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# Total Quality Management in Mine Action

Here the author relays the relationship between information management and quality management and how the latter depends on the efficiency of the former. With increasingly better tools for mine-action programs in the field of information management, such as the new versions of the Information Management System for Mine Action, the author discusses how mine action will move into a new age of information technology that will allow for better proficiency in the field.

by Daniel Eriksson [ UNDP-Iraq / Swedish Rescue Services Agency ]

Although many credit Dr. W. Edwards Deming with being the father of the quality-management movement, which propelled the post-World War II Japanese industry onto the global market, his role was in fact limited. David Hutchins wrote: “Dr. Deming did not, as many Westerners think, introduce the Japanese to statistical quality control. These concepts and their importance were well-known to the Japanese long before he even went there. However, the Japanese were struggling with the problem of conveying the mathematical concepts to their people. ... Dr Deming’s contribution was to help them cut through the academic theory, to present the ideas in a simple way which could be meaningful down to production-level workers.”<sup>1</sup>

Deming’s success was, in other words, based on his ability to take existing theory and methods and convey them in a more intuitive way to those who could benefit from them. The case can be made that the information-management concept in mine action today is at a defining moment similar to that which Deming encountered in 1950s Japan. The aim of this article is to discuss the role of information management in total quality management of mine action and to introduce the reader to an existing framework that joins the fields of quality management and information management. This framework has the potential to spur quality in mine-action information management in a similar way to how Deming managed to launch quality management in the manufacturing industry.

## Mine-action Information Management

Mine action has arguably been on the forefront of information management in the development domain since the 1990s, particularly in terms of spatial-information management. In spite of this relative success, information management is still an underutilized element in mine action. Similar to the situation in other nonprofit business areas, the information-management concept is often equated with the most visible tools and mediums in the organization, in this case, the Information Management System for Mine Action, e-mail, and Web sites. Parallels should instead be made to the business-intelligence concept in commercial industry, where the value of information management is well understood. This significance is exemplified in this quote from an information-management handbook: “[I]t has become increasingly

recognized that information is the most important strategic resource that any organization has to manage.”<sup>2</sup>

In industries that apply the business-intelligence and data-mining concepts, all the data required to direct an organization is collected, analyzed, digested and disseminated to decision-makers through one central function. Information management in that context is not an entity or a tool, but a policy area that enables senior management to govern the organization. That state of affairs should be the aim of the mine-action community, and theories of quality-management experts could be used as catalyzers to improve mine-action systems.

## Quality and Information Management

Charles Loxton, the pioneer of total quality management in mine action, wrote, “... the minefield is only the last stage of the product-realisation process.”<sup>3</sup> The quality of the services generated in the information-management function is thus part of the product-realization process and will affect the quality of the end product either negatively or positively. Furthermore, Loxton emphasized the importance of senior-management commitment in successful quality management.<sup>3</sup> The situation is similar in information management: In the absence of adequate management vision and commitment, information managers all too often become high-tech archivists or space-age cartographers.

Information management can add to total quality in two fundamental ways: through the support services required for operational departments to do their work (e.g., e-mail, printers) and through the implementation of information-management tools and methods in other departments with the intention to give leverage to quality in the product-realization process. Let us call these two parts “service support” and “service delivery,” respectively.

Can high-quality information management improve the quality of the products provided through a mine-action program? One must first ask whether it is possible to measure quality in information management. Key performance indicators address this problem. In service support, there is potential to measure responsiveness, e.g., time required to solve a user problem, number of problems solved per day. For service delivery, the key performance indicators are more abstract. Indicators

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can include conversion time, i.e., the time required for a user to find the information required to make a decision or a count of the reported problems, which indicates the stability of the system and the knowledge of the users. Key performance indicators are, however, not the answer to all our problems. Deming sees one of the “seven deadly diseases” of quality management as “running a company on visible figures alone.”<sup>4</sup> He also states that “the most important figures that one needs for management are unknown or unknowable, but successful management must nevertheless take account of them.”<sup>4</sup> Key performance indicators must henceforth be seen in their context and care should be taken to avoid fixation on improving these indicator values at the cost of overall quality.

#### Service Delivery in Mine Action

What are the concrete ways in which information management can improve the quality of the product-realization process in the operational departments? According to Loxton, “Quality is about prevention—you cannot ‘inspect’ quality into a product. It has to happen before the inspection process.”<sup>3</sup> Loxton points out that operations staff are responsible for the level of quality in the product of the organization, and that quality-assurance staff are only responsible for reporting the level of quality in the product. Information management can therefore support operational staff by giving them access to more relevant information on which to base their decisions. Information management can also enable quality-assurance staff to identify causes of poor quality in inspected projects by providing tools for analyzing collected data in the search for correlations. In this context it is possible to see that information management is an accelerant to a manual process; this means that information management is, at the best, ineffectual without a properly working manual operational-management process. Deming warns that excessive support from machinery in the product-realization process, particularly in processes where knowledge and learning are important, can be counterproductive and result in lower quality over time. He recommends processes to be “semi-automated, not fully automated”<sup>4</sup> which enables users to learn from experience and to apply new theory and knowledge when necessary.

In mine action there have already been cases in which decision support has been allowed to automate operations-management processes to the detriment of quality. An example is when community-impact scores from IMSMA are followed blindly in the prioritization of mine-action operations. Without the knowledge of how the software calculated that score, it will be difficult for the user to determine when and how the scoring should be updated, either in terms of changing the algorithm or in re-surveying areas to collect more recent data. In order to avoid this issue, training of decision-makers should start with the manual prioritization process and move into the use of decision support once the user has developed a firm understanding of the manual processes. This advice is an example of how a service-delivery policy can support total quality.

The aforementioned IMSMA example is a case

in which information management aims to provide decision benefit, i.e., ways to supply decision-makers with faster and better information on which to base their decisions. Other benefits include increased consistency, transparency and accountability in the operational planning processes. This benefit is realized as decisions will be made using known baseline data, which enable the decision-maker to defend the decision in an objective manner. Admittedly, the accountability increase is limited because the decision is made on baseline data in combination with the decision-maker’s knowledge of the subject. The user’s knowledge can therefore cause the decision to be different in two separate cases with the similar baseline data, e.g., two villages with the same impact data. Nevertheless, a record of which information was at hand when the decision was made will increase the accountability.

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#### IMSMA

IMSMA does provide some functionality for process consistency, accountability and decision support. The most widely used versions of IMSMA, version 3, is very rigid. The built-in flexibility lies in the user-defined fields that can be added to each process output, e.g., minefield and Technical Survey. Although this capability adds to what IMSMA can store, it does not allow for changes in the mine-action workflow. For IMSMA v.3 to provide a consistency benefit, the workflow in the organization will have to be adjusted to the software, which is sacrilegious to information-management theory. The software should fit the organization, not the other way around.

The editions of IMSMA that have succeeded v.3<sup>5</sup> are located on the other end of the spectrum in terms of flexibility, giving the administrator complete freedom to set up the processes and outputs in the mine-action program. With the ability to set up the processes, it becomes clear that information management has become a central

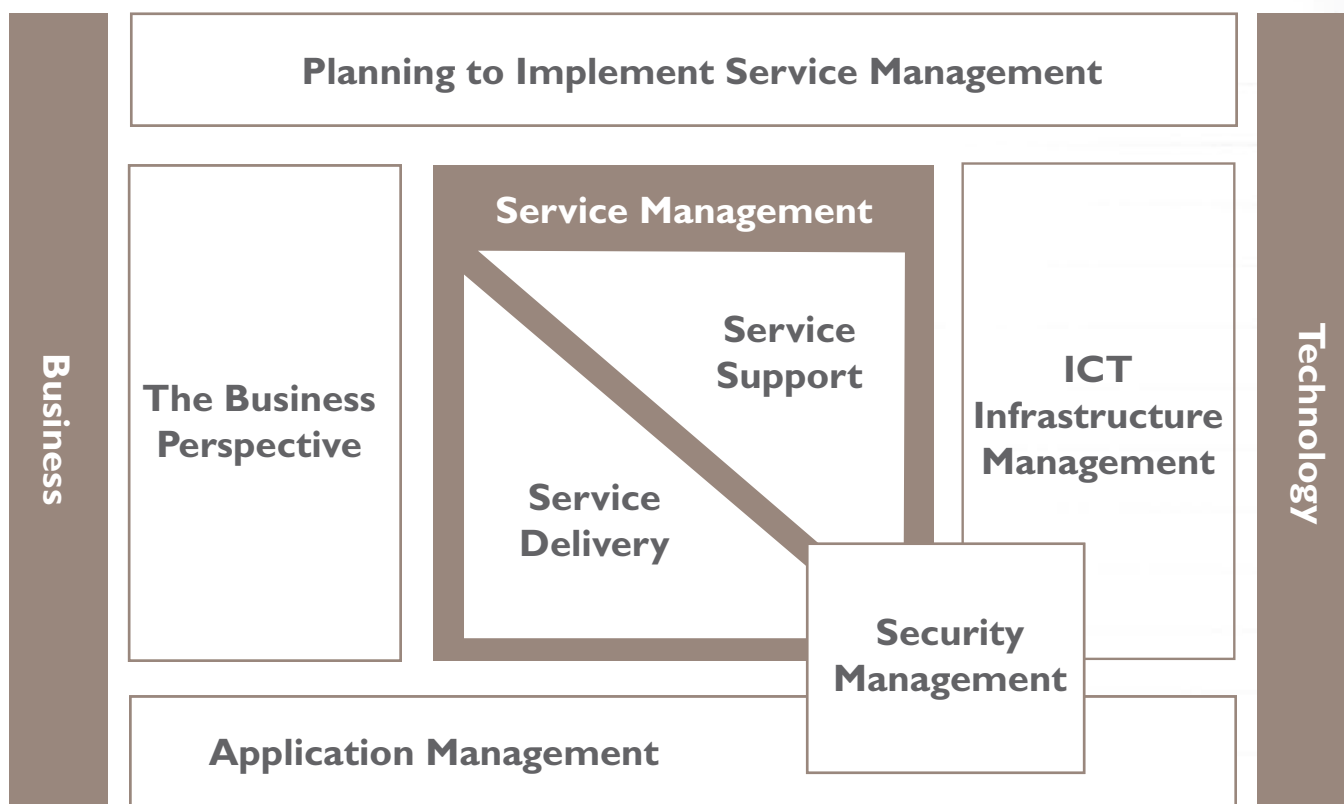
The scene is set for a leap forward in mine-action information management

tool for strategic management of the organization. Through the setup of IMSMA, the management will have to determine how the organization will conduct its business, both in terms of processes, such as socioeconomic survey and battle-area clearance, as well as in terms of outputs, such as dangerous areas, minefields and cleared areas.

Although the technology allows for change of the processes, once the workflow is set, it will be challenging to alter it. With the new versions of IMSMA, it is important that the information-management unit foresees the information needs of its organization so that data can be collected at an early stage and digested into information presented to the clients when they request it. This task is part of the service-delivery function.

#### The Information Technology Infrastructure Library

Service delivery and service support are terms taken from the Information Technology Infrastructure Library. ITIL is a guide for the development of a comprehensive information-management policy in an organization. As opposed to the International Organization for Standardization 9001:2000 system,<sup>6</sup> ITIL is not a



A conceptual model of the ITIL modules and the bridge between business and technology.  
GRAPHIC COURTESY OF THE AUTHOR

With the arrival of more powerful information-management tools in mine action, like the next generation of IMSMA, mine-action programs will become more reliant on information-management systems and tools. In this context, the adoption of an information-management policy will become increasingly important.

standard toward which an organization can be deemed compliant. ITIL provides best practices for information management, which should be adapted to the particular circumstances surrounding individual organizations. The United Kingdom's Office of Government Commerce developed ITIL in the 1980s. ITIL now exists in three sequentially released versions, the most widely used being version 2. The Information Technology Infrastructure Library v.2 guidelines consist of seven books, or modules, which bridge the business with the technology. The books cover aspects of information management ranging from the tangible, such as network management, otherwise known as information and communications technology infrastructure management, to the conceptual, such as organizational change management, also known as

planning to implement service management.

Although all mine-action programs that are dependent on information management will benefit from adopting ITIL for their information-management policy, it will be particularly relevant for mine-action programs to introduce more advanced and flexible tools, like the next generation of IMSMA. ITIL will help the information management unit maximize the impact of such software, as well as reduce the risks associated with technology in developing-country contexts.

#### Conclusion

There is an intimate relationship between successful information management and successful implementation of total



quality management. High-quality information-management services bridge the business with the technology to provide leverage to all business processes. With the arrival of more powerful information-management tools in mine action, like the next generation of IMSMA, mine-action programs will become more reliant on information-management systems and tools. In this context, the adoption of an information-management policy will become increasingly important.

ITIL is a guideline that supports information managers and senior managers in identifying the elements that should be part of an effective information-management policy. In bridging business and technology it is important to accept that quality in the two cannot be isolated. Changes in the technology

will affect quality of the business and vice versa. Deming's advice for quality management translates well to mine-action information management. His most relevant advice is that quantitative measurements, e.g., key performance indicators, should not be allowed to become an end in themselves, and that fully automated methods in the product-realization process will harm the continuous improvement of quality.

In summary, the requirements put on the mine-action business through the adoption of new technology give the incentive to bring mine action into a new era. The ITIL framework combined with the teachings of Loxton and others provides the ability to enter this era. The scene is set for a leap forward in mine-action information management. ♦

*See Endnotes, page 114*



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## News Brief

### State Department Co-sponsors MANPADS Threat-reduction Seminar

The U.S. Department of State's Office of Weapons Removal and Abatement in the Bureau of Political-Military Affairs co-sponsored the first African seminar on reducing the threat from man-portable air defense systems (MANPADS), which are also known as shoulder-fired anti-aircraft missiles. With the Regional Center on Small Arms (RESCA), PM/WRA held the seminar in Nairobi, Kenya, on 1-2 July 2008.

The seminar was hosted by the government of Kenya and attended by State Department Special Envoy on MANPADS Threat Reduction Ambassador Lincoln Bloomfield, Jr., officials from the 12 African member states to RESCA, and representatives from the United Kingdom and nongovernmental organizations. The attendees discussed in detail MANPADS proliferation in the African Great Lakes region and the Horn of Africa.

The seminar stressed the importance of strengthened physical security and stockpile management in light of activities by the United States to bolster efforts to protect international aviation from MANPADS. Since 2003, the State Department, via the Office of Weapons Removal and Abatement, has helped 25 countries destroy more than 26,000 at-risk MANPADS. The Office of Conventional Arms Threat Reduction in the State Department's Bureau of International Security and Nonproliferation, along with Special Envoy Bloomfield, has promoted stricter controls on importing, exporting and transferring of MANPADS by governments.

This effort has been in tandem with PM/WRA's broader efforts to end the proliferation of small arms and light weapons (in Africa and globally), protect civilian populations, and strengthen peace.

For the original State Department press release on this seminar, visit <http://tinyurl.com/57vn4m>. For a fact sheet on the MANPADS threat and PM/WRA's efforts to combat it, visit <http://tinyurl.com/5ka5c2>