

# KNÆK KODEN TIL NØDHJÆLPSPRÆKKEDE deciphering the relief aid market

**INDUSTRIENS  
FOND** FREMMER DANSK  
KONKURRENCEEVNE  
The Danish Industry Foundation

**access<sup>2</sup>innovation**

## THE THREE LAYERS OF CONNECTIVITY

**concept note**  
communications



Due to climate change and a higher population density, natural disasters are dramatically increasing in frequency and severity. Every year, more than 350 natural disasters strike, affecting more than 200 million people worldwide. In 2014, more than 38 million people were forced to leave their homes due to conflict, generalized violence, human rights violations and natural hazard-induced disasters. In 2014, international humanitarian assistance totaled USD 24.5 billion.

PARTNERS: DANISH RED CROSS



## TO ENABLE A SINGLE OR A COMBINATION OF DIFFERENT LAYERS OF END-USER CONNECTIVITY IN DISASTER AREAS OR REMOTE AREAS WITHOUT CONNECTIVITY.

Prioritising and optimising the effective use of scarce resources have never been more important for humanitarian organisations. Information management has been identified as a potential topic with significant opportunities to develop or even disrupt existing practices and operational models. Three different layers of connectivity between humanitarian agencies and target beneficiaries can be described:

### Level 1

In a humanitarian crisis, making decisions is a challenge. The situation is constantly changing and information is scarce. Humanitarian actors must be able to zoom in on important details as well as see the big picture, fast.

Following a disaster, the first 72 hours represent the “*window of opportunity*”, where it is usually possible to save lives of the directly affected disaster victims.

The efforts during the following days and weeks also provide opportunities for improving the relief operation by better information on local needs and plans to avoid duplication of efforts and gaps.

Unfortunately, overview has to be established in a situation of chaos where any existing infrastructure including power and communication lines, are often rendered inoperative. As a result, the humanitarian actors often operate on an uninformed basis, risking that help arrives too late or does not match actual needs where delivered, leading to lives lost and waste of valuable resources.

Due to lack of critical information, the estimated amount of humanitarian relief considered redundant or not hitting the desired target is a staggering 25-40 percent of the total response costs.

### Level 2

Relief workers and community volunteers rely heavily on the availability of robust communications in the field. Without communication, it is not possible to report the local needs of victims back to their organisations’ headquarters, so that the right relief can be directed to the most affected disaster areas.

If working, local communication lines are often damaged or overloaded due to the greatly increased need for locals to communicate. Each organisation therefore deploys their own equipment to set up small wireless networks and narrow bandwidth satellite connections. The solutions are often originally designed for businesses that operate in a physically enclosed area such as a company’s headquarter. Emergency workers need a shared communication network that is independent of local infrastructure, has the characteristics of a public network and can be set up in just a few days, covering major urban areas. The availability of a Level 2 network would further enable the humanitarian actors to develop and implement future applications such as effective m-health/e-health solutions, sensor networks, mobile data collection etc.

### Level 3

A breakdown of public communication networks and power sources leaves the local population deprived of the technical ability to communicate with their families and loved ones.

The poorest people are often most affected by disasters for a number of reasons. However, the need for communication with family and networks is equally crucial.

The psychological strain of *not knowing* can be severe - especially to children, and it is essential that disaster victims are reunited with their families as soon as possible.

A level 3 network would provide essential knowledge to survivors and thereby reduce the psychological traumas, creating a better basis for victims to restore a dignified post-disaster life.

## WHAT IS NEW

Providing means of communications to those affected by war or disaster has always been at the core of the Red Cross activities. In World War One alone, the Red Cross movement delivered more than 20 million letters and messages between prisoners of war and their loved ones.

Every year, more than 200 million people are affected by natural disasters.

With the technological advances made over the last decade, digital communication between people has become a cornerstone in the perception of a dignified life and is seen by many as a basic human right.

*Humanitarian organisations have only marginally been able to provide connectivity to the extent it has been sought, and the 2015 refugee crisis painfully emphasized the lack of beneficiary-aimed technological services available from the major humanitarian organisations.*

## DETAILS

### Level 1 communication

Must provide means of communications for first responders in the immediate aftermath of a catastrophic event, or in the first hours and days in a setting completely lacking infrastructure. First responders should be able to assess and relay information about the level of destruction, number of casualties and immediate lifesaving needs. Device and/or infrastructure should be resilient to floods, earthquakes, typhoons etc. and should be powered or charged by a sustainable energy source. Data footprint should be extremely small to maintain the fastest and smallest possible setup and to ensure battery life on all devices. Speed, accumulation of data and simplicity are essential. Ability to integrate with “old” forms of communication such as radio is beneficial.

### Level 2 communication

Must provide communications for first responders in the days and weeks following a catastrophic event, or in a setting with no or poor infrastructure. The communication network should be able to host large data footprints and provide connectivity for a large

amount of relief workers. Typical data applications could be video conferencing, emails, social media, large file transfers, high res videos & pictures and big data access and analysis.

The network could use common frequencies and protocol, but could also require specialised equipment to gain access, as seen in other WWAN solutions. The Level 2 (and 3) networks would provide a platform for the humanitarian organisations on which they could further develop new and innovative digital tools such as shared patient records, digital CASH distributions etc.

### Level 3 communication

Must provide a city-wide wireless network, that can be accessed by free-of-charge by the general public. The network should be accessible by all networked enabled devices such as smartphones, tablets and laptops. The network should function until such a time where access to public networks becomes available. In some cases, one could imagine that the network could be integrated into either a telco network or that of public authorities as a *disaster preparedness* platform.

## WHAT IS ALREADY BEING DONE

For all levels, satellite phones and satellite IP uplinks are an option. They are expensive to acquire and extremely expensive to operate and maintain. One satellite based internet terminal used by a single person can easily generate a monthly charge of USD 50,000.00 and is thus considered by many as financially out of reach.

To our knowledge, **Level 1** communications is not being addressed in any other publicly available products. Danish based startup “Link-aiders” have created and tested prototypes for handheld MESH-devices.

### Level 2

Most level 2 communication is initially being provided by the humanitarian actors themselves, using satellite IP uplinks and satellite phones.

When the UN clusters are activated, the ETC cluster lead by UN WFP is to some ex-

tend trying to provide common networks for humanitarian actors.

However, the technology used is the same domestic-type equipment as used by the humanitarian actors themselves.

To our knowledge, **Level 3** communications is not being addressed in any publicly available products. The TV whitespace market seems to have the potential for providing the backhaul for both level 2 and 3.

## WHO COULD USE THIS

All communication levels could be used by both humanitarian organisations, civil protection agencies and commercial events such as festivals, sports events etc.

Since the level 3 is targeted directly towards beneficiaries, it is at this level you will find the greatest interest and the most funding sources.

However, level 1 and two will also be of great interest to the operational levels of the humanitarian organisations.

Potentially, a new type of inexpensive technology for internet connectivity could also be of interest to commercial companies providing an alternative to the rather expensive 3G and 4G cell based public networks.

## DANISH RED CROSS CAPACITY, CONTRIBUTION AND STRATEGIC FOCUS

Danish Red Cross will engage in and facilitate more partnerships with non Red Cross / Red Crescent actors to promote innovation in humanitarian action.

With a view to enhance humanitarian impact and provide sustainable solutions to address human vulnerability, Danish Red Cross will engage in co-creation by working with and drawing on expertise of actors from the private sector, research institutions and target groups of DRC interventions.

# KNÆK KODEN TIL NØDHJÆLPSPRÆKEDET deciphering the relief aid market



**access<sup>2</sup>innovation**  
[www.access2innovation.com](http://www.access2innovation.com)

A recent report from Global Humanitarian Assistance shows that the global humanitarian aid market has reached a yearly turnover of 24.5 billion USD. But the humanitarian aid organisations are increasingly challenged in providing the needed solutions. Closer collaboration with the private sector and researchers is needed in order to meet the challenges ahead.

In partnership between the Danish Industry Foundation and access2innovation the project "Knæk Koden til Nødhjælpsmarkedet" (Deciphering the Relief Aid Market) sets out to establish a Danish innovation platform enabling humanitarian organisations, private sector and academia to efficiently develop and commercialise needed solutions.

This will be accomplished by supporting Danish Red Cross, DanChurchAid and the Danish Refugee Council to map out concrete business opportunities within renewable energy, agri-business, water management and ICT as the basis to team up with private sector companies as well as the universities in Aalborg and Copenhagen in order to develop sustainable solutions for the humanitarian aid.

With financial support from the Danish Industry Foundation the project is facilitated by the access2innovation association