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IMSMA® Version 4: A Collaborative Approach

From July 24 to 27, 2006, the Geneva International Centre for Humanitarian Demining hosted a workshop in Murten, Switzerland, to introduce and discuss the release of the Information Management System for Mine Action version 4. Participants included management, operations and technology professionals involved in mine-action information management. During this workshop, results from IMSMA v4 pilot field tests were presented, v4 changes and innovations were explained, and a demonstration of IMSMA v4 with new handheld and Geographic Information System components was offered. IMSMA v4 reflects a collaborative effort to improve the accuracy and ease of mine-action information management in the field.

AMSMA is a licensed and registered trademark produced by the Geneva International Centre for Humanitarian Demining, created as a database to assist in managing and standardizing mine-action data collection and information management. IMSMA has undergone several updates since its first release in 1999. The most recent version of IMSMA, v4, has gone through pilot tests in five countries and is being refined for distribution by the GICHD to all existing IMSMA users by the end of 2007. The information-management workshop hosted by the GICHD provided a forum to discuss, plan and ask questions about the then-forthcoming v4.

IMSMA v4: A Collaborative Effort

As Alan Arnold, Program Manager for the GICHD’s Mine Action Information Systems and host of the July workshop, noted, IMSMA v4 is not simply an updated version of IMSMA v3, but is new and different in significant ways. The updates to IMSMA reflect an expanded effort utilizing the collaboration of various groups in a variety of subject areas of expertise.

System and program improvements. After feedback from field users was collected to determine how IMSMA could be improved, the GICHD completed an open tender process for the work required to redesign and develop a v4 application that would enhance IMSMA’s capabilities as an information-management tool. FGM, Inc. assisted in providing information technology services to design some of IMSMA’s updated application programs. Version 4.0 is written in the Java programming language, allowing it to be compatible with a variety of operating systems, including Linux, and IMSMA no longer requires users to have Microsoft® Office or Microsoft Access database capabilities.

Building on the concepts expressed in v3, v4 provides even greater flexibility and allows users to create a customized information-management system that suits the needs of their specific mine-action situation. One example of this is that, unlike previous versions of IMSMA, which offered only predefined forms, v4 allows users to create or alter all data-collection tools (e.g., forms and surveys), reports and elements. Version 4 provides some default forms with most of the elements that were in the v3 forms, but v4 now allows these to be changed.

Additionally, new forms can be completely designed locally and from scratch. Also, v4 users can add their own forms and elements to IMSMA, arachning them to the preferred “user-defined data fields” that already exist in the system. This allows users to customize the data collection process using locally produced forms and systems-access permissions.

Flexibility is furthered with the introduction of expanded language options. Using new language-translation features, v4 can be translated into virtually any language and currently ships with Arabic, English, French, Portuguese, Russian and Spanish. If there are user systems with different language preferences, the shared system allows any of these languages to be used simultaneously and information to be formatted multiple times in different languages. Users can also now add and publish locally created forms in other regional languages.

GUM and “locality” basis. One of the major updates in v4 is the integration of a Geographic Information System component. This additional provides a geographical interface on the basic screen that is used to organize IMSMA data around the concept of “location.” Data and reports are represented by symbols on the map found on the main screen and can be accessed by theme, report, incident, date or location for geographic reports and analysis. Multiple reports associated with a single location can be stored and evaluated cumulatively over time.

The University of Kansas’ Department of Geography and Kansas Applied Remote Sensing Program joined the collaborative effort of v4 and the University of Kent (in the UK) presented a module on GIS at the conference. The University of Kenya team has created a new and standardized set of humanitarian-mine-action symbols that are used in v4’s display. They have also supplied joint operations graphic maps, Landsat satellite imagery, elevation data and population data into IMSMA v4 that are specialized for each country.

Handheld unit. A final innovation to IMSMA v4 is an additional handheld tool that allows field personnel to capture information and transfer it to their main IMSMA database with ease. The Swedish Armed Forces engineered the handheld unit through their Swedish Exploratory Ordinance Disposal and Demining Centre and it connects to the main computer (Windows Mobile 5) with a Global Positioning System, laser rangefinder binoculars and a digital camera all connected by Bluetooth® wireless technology. Formally called the Explosive Ordnance Disposal Information System Survey Tool, the EOD IS-SURVEY allows users to:

• Download IMSMA forms and data to the wireless handheld computer unit
• Enter data into forms while in the field during surveying (with location information from the GPS and the laser binoculars connected directly to the wireless handheld unit)
• Attach and save photos or other files (e.g., maps, photographs, dataset information) to or from the wireless unit
• Transfer all data back to the main IMSMA database

With the technical assistance of FGM, Inc., the IMSMA v4 developers, the mine-action (extensible Mark-up Language was programmed into IMSMA v4 to allow for the transmission of standardized data between different information systems: maXML is the schema that links the metadata specifications and therefore the information between IMSMA (in Java) and the EOD IS-SURVEY (using a Microsoft product) by creating a common language. Unlike the handheld data-collection implementation used with v3, IMSMA v4 allows for the direct translation of data between the handheld and IMSMA program, making it easier to transfer information between the two.

The EOD IS-SURVEY has been field-tested in a number of locations and the team from the University of Kansas has also produced a formal report documenting these evaluations.

EOD IS-SURVEY Demonstration and Country Presentations

Two highlights of the conference were a hands-on demonstration of the new EOD IS-SURVEY handheld unit as the field survey and reporting tool for IMSMA v4 and presentations about the results of IMSMA v4 pilot testing in five countries.

For the final EOD IS-SURVEY demonstration, participants spent the day outside and practiced using laser binoculars to plot a perimeter and transmit the coordinates into the handheld computer unit. The handheld unit allowed forms fields to be filled out and saved or changed as needed. Coordinates appeared on the screen over a map of the area, allowing the ability to accurately plot any physical locations deemed important.
also refer to being able to electronically trans- 
mit data between regional centers and orga-
nizations rather than traveling through con-
ference zones. Jordan discussed using v4 as a 
tool for improved quality management and 
organizational coordination activities. 

In the case of the Falkland Islands, the 
use of v4 could bring Argentina and the 
United Kingdom in coordinate and share 
national data for clearing efforts. Uganda’s 
future goals for v4 highlighted the potential for 
IMASMA to not only operate within its 
national mine-action centers but also to ex-
panel beyond mine action, with plans for the 
integration of health, refugee and develop-
dment data to collect and manage disaster-
management/early-recovery planning. In all 
five cases, the expanded language options 
were noted as important and useful.

vanced ways. The pilot test results from five 
countries reinforced the potential that v4 has 
to add a velocity of different mine-action 
situations with its new multilingual, customa-
ble and innovative features.

The GICHID distributes IMASMA soft-
ware at no charge and provides on-site train-
ing for its use. GICHID staff can transfer 
data from earlier versions of IMASMA to 
v4. New or updated equipment is not required for 
v4 and users do not need to purchase 
GIS software or licenses in order to use the 
mapping features. The GICHID, in col-
laboration with FGM, Inc., the University of 
Kansas and the Swedish Explosives Ordinance 
Disposal and Demining Centre have applied 
their efforts to create not just an updated 
version of IMASMA, but a different and in-
novative one.

Conclusions
Some of the changes in v4 offer potential 
breakthroughs in mine-action informa-
tion management by allowing flexibility, 
creativity and linkage of different systems in 
IMASMA. The integration of a fully func-
tional GIS into the system allows users to 
navigate the database using the map rather 
than working directly in the database itself. 
Combined with the direct transfer of field 
data to IMASMA from the EOD IS-SURVEY 
tool, v4 users will find that IMASMA v4 can 
reduce data-collection errors, speeds up the 
inclusion of new data from the field and 
make it easier to visualize the threat situ-
ation in a country or region. The updated 
v4 allows for new languages, the freedom to 
create and modify forms and reports, and the 
ability to combine and link data in ad-

F
culting the theme of quality for 
the feature section in this edition of 
the JMA, the GICHID continues to 
work in all areas of the quality-management 
cycle. The more obvious is the development of 
the International Mine Action Standards, 
which are produced on behalf of the United 
Nations Mine Action Service. The process 
includes writing new standards, reviewing 
existing standards, conducting training and 
hosting the IMAS Review Board. In addi-
tion, the GICHID is able to help countries 
adapt the IMAS to their own national stan-
dards by providing expert staff to guide 
national authorities through the process. 
This capability has recently been enhanced by 
the creation of a staff post, the National Mine 
Action Standards Officer, within the Centre 
of Natural Mine Action Standards.

New Guidebooks
In collaboration with UNICEF, the 
GICHID has recently completed a series of 
IMASMA site risk education best-practice 
guidebooks.1 These guidebooks address a 
wide range of issues, including coordinating 
MBE, disseminating public information, 
interim projects, establishing community 
mine-action liaisons, and conduct-
ing MRE in emergencies. The primary 
aim of the books is to provide advice, 
tools and guidance to undertake MRE 
programmes compliant with the IMAS. They 
are also intended to provide a framework for 
a more predictable, systematic and integrated 
approach to mine-risk education. They 
will be useful to anyone engaged in planning, 
managing, funding or evaluating MRE pro-
grammes and projects.

New Studies
The GICHID is undertaking a major 
study, “Land Release and Risk Management 
Approaches,” which aims to examine the 
various processes used to release land (other 
than by full clearance) and advise on ways 
in which a risk-management approach can 
be applied to speed up this process. Several 
countries are being used as case studies to 
review current best practices and dem-
strate methodologies applicable to the 
broader mine-action community. These 
study include work with Cambodia on its 
recently introduced “Avar Radiation Policy,” 
a risk-management model for unexploded 
ordnance in Laos and the development of 
a risk-matrix-based system for the opening of 
suspected mined roads in Sudan. The overall 
aim is to develop a system allowing national 
authorities and operators to effectively, yet 
methodically, reduce mine-suspected areas, 
leaving an audit trail that allows decisions 
that can be justified.

Finally, in cooperation with the 
Yemen Executive Mine Action Centre, the 
GICHID is undertaking a “Triage” study of 
mine-affected areas that have been cleared. 
The survey will use a carefully 
balanced set of qualitative and quanti-
tative survey tools (e.g., village profiling, 
focus-group discussions, timelines, wealth 
ranking, participatory mapping, cause-
and-effect diagramming, livelihood kits, 
household-level interviews, etc.) to build a 
picture of the economic, social, infrastruc-
tural, natural and human impacts of dem-
ining within the specific and dynamic local 
setting of the community in question. While 
it will be possible to quantify the costs and

benefits of some impacts (e.g., improved 
access to grazing land), others—such as 
improved cohesion within the village, or 
greater confidence in future prospects—
are subjective and complex judgments that 
are difficult to quantify.

by Ian Mansfield | Geneva International Centre for Humanitarian Demining |