Marrying logistics and technology for effective relief
by H Wally Lee and Marc Zbinden

Logistics links all the stakeholders in the relief delivery process.

During an emergency, logistics departments have the primary mission to procure and track food, non-food items and gifts-in-kind (solicited and unsolicited) from appeal through to delivery while simultaneously monitoring the commodity and financial information along the relief pipeline. Timely and accurate availability of information is key. An effective operation depends on the emergency manager being aware of the changing needs of the field and communicating these to donors. Despite being the conduit connecting donors to beneficiaries, logisticians are seldom active participants in the acquisition and implementation of IT solutions pertaining to relief operations.

The relief technology landscape

The way information technology is used varies widely among humanitarian relief organisations. The technology landscape in the humanitarian sector is often extremely fragmented, limiting the availability of timely and accurate information. Organisations either buy large off-the-shelf commercial packages that need extensive customisation or create small in-house solutions for each field location. In the former instance, the dynamic variables and context of relief are not captured. Customisation to address this problem is very expensive and inhibits absorption of routine upgrades. Attempts to scale up home-grown solutions are rarely effective and are often dependent on the transient expertise of the organisation's IT staff.

Despite large investments by organisations, origin to destination information about the money, food and non-food supplies and gifts-in-kind is not readily available to decision makers in real time. In addition, manual, non-standardised, error-prone processes still dominate.

IT resources which could enhance information availability, reporting and learning are often not put to best use. Some of the deficiencies of current relief information systems include:

- Data has to be written out onto multiple forms and keyed into multiple spreadsheets.

- Budget control is inadequate; funds may be misspent as a result.

- Usage of funds is not tracked to the extent that donors have requested.

- Procurement procedures are difficult to enforce; integrity is lacking.

- Tracking and tracing of shipments are done manually using spreadsheets.

- There is no central database of history on prices paid, transit times or quantities received/purchased.

- Reports are done manually. Therefore, little reporting and performance analysis is undertaken, other than reporting to donors on quantities of relief items delivered for a given operation.

Harnessing technology

Humanitarian relief organisations have a common need for integrated information systems that are complete, timely and transparent. They should act as a repository for information from operations and integrate with other systems such as finance and human resources. In such a scenario decision makers would have access to valuable information before, during and after a relief operation. A snapshot of the possibilities is provided opposite:

New information technologies enable modular design to connect existing systems and introduce new ones to provide visibility and information about the entire relief supply chain.

Humanitarian Logistics Software

Fritz Institute has used the latest technologies and partnered with logisticians to build an origin to destination tracking system, especially designed for the dynamic relief context. It is based on commercial best practices and adapted to humanitarian requirements through extensive research with many leading relief organisations. Currently implemented at the International Federation of the Red Cross and Red Crescent Societies, the Humanitarian Logistics Software (HLS) is being made available free of charge to other humanitarian relief organisations. Its modularity allows it to be used as a framework tool which can incorporate current systems that underlie the relief supply chain and fill the functional gaps that may exist.

Humanitarian Logistics Software consists of four main modules: mobilisation, procurement, transportation and tracking, and reports. It connects to financial systems to provide real-time visibility for costs, purchases and in-kind donations in the relief pipeline. Information once entered populates all relevant modules.

The mobilisation module simultaneously tracks the needs of the beneficiaries and agency funding appeals, reconciling them with donations. The procurement module controls purchase orders, performs competitive bid analysis and reconciles received goods against invoices awaiting payment. The transportation and tracking module allows consolidation of supplies for transportation and allows the automatic tracking of major milestones in this process. Over time, the procurement and transportation modules become a repository for information about the performance of suppliers and transportation vendors. Finally, the reporting module provides detailed standard and customised reports for donors as well as internal decision makers.

Conclusion

More comprehensive and timely information provision can enhance the effectiveness of decisions made before, during and after a relief operation. However, to realise this potential, humanitarian organisations must develop forward-looking integrated information technology strategies which incorporate the valuable perspective of the logistics function. HLS may be a first step. It is only though collaboration across functions and organisations that the real potential of information can be harnessed for humanitarian relief.

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Preparedness	During operations	Post-operations
■ Historical profile of disaster types with geographic information to predict beneficiary needs more accurately.	■ Reconciliation of quantities needed and quantities supplied to accurately adapt to the relief situation.	■ Accountability of donations (use and administrative costs) to maintain integrity of relationship with donors.
■ Past performance of suppliers, logistics providers and donors to plan effective and reliable relief.	■ Tracking costs of each operation to calibrate against incoming donations.	■ Performance of relief operations i.e. time from appeal to delivery.
■ Market price and historical price by region to prepare contingency stock.	■ Visibility of stock *en route* and stored in warehouses to determine procurement needs.	■ Loss and damage for accountability and claims.

For further information about Humanitarian Logistics Software see: www.fritzinstitute.org

1. The conclusions of this article are based on research into the technology underlying the relief supply chains of ten major humanitarian agencies: American Red Cross, CARE USA, Catholic Relief Services, International Committee of the Red Cross, International Federation of the Red Cross and Red Crescent Societies, International Rescue Committee, Médecins San Frontières- Belgium, WFP, UNICEF and World Vision International.

Humanitarian mapping

by Rupert Douglas-Bate

In order to better serve those affected by conflict and disasters, there is a real need among aid agencies to better understand their locations, numbers and needs. Geographic Information Systems (GIS) are computer mapping software systems. Currently they are being used by relief and development agencies to improve decision making and assist in the presentation of information relating to public health, epidemiology and humanitarian aid. To be most effective, maps must be:

■ **Timely:** Maps should be available for use the moment a mission starts, so it may be worth a visit to your local bookshop to try and find paper maps relevant to the area you will be working in. GIS file formats can be updated with information as the situation unfolds. The presentation of such maps at sectoral coordination meetings can have an electrifying effect on understanding: maps speak louder than words.

■ **Simple:** Maps that contain more than eight colours are too complicated. The scale needs to be appropriate to the situation, for example 1:10,000 for refugee camps and 1:100,000 for towns and surrounding villages. A proven idea is to draw a freehand map that contains the style and form of the desired map but not yet the content. Once this objective map is obtained the team can work backwards in terms of designing questions and data collection strategies.

■ **Accurate:** Information on beneficiary needs that goes into maps is mostly numerical; therefore the questions to obtain this information need to be very carefully thought through. Systematic survey technique is important.

■ **Culturally sensitive:** Radios, sat phones, vehicles and, indeed, maps may be treated with suspicion by local governmental authorities in conflict zones. The best way around this is to request a government person to be seconded on a fixed term contract to work with the mapping team. This will help dispel suspicion and enhance capacity building.

■ **Relevant:** Given the advent of GIS, maps may now be rapidly generated and updated, within the above criteria. Placed upon a basic ground layer, overlays may include information such as population numbers, shelter, agriculture, hospitals, water and mass graves.

■ **Planned and trained for in advance:** The manufacturers of GIS have donated their software for free to aid agencies but learning to use a GIS package is like learning a new language: a basic understanding is achievable in a few months but real understanding may take years. If you can, find some volunteers in industry or government already using GIS and ask if they will work within your organisation and help provide training.

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