronic device.

Land-Release Information Management

Land release brings with it a range of concepts affecting the way that information management has to be conducted to be efficient. This includes a new cartographic symbol set the University of Kansas developed with the GICHD's support, in addition to symbols that were developed for mine action by the International Organization for Standardization (ISO). The default forms and recommended workflows have also been scrutinized. The result is a set of recommendations on how to accommodate land-release methods in the organizational information system. Correctly done, the combination of a well performing information system and operational land-release methods will prove to be a catalyst in overall organizational management.

The Future

The other side of all this work that has been completed over the last couple of years is a drastic increase in the number of requests coming to the GICHD information-management section. The number of requests will reduce as more mine-action programs adopt IMSMA^{NG}, due to its increased efficiency and stability over older versions of IMSMA. Only a few programs out of the current 52 countries are expected to continue using older versions of IMSMA, called IMSMA Legacy, in 2012. Requests coming from one universal software will be easier to handle as the support staff does not have to maintain knowledge on multiple versions of the software. In spite of this, the demand for support will exceed the availability of services for at least another year. Internally, adjustments are being made to divert resources from software development and research to training and support. By 2013, the GICHD plans to conduct the bulk of software development in-house. Development will be very limited in scale, based solely on specific requests from the field.

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IMSMA has been very successfully deployed in mine action thus far. Many other nonprofit sectors have developed interest in using the software for their own purposes. IMSMA's built-in translation feature can be used to translate the software elements into another concept rather than a different language. As such, "hazard" could become "collapsed building," "flooded area" or "refugee camp."

Conclusion

So far, the data-collection strategy over the last two years has proven successful. New methods and technology are streamlining accurate data collection, and will hopefully become uniform across all programs in the near future. As the GICHD moves to a new strategy of IMSMA support and training instead of development and system maintenance, we can ensure the program's sustainability, regardless of its format, in the near future. ◆

Biography

Daniel Eriksson, Ph.D., is Head of the Information Management section at the GICHD. He was introduced to mine action during his Swedish military service as an explosive ordnance disposal specialist. Since completing his service in 1997, he has been involved in research and implementation of information-management and decision-support systems in Afghanistan, Iraq and Sudan. His past employers include the Swedish Rescue Services Agency, the European Commission, United Nations Office for Project Services, Vietnam Veterans of America Foundation, and Information Management and Mine Action Programs.

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Endnotes

1. Downloadable from the GICHD website: http://www.gichd.org/operational-assistance-research/information-management-imsma/resources-and-publications.
2. Currently in development at the GICHD and will be completed by September 2011.
3. The most commonly used geographical information system (GIS) software http://www.esri.com/software/arcgis/index.html.
4. The GICHD is providing a service for closed programs or low-intensity programs to host their complete database on the Internet available by username and password. This reduces the need for a local administrator in programs that see little or no change in the data.
5. The kind of maps that we commonly use to navigate. It includes elevation contours and vegetation.

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