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Review of New Technologies and Methodologies for EORE in Challenging Contexts

GICHD

Geneva International Centre for Humanitarian Demining (GICHD)

REVIEW OF NEW TECHNOLOGIES AND METHODOLOGIES FOR EXPLOSIVE ORDNANCE RISK EDUCATION (EORE) IN CHALLENGING CONTEXTS

GICHD

The Geneva International Centre for Humanitarian Demining (GICHD) works towards reducing risks to communities stemming from explosive ordnance, with particular focus on mines, cluster munitions, other explosive remnants of war and ammunition storage. It does so by combining three distinct lines of service: field support focused on capacity development and advice, multilateral work focused on norms and standards, and research and development focused on cutting-edge solutions.

The GICHD is a core member of and serves as secretariat for the Explosive Ordnance Risk Education Advisory Group (EORE AG). The Advisory Group draws on the expertise of over a dozen UN agencies, international organisations and international NGOs to provide overall guidance to the sector and identify ways to improve the integration, effectiveness, efficiency and relevance of EORE.

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CONTENTS

ABBREVIATIONS AND ACRONYMS

AR
Augmented reality

AVR
Armed violence reduction

C4D
Communication for development

CFP
Community focal point

CPP
Conflict protection and preparedness

DCA
DanChurchAid

DMA
Directorate of Mine Action (Iraq)

DMAC
Directorate of Mine Action Coordination

EO
Explosive ordnance

EOD
Explosive ordnance disposal

EORE
Explosive ordnance risk education

EORE AG
EORE Advisory Group

ERW
Explosive remnants of war

GSA
Ground sign awareness

ICRC
International Committee of the Red Cross

IDP
Internally displaced person

IED
Improvised explosive device

IFRC
International Federation of Red Cross and Red Crescent Societies

IMSMA
Information Management System for Mine Action

IOM
International Organization for Migration

IRC
International Rescue Committee

KAP
Knowledge, attitudes and practices

MA
Mine action

MA AOR
Mine Action Area of Responsibility

MAG
Mines Advisory Group

MC

Mercy Corps

MDC

Mobile data collection

PM/WRA

Bureau of Political-Military Affairs Office of Weapons Removal and Abatement

RASB

Risk awareness and safer behaviour

RCCE

Risk communication and community engagement

RETD

Risk education talking device

SBCC

Social and behaviour change communication

TNMA

Technical Note for Mine Action

UNICEF

United Nations International Children's Fund

UNMAS

United Nations Mine Action Service

UNHCR

United Nations High Commissioner for Refugees

VR

Virtual reality

WHO

World Health Organization

XR

Extended reality

YPOC

Yellow palm oil container

EXECUTIVE SUMMARY

BRIEF OVERVIEW

In recent years, the number of civilian casualties from explosive ordnance (EO) has risen at an alarming rate. A series of factors such as the increasingly protracted nature of humanitarian crises, the urbanisation of warfare, large-scale displacement and the extensive use of improvised explosive devices (IEDs) have contributed to this sharp upturn in victims and pose significant challenges to the delivery of effective and relevant explosive ordnance risk education (EORE).

Over the last year, there has been renewed global interest in the risk education pillar of mine action, with recognition that EORE efforts must be stepped up and innovative methodologies, tools and approaches explored to protect civilians from the threats of EO. While the COVID-19 pandemic has fast-tracked emerging questions and prompted new ones, it has also served as a catalyst for the EORE sector to increase the systematic exchange of good practices and to think collectively in terms of new ways of raising awareness and promoting behaviour change.

This review aims at contributing to the ongoing reflection of EORE practitioners on how to address challenges that were identified through an 'EORE Sector Mapping and Needs Analysis' published in December 2019 and others that emerged with the COVID-19 crisis. Against this background, it examines promising new technologies and methodologies used for the delivery and monitoring of risk education interventions in response to three key challenges: risk education for IEDs, risk education in urban complex environments, and in areas with limited to no accessibility.

The report highlights examples, good practices and emerging solutions in facing these challenges, both from within and outside the EORE sector, and builds on recent initiatives developed to adapt to the COVID-19 pandemic. It concludes with a set of recommendations and gaps that remain to be addressed. The data for this review was collected between December 2019 and July 2020 through a combination of desk review, key informant interviews, a virtual stakeholder workshop and an online survey involving 34 organisations and 16 countries.

KEY FINDINGS AND RECOMMENDATIONS

General

- As the EORE sector is challenged to evolve rapidly in response to ever more complex operational environments, there is a need to systemise the way practitioners learn, to promote innovation, and to accelerate knowledge sharing between countries, regions and organisations. Some ways to do so identified in this review include:
  - Embedding the development of lessons learnt and sharing of good practices in programme cycles;
  - Establishing dedicated capacities for EORE, including at a global/HQ level;
  - Strengthening collaborative 'learning ecosystems', knowledge sharing events, practitioners' networks and partnerships;
  - Fostering cooperation through regional mechanisms (e.g. Association of Southeast Asian Nations Regional Mine Action Center, Regional Durable Solutions Working Group for Syria);
  - Facilitating the translation of relevant EORE resources into other languages; and
  - Fast-tracking the creation of an online global resource library or repository for EORE practitioners.
- The successful evolution of the sector requires building collaboratively with the knowledge and expertise of outside resources. While it is widely acknowledged that EORE should be integrated into humanitarian, development, protection and education efforts, as articulated in the Oslo Action Plan (Action 28) of the Anti-Personnel Mine Ban Convention, this review shows that innovative EORE interventions are also dependant on the establishment of partnerships with experts from other sectors: social and behaviour change communication (SBCC), risk communication and community engagement (RCCE), information and communication technology, international and local technology companies, innovation labs, marketing, design thinking, extended reality, etc. By capitalising on other sectors' expertise and know-how, EORE practitioners will be better equipped to address the needs of EO-affected communities.

- Effective EORE must be sensitive to the different vulnerabilities, roles and needs of women, girls, boys and men from diverse groups and should be based on a comprehensive gender and diversity context analysis. This review highlighted that efforts are still needed to integrate and mainstream gender and diversity considerations in EORE programming, especially when it comes to the use of new technologies. In addition, various respondents said that EORE interventions often fail to include and address the specific needs of persons with disabilities, and those of survivors.
- Few findings on the effectiveness of the reported technologies or methodologies on achieving behaviour change were able to be identified. While measuring behaviour change and assessing the impact of EORE interventions is not the object of this review, the development of global sector guidance in this field is urgently needed, especially in challenging contexts. A recent paper by The HALO Trust, Mines Advisory Group (MAG) and Norwegian People's Aid (NPA) on 'Measuring Behavior Change Resulting from EORE and the Need for Complementary Risk Reduction Activities'[1] as well as the RCCE sector's recent work on metrics to measure behaviour change[2] can be sources of inspiration in this regard.

Technologies for EORE

- Overall, digital technologies represent an easily scalable, cost-effective way of reaching large groups of people (especially young people). Most can also be easily updated to adapt to changing circumstances such as new contamination, which is highly beneficial for environments in flux.
- When designing digital tools, practitioners should apply the same key principles underpinning all EORE as well as international standards adopted by the sector. It is also recommended to uphold digital principles (https://digitalprinciples.org) adopted by the global community.
- While the use of digital technologies has gained significant traction in the EORE sector and has potential to be scaled up, it is still early days, and opportunities for risk education have not yet been capitalised on. The review has shown that targeted and two-way communication through digital means is possible and that social media platforms, digital apps, extended reality technologies and other digital tools offer

immense scope for the future of EORE. As the private sector is driving much of the progress in new technologies, it is incumbent upon the EORE sector to foster relevant partnerships.

- As practitioners learn by doing, they need to more systematically document and exchange good practices and lessons learnt, build new guidelines (e.g. methodologies for impact measurement of digital tools), and collectively address gaps identified.
- There is a need to pay increased attention to the promotion of innovation in the EORE sector by dedicating resources, creating the space required within organisations for innovation to take place and generating collaborative dynamics.
- That said, this review highlighted that innovation does not just mean the latest and greatest technology. The review illustrates that being innovative is also about re- evaluating current practices in light of the changing context, returning to basics in new or fresh ways, developing stronger community-based approaches, supporting community capacities and fostering more holistic and pragmatic risk reduction responses.
- Although communication today is becoming increasingly digital and the COVID-19 crisis has put pressure on EORE practitioners to design contingency plans and digital alternatives to existing methods of EORE delivery and monitoring, community-based approaches conducive to building trust remain pivotal in the delivery of relevant and effective EORE interventions. Digital tools (e.g. apps) and strategies (e.g. social media campaigns) should complement interpersonal interventions and practitioners should be cautious not to do harm or widen the chasm between the connected and the unconnected.

Methodologies for EORE

- Non-digital methodologies are still needed to reach affected communities and vulnerable groups with low to no digital access. In these contexts, community focal points – long used by the mine action sector – and other community-based networks can be highly valuable resources. EORE practitioners should strive to develop such networks when possible, while also taking measures to prepare for and mitigate the risks of having to decrease or withdraw physical presence. Methodologies for remotely delivering comprehensive, interpersonal EORE sessions are needed, as well as to remotely reach those with lower literacy levels, limited digital connection and persons with disabilities.
- While there is widespread agreement that populations at risk should have access to information on the risks and safe behaviours related to IEDs, the sector has not yet reached consensus on the question of visualising IEDs. With no 'one size fits all' approach, EORE practitioners are advised to exercise caution, emphasising broader messages on ground sign awareness and being alert to the unexpected. When images of IEDs are used, close coordination is needed with IED search and clearance teams to ensure continued accuracy and relevance.
- In urban environments where there is greater blurring of the boundaries between safe and unsafe, EORE practitioners face additional requirements to ensure the safety of their staff and that they do no harm for the community at large.
- The core principles of effective and ethical EORE are essential in all contexts – and even more so for challenging ones where the margin for manoeuvre is smaller and the risk potential greater. In these environments, broader approaches that strive to improve the efficiency, effectiveness and impact of EORE bring much added value.
- It is well established that integrating EORE with other sectors is crucial to addressing structural and recurrent barriers to the adoption and practice of safe behaviours. Risk awareness and safer behaviour (RASB), conflict protection and preparedness (CPP), and armed violence reduction (AVR) are three promising examples of approaches that adopt a more holistic view of risk management, aiming to address a broader range of risks to which communities are exposed.

The sector would benefit from wider piloting and implementation of these approaches, sharing of lessons learnt and good practices as their implementation expands, and gathering of more evidence on their effectiveness and impact including in challenging contexts.

- Behaviour change approaches to EORE seek to achieve a deeper impact by focusing on addressing and leveraging social norms, clearly defining and understanding the target audience through participatory processes and implementing a multi-faceted communication strategy. While such a process can take time to develop and scale up, behaviour change approaches have strong potential to improve the effectiveness and efficiency of EORE in all contexts and especially in challenging ones. More advocacy is needed by partners and donors to increase investment in EORE initiatives grounded in behaviour change.
  The sector would also benefit from guidance on the strategic design of EORE initiatives using behaviour change theory, as well as on how participatory processes can be employed in contexts where access to affected communities is not possible.

Other inspiring innovations and practices

- This review has identified other sectors' methodologies and technologies that the EORE sector could learn from: design thinking, RCCE tools, communication for development (C4D), mobile technologies from the private and public health sectors as well as other digital apps and artificial intelligence.
- Rather than creating new digital platforms specifically for risk education, EORE practitioners can seek, when relevant, to build on existing initiatives that address multiple risk factors.
- COVID-19 has propelled new initiatives forward and greater cross-fertilisation between EORE, public health, and the RCCE sectors which still need to be capitalised upon.

INTRODUCTION

RATIONALE

After a steady decrease in casualties from accidents with explosive ordnance (EO) over a 15-year period, there has been a sharp increase in the number of victims since 2014. The upturn in these global figures has been heavily influenced by casualty numbers in regions and countries with intensive and/or protracted armed conflicts. Factors behind the elevated accident rates include the threat posed by improvised explosive devices (IEDs), the changing nature of warfare with hostilities increasingly being conducted in urban environments, and the often limited or restricted access to affected communities and population groups on the move. Many of the same factors contributing to the rise in casualties pose significant challenges for the delivery and monitoring of targeted and tailored explosive ordnance risk education (EORE).

Recent contamination in contexts that are ever more complex have led to mine action actors having to adapt their practices when it comes to delivering and monitoring EORE interventions. While in recent years there has been a rapid expansion in the scope of mine action to deliver efficient land release, momentum-building and consensus on the importance of reinvigorating the EORE pillar of mine action, to curb the upward casualty trend, only recently emerged. Testimony to this was the establishment of the EORE Advisory Group[3] (EORE AG) in May 2019 and the adoption by Anti-Personnel Mine Ban Convention States Parties in November 2019 of the Oslo Action Plan that contains a dedicated section on risk education and reduction.[4]

The COVID-19 pandemic that began during the drafting of this review has undoubtably exacerbated existing challenges and created new ones. This unprecedented global public health crisis has also brought EORE practitioners together to find ways to adapt in an innovative and collective manner[5] and to ensure that communities affected by EO are not left behind. Against this background, this review aims to identify new EORE technologies and methodologies used in the mine action sector and beyond, to address key challenges as identified in a rapid global assessment[6] published by the GICHD on behalf of the EORE AG in December 2019:

- While the **use of IEDs** is not new, there has been a sharp increase in their use in recent years. This has led to an increase in civilian casualties and the need for the EORE community to review its practices and explore ways of designing and delivering effective risk education for IEDs. By exploring existing initiatives for IED risk education, this review tries to provide tentative answers to questions raised by some interviewees: *What is different about risk education for IEDs compared to factory-made devices?*

What additional considerations are required regarding messaging content, visual presentation and ethical questions such as 'do no harm'?

- The complex morphology of **urban conflicts** and EO contamination also presents challenges for EORE, as collapsed buildings and other infrastructure can conceal the threats, meaning that local people are unaware of their existence. Newly arrived residents' and/or returnees' local knowledge is often scarce and messages such as 'don't approach, don't touch, report' are not sufficient in situations with limited or no clearance and where vulnerable communities are returning to their homes.
- Similarly, **accessibility to the at-risk population** can be limited due to the physical environment, seasonal changes, ongoing conflicts, insecurity or regulatory barriers. Some of these factors have recently been exacerbated by additional restrictions related to the COVID-19 outbreak and require the development of innovative strategies to engage in 'hard-to-reach' areas, provide training and monitor activities. In addition, it was reported that an increasing number of donors are asking mine action organisations to develop contingency or back-up plans should face-to-face interventions not be possible.

SCOPE, OBJECTIVES AND METHODOLOGY

The main objective of the review is to provide examples of promising new technologies and methodologies used in the mine action sector and beyond for the delivery and monitoring[7] of EORE interventions in the aforementioned challenging contexts. It aims to contribute to the development and more systematic sharing of good practices for EORE, and ultimately to inform future developments of International Mine Action Standards and the creation of new guidelines.

The study was conducted between December 2019 and July 2020 through a combination of desk research, face-to-face and remote interviews with key informants, email exchanges, an online survey and a virtual workshop[8] with 10 stakeholders from Afghanistan. The review process included diverse participation across geographic regions and countries facing emerging challenges as well as EORE practitioners and managers. In total, the review draws upon the experience and materials shared by 86 stakeholders from 16 countries[9] (as well as regional and global representatives) and 34 entities from a variety of sectors.[10] Roughly half (45 percent) of stakeholders consulted were women.

The review, however, comes with some limitations. The responses to the online survey and the ability to provide qualitative information on new technologies and methodologies, as well as to share relevant materials, differed between

stakeholders. Active engagement by some actors was hampered by the emergence of the COVID-19 pandemic and shifting of priorities. Similarly, a field visit to Afghanistan initially foreseen for April 2020 had to be cancelled due to travel restrictions, and was replaced by a remote workshop.

While recognising that some mine action actors are increasingly becoming involved in risk education against active security threats (e.g. person-borne IEDs), this is outside the scope of this review which is mainly focused on legacy, victim-operated devices. The draft Technical Note for Mine Action on Risk Education for IEDs defines legacy devices as "no longer under the effective control of the individual or group that deployed them, and where the local populations and relevant authorities in those locations wish to see them removed".

The level of detail provided reflects the information available and shared by stakeholders at the time of writing. It does not pretend to be exhaustive but rather to present an overview of some interventions that can inspire EORE practitioners. With the current COVID-19 challenges driving innovation, there are likely to be many more examples to learn from than what was captured in the review. Finally, it is important to note that this report is by no means an evaluation of new technologies and methodologies currently used by EORE practitioners and/or other sectors.

This report consists of three main chapters:

- **Chapter one** examines a series of initiatives that use technology and digital engagement to deliver and monitor EORE and their application in challenging contexts.
- **Chapter two** explores methodologies that either directly respond to the challenges covered in this review or have been applied to enrich EORE in challenging contexts.
- **Chapter three** introduces some inspiring initiatives and practices from other sectors that could be adapted and applied by EORE practitioners.

A catalogue of resources collected through this review process is available online (www.eore.org). The findings and recommendations outlined in the publication are intended to guide the EORE AG in defining its priorities and road map for 2021 and beyond.

CHAPTER 1

TECHNOLOGIES USED TO DELIVER AND MONITOR EORE

For years now, the mine action (MA) sector has sought new ways of using digital tools and new technologies for clearance, information management, surveys, etc. The annual *Mine Action Technology Workshop*[11] organised by the GICHD gathers together professionals from the sector and other experts to share ideas and experiences that promote efficient and effective use of innovation and technology in mine action. Some respondents explained that while significant resources have been dedicated to research and innovation in certain areas of mine action, attention to technological initiatives in the explosive ordnance risk education (EORE) sector has only recently emerged, and the wider technological progress seen over the last decade has not yet been fully capitalised on for EORE. That said, the interest in and uptake of digital solutions and tools by EORE practitioners has substantially increased in recent months due to the COVID-19 crisis.

This chapter provides an overview of technologies used to deliver and monitor EORE interventions and their potential to address the operational challenges that the sector faces. It starts with a compilation of overarching considerations shared by respondents before outlining existing initiatives using specific technologies, good practices and their respective lessons learnt. It is to be noted that this paper does not address the use of low-tech channels such as posters, leaflets, mobile cinemas, theatre, etc. For the sake of clarity, the technologies presented have been divided into five broad categories that reflect the information provided by responders:

- Social media and other digital communications platforms
- Digital applications
- Augmented reality (AR) and virtual reality (VR)
- Risk education talking device (RETD)
- Mobile data collection (MDC)

OVERALL CONSIDERATIONS

Key principles for using technology in EORE

When designing and using digital tools for EORE, many respondents emphasised the importance for practitioners to uphold the same key principles that underlie all EORE:[12]

- It was explained that successful digital initiatives must be evidence-based and rooted in an analysis of the characteristics, needs and challenges of the at-risk population to better address the specific context, culture, behaviours and expectations of the people who will directly interact with the technology. Involving the end users, if/when possible, in the development of the digital responses was also mentioned as beneficial to ensure uptake and strengthen impact of the tools used.

- The most effective EORE is usually didactic and interactive, engaging the intended audience in a two-way dialogue as much as possible. This can be more challenging to achieve virtually than in a face-to-face setting, but it is possible. Messages should be positive, emotional and empowering (e.g. solutions-oriented, encouraging to warn/protect others or celebrate positive actions) rather than technical or negative, and materials should be inclusive, ensuring that no one is left behind and upholding the dignity of all involved.

- The tools and messages developed must be tested and regularly adapted based on casualty trends and on the evolution of the local context. Some also highlighted the importance of pre/post testing (technology allowing) to measure the impact of the tool used.

- Dedicating time and resources to analysing the context is fundamental in selecting and designing digital tools to ensure that they are relevant, do not duplicate existing efforts and that their use will not result in any harm to beneficiaries. Elements to be considered in the context analysis include: diversity (e.g. ability, disability, impairment, age, language, literacy, displacement status, migration status, socio-economic status and rural/urban location), gender norms and security (sensitivity of the information, political environment, restrictions on certain digital devices, and technology infrastructure e.g. access to the internet and smartphones) that can affect the ability of at-risk communities to safely access and/or use a certain type of technology.

Several additional considerations were brought up that should be taken into account especially for digital EORE interventions. As mentioned above, data collection and analysis are fundamental to tailor EORE interventions, and social networks can play a crucial role in information and awareness-raising campaigns. However, some communities might not be comfortable and/or even be put in danger by using digital tools, particularly in insecure areas experiencing tension if it can be interpreted as a security threat. Respondents stressed the need for EORE practitioners to adopt a 'do no harm' approach to protect the safety and security of both staff and communities when using digital tools and also to address challenges related to the privacy and security[13] of data collected through digital platforms.

Poor internet or satellite coverage and limited infrastructure can limit digital EORE programming from reaching its fullest potential. Gendered aspects of internet and mobile use should also be considered. According to the Mobile Gender Gap Report 2020,[14] women are 20 percent less likely to use mobile internet than men. The difference is even starker in some regions, with the gender gap reaching 37 percent in sub-Saharan Africa and 51 percent in South Asia. This same report notes that women tend to use fewer internet services (e.g. apps) than men, meaning the online locations to reach women is likely to be narrower than for men. Finally, social norms around technology use are important to consider. In Afghanistan, for example, a negative response was triggered when EORE SMS messages were sent directly to female community members, and trust had to be rebuilt through intense community liaison.

Several interviewees insisted that digital tools work best when the organisation or entity already has a relationship with the target communities through which mutual trust and understanding have been established. Some respondents emphasised that the success of their social media campaigns was by and large due to their long-term presence in the country, the use of community-based approaches and the confidence built through community focal points, community leaders and/or respected community members. This is even more important in volatile environments where EORE practitioners have to continually adapt their approaches and where there is a risk of not being able to access at-risk communities directly in the future. Relationship building with authorities was also mentioned as a key element to facilitate testing and scaling up of innovative EORE user-centred digital tools.

For these reasons, digital EORE campaigns seem to be most effective when complementing, not substituting, other EORE activities including at an inter-personal or face-to-face level. In this way, digital EORE becomes a highly cost-effective force multiplier, increasing reach and coverage while reinforcing

messages provided through non-digital means of delivery. That said, stand-alone digital campaigns were also reported in complex operational environments but with (at the time of the review) limited to no information on their impact.

The power of partnerships

Numerous informants underlined the role of partnerships and collaborative approaches as a fundamental element that can help reduce costs, gain time, accelerate innovation and increase overall efficiency and the impact of new technologies in the EORE sector. When referring to partnerships, interviewees shared a variety of models:

- Approaching corporate social responsibility or philanthropic sections of 'big tech' companies was reported as a way of obtaining free or subsidised support for EORE digital projects (as seen in the case study below on Facebook advertisements, p. 28) and harnessing the potential of social media to deliver EORE in hard-to-reach areas. Others mentioned the importance of partnering with companies specialised in areas such as extended reality (XR), edutainment, behaviour change communications, marketing, telecommunications, etc. depending on the nature of the EORE project to be developed. It was explained that those sectors often know very little about the mine action sector and/or believe that EORE is too technical, so it is the sector's responsibility to educate new partners and highlight where they can add value.
- Some respondents reported examples of initiatives involving multiple stakeholders such as national authorities, operators, ministries, the private sector, research institutions and communications companies to research the most effective means of communicating with the target beneficiaries and working together on the development of innovative EORE initiatives (e.g. the 'Safe Steps' project in Colombia, p. 73). By collaborating, those working in the EORE sector, in digital development and other sectors are able to pool their resources and expertise and bring in different perspectives to map the best way forward.
- The development of local partnerships with national or local media centres, technology companies, universities or private businesses was also referred to as a way to ensure the adequacy, adaptability and sustainability of the platforms and tools used. Involving local innovators to brainstorm and create new initiatives is a promising way of stimulating grassroots ideas as well as generating sustainability.
- Innovation Labs have been drawn upon to develop new EORE technologies. Fabo Learning Lab,[15] a DanChurchAid (DCA) unit dedicated to developing

digital learning tools, created EORE apps for Myanmar and Syria (see section on digital apps, p. 34). Similarly, innovation blogs like the International Committee of the Red Cross's (ICRC) *Inspired,*[16] UN International Children's Fund's (UNICEF) *Internet of Good Things*[17] and UN Development Programme's Accelerator Labs[18] can be good sources of inspiration. Finally, the organisation of dedicated hackathons as part of long-term strategies can also help drive innovation to address EORE challenges.

Ultimately, developing strategic relationships or alliances across projects, organisations and sectors is fundamental but requires time, planning and dedicated resources to look for and develop opportunities.

Sharing and scaling up

While it is rarely appropriate to 'copy and paste' an existing tool into another context, several respondents mentioned that they were in the process of adapting, reusing, improving and building on existing digital products (e.g. EORE apps) rather than creating something entirely new and/or duplicating efforts.

Taking it a step further, some encouraged thinking already from the start about what comes after the pilot testing phase of a digital tool and starting to lay the foundation for its scaling up/expansion. In other words, any new EORE digital project should be part of a larger organisational effort or strategy. In this context, practitioners shared several elements to be taken into account: getting early buy-in from management on the rationale for exploring and investing in new technologies for EORE; seeking and sharing examples of good practices from the same or other contexts; clearly defining internal policies and frameworks prior to starting the project; having a fundraising strategy and donors identified; and, if possible, identifying a strategy to institutionalise the tool to ensure its sustainability. In terms of fundraising, the review showed that there is increased interest by some donors to support digital EORE initiatives as a risk mitigation measure.

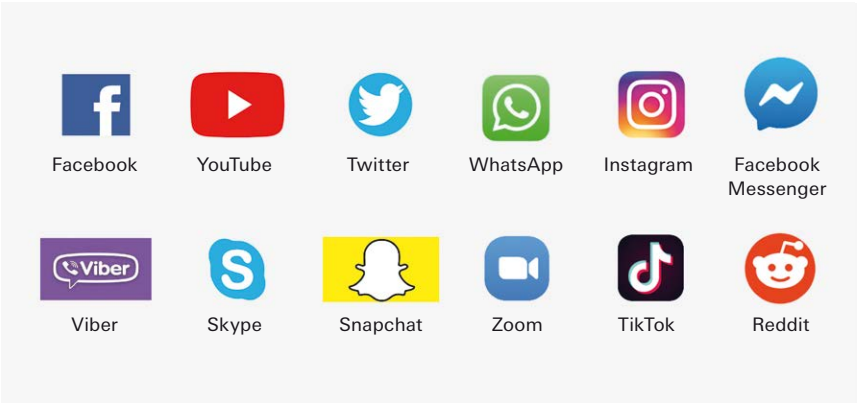
The process of learning, sharing and scaling up is made easier when there is sufficient capacity within an organisation (and buy-in from management) to take stock, critically review current EORE practices, and (when needed) collectively rethink how to improve EORE delivery and monitoring. Internally, this has been facilitated in some organisations by establishing a dedicated EORE capacity at global or headquarters level and/or an innovation unit in support of other areas of work.[19] Meanwhile, although information sharing amongst EORE practitioners has improved through the international Mine Risk Education Working Group,[20] EORE Advisory Group and Mine Action Area of Responsibility, the need was expressed to improve cross-organisational collaboration and have an online EORE repository

that would also include existing technological/digital EORE initiatives to facilitate the exchange of lessons learnt, their use, adaptation and/or improvement by practitioners from different organisations in diverse contexts.

Having outlined some general considerations for the use of technology in EORE, the remainder of this chapter focuses on particularly promising technologies in more detail.

SOCIAL MEDIA AND OTHER DIGITAL COMMUNICATIONS PLATFORMS

The past decade has seen a surge in the use of social media and digital communications platforms, which vary greatly in terms of their scope and functionality. As of April 2020, there were an estimated 3.81 billion active social media users, representing roughly half of the global population.[21] The figure below provides examples of some of the most popular social media platforms worldwide.



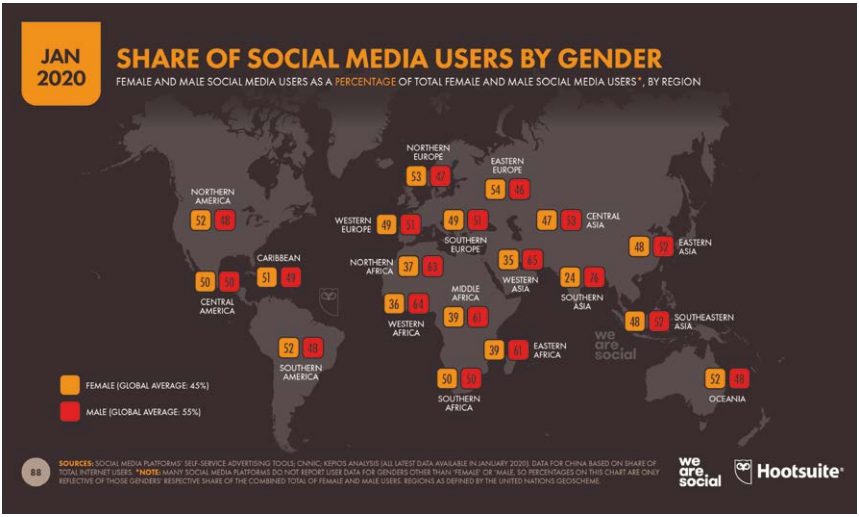
Facebook, Twitter, WhatsApp and other social media platforms have been actively used by mine action organisations for some years. EORE practitioners in particular reported using such tools in Afghanistan, Colombia, Iraq, Lao PDR, Lebanon, Myanmar, Nigeria, Syria, Ukraine and Vietnam. This is generally done through one of two ways: (a) through sharing of organic content from the organisation's page or account and (b) through paid advertisements.

Social media networks

Social media networks are online platforms that allow people to interact within networks and/or through the sharing of content in a one-to-many format. With nearly 2.5 billion active user accounts, Facebook is the largest social media platform in the world. It was also the platform most mentioned by EORE practitioners for this review. Other examples of social media networks include Twitter and LinkedIn; media sharing platforms like Instagram, Snapchat, TikTok and YouTube; and regional-specific networks like VK (Russia's main social media platform that has been used for EORE delivery in non-governmental controlled areas of Eastern Ukraine).

Social media use can vary widely between regions and demographic groups. Globally, more social media users are men than women, yet women and people between the ages 35–65 are more likely to engage with Facebook ads than men or people younger than 35. It is advised to research audience preferences and behaviours specific to the target region before selecting a platform and approach. In order to explore which social media platforms to use in a country/region or for a certain demographic, the following strategies were shared:

- UN Mine Action Service (UNMAS) Iraq teamed up with a strategic communications company to research the most commonly used communication channels by different segments of the target population.
- Some reported to have carried out research online using We Are Social,[22] a creative agency which releases annual reports on mobile phone, internet and social media use in many countries and for all regions of the world.
- Finally, it was recommended to include questions on communication channels in needs assessments.



Share of social media users by gender.[23]

A number of organisations reported using their organisation's Facebook pages[24] to interact with the general public but also, in situations where access for staff was impeded, to remain in contact with community focal points, provide them with refreshment training and share new information and instructions. Facebook pages were also reported as a means to deliver instant messages which were targeted for returnees and internally displaced persons (IDPs).

Organic content that can be shared on social networks includes text, links, photo or carousel photo (multiple pictures) posts, video posts, live videos and stories (microcontent that disappears after 24 hours). This content can then be interacted with by users, e.g. by liking, commenting or sharing. Advertisements (ads) can then ensure the content reaches a larger, more targeted audience. The case study below looks at how a Facebook advertisement campaign was used to reach nearly one million unique users with EORE content.

CASE STUDY **FACEBOOK ADVERTISEMENTS**[25]

Country: Iraq

Organisation(s): The Bureau of Political-Military Affairs Office of Weapons Removal and Abatement (PM/WRA) with Facebook, Mines Advisory Group (MAG) and the Iraqi Directorate of Mine Action (DMA)

Time: August to November 2019

Description: In order to fill a gap in the delivery of EORE to returnees in Ninewa governate in Northern Iraq, the US Department of State partnered with Facebook, MAG, and the DMA to explore alternative methods of EORE delivery. As a result, a project using Facebook advertisements (hereafter referred to as ads) as a delivery method for EORE was piloted in 2019.

With increasing numbers of people returning to their homes in explosive ordnance (EO) affected areas, partners explored ways to complement existing EORE activities (e.g. billboards, TV, radio, messages on food and water containers) to provide risk education to larger audiences more quickly. To expand its strategy and try a new format, MAG in collaboration with DMA used Facebook's advertising tools to deliver EORE infographics in the form of posters to at-risk communities describing how to recognise dangers, how to stay safe if an explosive device is discovered, and how to alert the authorities. The ads were linked to a dedicated website[26] containing essential information in three languages, four posters each promoting a different safe behaviour and a form to report EO.

Advantages of Facebook ads reported through this pilot project

- Large numbers of people can be reached in a specific area, overcoming obstacles posed by security, geography and complex operating environments that limit the delivery of face-to-face EORE;

- Ads have a low entry barrier and are easily scalable at a limited cost (the average cost per individual in this project was USD 0.013);
- Organisations can adjust their target audience to be as broad or well-defined as they wish, based on criteria such as language, location, demographics, interests, age groups, etc;[27]
- Updated EORE messages based on new accident trends or explosive hazards can be rapidly disseminated;
- It has potential to reach groups that are harder to attract through 'traditional' face-to-face sessions (e.g. youth and young adults);
- Ads can be more effective than apps and text messages because Facebook users are forced to scroll past an ad if they want to see more content on Facebook;
- Ads were shown to each individual 15–30 times thereby reinforcing the messages.

Lessons learnt

- This pilot shows the potential of public-private sector partnerships (governments, big tech, and mine action NGOs) in finding innovative ways to respond to current challenges. Through this partnership, Facebook agreed to provide USD 25,000 in free ad credits to MAG.
- Digital tools are not effective in areas with poor internet connectivity or mobile data coverage.
- As not all at-risk groups have access to social media, ads should be one component of a broader risk education campaign and used to complement other efforts.
- The average Facebook user spends just 1.7 seconds with a piece of content on a mobile device compared to 2.5 seconds on a desktop.[28] It is therefore critical to deliver life-saving messages in the most efficient way possible. It is also recommended to use a variety of multimedia/interactive materials such as short videos that are more engaging than text posts.
- Following up and replying to comments requires monitoring capacity. If capacity is not sufficient, it is recommended to turn off the comments section of the ads and instead include the contact details of the national mine action authority.

- More research is needed to determine the impact on behaviour as messaging on Facebook is often one-way (especially if comments are turned off), and Facebook analytical data does not allow the implementer to know if those reached are at risk.
- There is scope to expand the partnership with Facebook and also to explore similar partnerships with other social media companies.

Based on these lessons learnt, MAG reported that this pilot will be expanded to other operational contexts.

Videos

Video is one of the fastest growing digital mediums, with consumption of video content increasing by over 50 percent among both men and women in low and middle-income countries over the last two years.[29] While YouTube is the platform most known for videos, they can be shared on many other social media platforms like Facebook, Twitter and Instagram. In Afghanistan, two behaviour-change-focused EORE videos[30] were developed in local languages and published through popular national TV channels and social media to reach different target groups. The videos were uploaded on UNMAS's Facebook page. Both videos promote safe behaviour with positive messaging. These were tested and a baseline telephone survey conducted. The videos started airing mid-February 2020 and were expected to continue for four months, followed by an evaluation. It was reported that interactive materials such as videos are more engaging than simple text or photo-based ads.

Messengers & video conferencing

Messaging apps provide platforms for direct communication between individuals and groups. Common features include text messages, voice and video messages, voice and video calls, and sharing of photos or other files. Examples of messaging platforms include WhatsApp, Facebook Messenger and Viber. It was reported that such platforms have allowed organisations to stay connected with their staff and/or communities remotely and provide support in situations of conflict and restricted movements. Examples vary from quick dissemination of information about contamination and EO incidents to affected communities and remote support to local partners. EORE training courses have also been delivered remotely via WhatsApp, albeit with some challenges related to the lack of interpersonal interaction between participants and trainers, and progress assessment.

In Colombia, EORE practitioners have used WhatsApp to share security situation and accident reports from the field, as well as monitoring and evaluation information. This has allowed for quick responses to operational or security threats. For example, when an improvised explosive device (IED) was found along a road in March 2020, an EORE facilitator reported it on WhatsApp – which after some quick coordination with local authorities and the army, enabled the device's removal. It was recommended that clear rules be established for such chats, including not violating people's dignity (e.g. "no photos of victims in the moment of the accident or offensive language, etc."), exclusive use of the chat for work-related reasons and clear parameters for the reports. Forms should be simple enough to be used without a Wi-Fi connection and on a basic smartphone.

It was also highlighted that in some countries with outdated internet infrastructure or regions with no network or internet connection, WhatsApp and/or Facebook have developed packages with service providers allowing users to send messages/media files and watch videos for free even without having phone credit.

Similar to messaging platforms, video conferencing applications such as Zoom, Skype, Google Meet, Teams and Houseparty have seen sharp rises in use during the COVID-19 pandemic,[31] with some EORE practitioners mentioning that they were exploring using such platforms for small group sessions (e.g. with teachers and their classes) and communication with community focal points.

Pre-recorded messages

Several organisations reported on the use of interactive voice response (IVR) pre-recorded audio messages to reach at-risk communities in hard-to-reach areas. IVR pre-recorded messages can be shared via SMS on mobile phones, SD micro cards used in vehicles transporting people, loudspeakers, radio stations, mass and social media (WhatsApp, Messenger) to ensure the reach of all, including people on the move and/or in remote areas.

For example, ICRC Colombia developed 11 pre-recorded EORE radio messages (8 for rural and 3 for urban environments)[32] which have been broadcast since April 2020 through community radio stations. The radio stations in EO-affected areas were chosen based on a market analysis.

SMS

Despite the rapid development of technologies such as chatbots or messaging apps, mobile phones are still, in many contexts, one of the most prevalent and preferred channels of communication. SMS are text messages sent via mobile

phone networks without requiring an internet connection, but without the added functionalities of most messenger apps (e.g. voice or video calling, file sharing, etc.). Some explained that sending mass communication through SMS is one of the best and most cost-effective ways to communicate with a large audience. Dedicated software allows two-way SMS communication, thereby creating an interaction between the sender and the receivers. When opting for this channel of communication, it was recommended to partner with local telecommunications companies that provide either products or services for managing SMS engagement with customers.

Overall takeaways

Several respondents explained that social media campaigns are easily scalable and that even though the initial investment (financial and time) might not be insignificant, they can be more cost effective in the medium term. Digital tools are flexible in that they can be instantly updated according to new information on accident trends or EO contamination and therefore save costs and time related to the production or reprinting of physical risk education materials.

Some of the tools reported show that social media and other digital platforms are a much faster way of reaching massive numbers of people in EO-affected areas. This applies in particular to urban youth and young adults that are generally viewed as major adopters of new digital media and networks. Moreover, by drawing on market research regarding social media use, EORE practitioners are able to meet target audiences where they already are. Digital platforms can be used for remote programming. They provide the ability to keep contact with and deliver EORE to communities in hard-to-reach areas where physical access is not possible. Some of the examples demonstrate that they can also be used for real-time data collection and exchange for programming, e.g. security updates, accident and victim reports, remote activity reports, photos – and monitoring of the number and location of users, number of consultations, amount of time spent using the services, etc. Several respondents also gave examples of digital platforms used to provide remote training of community focal points, teachers, trainers and staff.

By engaging communities via social media and other digital communications platforms, it was reported that the sector can not only provide critical life-saving information, but also engage users and establish a dialogue allowing them to provide insights, feedback and priorities resulting in turn in more effective and better-targeted programming. Some platforms can be highly interactive two-way services through which users can share, co-create, discuss, participate and modify user-generated content or self-curated content posted online. Creating a two-way communication through digital means however can be a time-consuming

activity that requires dedicated resources. Mechanisms should be put in place to streamline the process to ensure appropriate actions are taken, relevant information is shared with concerned people or authorities, and users and their data are adequately protected. Filters and firewalls should also be installed to avoid flooding the platforms with spam.

Some highlighted the fact that the impact of social media campaigns was enhanced when these were part of a broader EORE campaign. In this context, it was advised that complementary and engaging EORE tools be combined. To do so, stakeholders that were interviewed recommended:

- Developing knowledge-building content through a wide variety of materials ranging from simple graphics and visuals to videos, ads and interactive tools such as games and quizzes to help enhance information recall as well as provide feedback on the impact of messaging;
- Inviting users to provide comments and feedback on social media is a dynamic way of enhancing information recall and measuring results when there are sufficient resources;
- Establishing, in close cooperation with the authorities involved, detailed visibility and communication parameters related to the nature and frequency of information to be exchanged. This is important to ensure the protection and security of beneficiaries and stakeholders.

Many respondents mentioned that social media and other digital communications platforms allow EORE practitioners to target and engage their intended audiences that use smartphones and social media. The tools shared by EORE practitioners are directed both at internal and external target audiences: people living or moving in EO-affected areas (including refugees and IDPs), community focal points, the general population, authorities, project teams and partners.

Due to the fact that messaging on social media tends to be one-way, some reported that it can be difficult to measure impact on the target audience. While such technologies can give precise insights when it comes to reach and knowledge retention, some of the stakeholders explained that further efforts need to be invested in assessing impact on behaviour change. It may also not be realistic to expect behaviour change as an outcome from messages received through social media alone, unless included as part of a larger intervention reaching beneficiaries through multiple avenues. More practical information and inspiration on the use of social media to effectively engage people affected by crises is provided in a 2017 publication[33] of the ICRC, the International Federation of Red Cross and Red Crescent Societies and the UN Office for the Coordination of Humanitarian Affairs.

DIGITAL APPLICATIONS (APPS)

Many EORE practitioners have expressed their interest in taking advantage of the rapid and widespread expansion of smartphone and computer use globally to explore digital applications for the delivery and monitoring of EORE interventions.

Examples

The following EORE interactive apps[34] were reported by respondents. They have been developed for different purposes: to deliver life-saving messages to specific target groups, to train teachers in hard-to-reach areas and, to some extent, to monitor the impact of EORE on knowledge and behaviour.

Country: Myanmar

Organisation(s): Learning Lab DanChurchAid (DCA) with the support of UNICEF

Launch: 2017

Target audience: At-risk communities, with particular emphasis on the 18–35 age bracket, and humanitarian workers

Specificity: The app forms part of a common EORE toolkit developed by DCA Myanmar, UNICEF and the Myanmar Mine Risk Working Group with the support of the Ministry of Social Welfare, Relief and Resettlement

Topics covered: Recognition of danger areas, warning signs and clues, high-risk behaviour and information sharing

Languages: Burmese and English

Free download from Google Play & App Store: MRE Myanmar

Country: Vietnam

Organisation(s): Catholic Relief Services Vietnam, with funding from PM/WRA

Launch: 2019

Target audience: Children aged 8–12-years old

Specificity: A game-based app with five stages that are equivalent to lessons. It can complement EORE in schools

Topics covered: Characteristics of EO, high-risk behaviour, ways to prevent accidents, consequences of accidents, and clues to identify contaminated areas

Languages: Vietnamese and English

Free download from Google Play & App Store: Vietnam App

Country: Syria

Organisation(s): Learning Lab DCA with funding from UNICEF and the Ministry of Foreign Affairs of Denmark

Launch: 2016

Target audience: Training for teachers in hard-to-reach and besieged areas of Syria (to ultimately be used for teaching of children)

Specificity: The app was tested to work on old and slow smartphones. It can be downloaded and used entirely offline. After completing a 50-minute training, teachers have access to a toolkit with activities and games

Topics covered: The app helps teachers acquire a deeper understanding of explosive threats in the country and how to behave safely, so they can provide EORE to children

Languages: Arabic and English

Free download from Google Play & App Store: Syria App

Overall takeaways

Apps are accessible at all times to anyone with the required technology (smartphone or computer), at no cost to the end user, although unlike with social media where the user base is already present, apps must be sought out and downloaded by users. All examples shared for this review can be downloaded free of charge from platforms like Google Play or the Apple Store. In Myanmar, users can also share the app directly via a file-sharing application called Zapya.[35] This means that while apps can be tailored for specific audiences (e.g. communities living or moving in affected areas, children, teachers in remote areas, staff, etc.), ultimately, they can be downloaded and used by anyone who has access to a smartphone. One operator reported that even though its app had been launched a few years ago, it was planning to launch a communications campaign through Facebook targeting potential future users living in EO-affected areas.

While initial costs for the development of an app can be a limiting factor, interviewees mentioned that they are cost effective over the medium term due to low maintenance costs, scalability, adaptability and environmental friendliness (removing the need to reprint materials). One respondent explained that the total projected cost for an EORE mobile app still to be developed amounts to approximately USD 20,000 with little to no additional cost once the product is launched, and that the value offered significantly outweighs the associated costs.

Other advantages reported include online and offline functionalities, translation into multiple languages and being highly customisable. Apps can be improved continuously with additional features and are highly interactive allowing users (especially young audiences) to engage with inspirational and attractive skill-building content like videos, games and quizzes, thus increasing the likelihood of knowledge retention. Other interesting features of EORE apps that were shared include the possibility of simulating environments where users can safely experience danger and practice behavioural responses with real-life applications, and to monitor the number of users, their locations, the amount of time spent using the app, quiz results, etc.

Some recommendations that have emerged through this review include:

- Including a budget and plan for marketing the app to its target audience. In Afghanistan, for example, five photographs and a 30-second video were planned to be aired once a week for two months on live television and at strategic times to reach children.
- Choosing the right back-end and online monitoring portal for the app is key to capturing users' performance, how they interact with the content and to

indicate knowledge gaps. This is also crucial for adjusting and fine-tuning messaging.

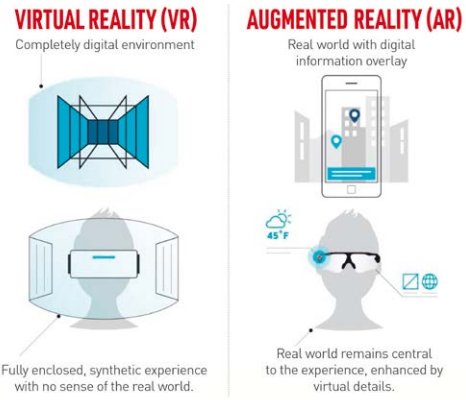
- Paying particular attention to users' data protection.
- EORE apps can be a good complementary tool for EORE delivery in conflict settings. This review also shows that apps can play an important role in development contexts (e.g. Vietnam) where EO casualties have decreased but the need remains to raise awareness and promote safe behaviour in at-risk communities. This is especially the case with people on the move and younger generations who are more accustomed to digital rather than face-to-face environments.
- As the use of digital apps for EORE is fairly recent, it is important to capture and share lessons learnt of behaviour change impact assessment methodologies.

Several informants reported that their organisation was in the process of reproducing, translating and adapting existing apps from other contexts to respond to their local needs. Finally, some also mentioned that existing apps that provide information on first aid[36] could be an interesting complementary risk reduction tool in some contexts.

AUGMENTED REALITY (AR) AND VIRTUAL REALITY (VR)

AR and VR are known collectively as extended reality (XR). Both relying on computer-generated images, VR is an immersive experience where users are fully surrounded by an artificial simulation, while AR refers to the superposition of digital objects or overlays on real-world environments. In other words, VR replaces reality, taking the user somewhere else while AR adds to reality, projecting information on top of what the person is already seeing.

The following examples of VR and AR technologies used in the sector were shared by respondents during the review.



© ICRC [37]

Examples

VIRTUAL REALITY GOGGLES–EXPLOSIVE HAZARDS AWARENESS TRAINING

Country: Iraq (Erbil and Baghdad)

Organisation(s): UNMAS

Time: 2018–present

Description: VR goggles have been used by the UNMAS Iraq programme as an auxiliary tool for explosive hazards awareness training[38] for humanitarian actors. The VR goggles provide an immersive three-dimensional realistic setting where trainees can safely practice identifying potentially threatening environments and gain basic knowledge on how to mitigate explosive hazard threats.
The VR experience complements a two-hour explosive hazards awareness training and was highly rated by training participants in their final evaluations.

AUGMENTED REALITY–EORE FOR CHILDREN

Country: Ukraine

Organisation(s): DRC-DDG (Danish Refugee Council–Danish Demining Group)

Time: In development

Description: In order to complement the use of small media for school-based EORE sessions, DRC-DDG developed colouring books featuring comic-like 'heroes and heroines' to encourage children to engage with the materials after the sessions and thereby enhance their retention. It was reported that the colouring books are currently in the process of being transformed into AR. *How does AR work on a book?* Children colour the characters in a printed colouring book. Then, using an app downloaded on a mobile device,[39] they scan their work. By doing so, the drawing is detected and tracked, and the characters are brought to life in movement and games directly on top of the pages of the book. Experience-based recommendations and a comprehensive evaluation of this project are expected after its implementation in late-2020 or early 2021.

VIRTUAL REALITY–EORE FOR CHILDREN

Country: Ukraine

Organisation(s): UNICEF and IT Ukraine Association

Time: New project launched in May 2020[40]

Description: IT Ukraine Association and UNICEF recently signed a Memorandum of Understanding to foster cooperation on protection of the rights of children and youth. The first outcome of the joint work will be the development of an interactive VR product to increase knowledge and behaviour change among children in eastern Ukraine.

AUGMENTED AND VIRTUAL REALITY–EXPLOSIVE ORDNANCE DISPOSAL (EOD) TRAINING

Country: Cambodia

Organisation(s): Golden West Design Lab[41] with the support of PM/WRA

Time: Ongoing

Description: Golden West Design Lab has been working on applying VR and AR technologies to EOD for approximately three years. As this is not the focus of our review, more details on this project can be found in an article published in the Journal of Conventional Weapons Destruction.[42]

FULL IMMERSION VIRTUAL REALITY–AWARENESS RAISING FOR MINE ACTION DAY

Country: Vietnam

Organisation(s): ICRC

Time: 2019/2020 (release delayed due to COVID-19)

Description: During its United Nations Security Council term, the Vietnamese Ministry of Foreign Affairs supported by the ICRC produced a virtual reality simulation[43] for use at the UNHQ in New York for International Mine Awareness Day 2020. The production seeks to raise awareness about the humanitarian consequences of weapon contamination in the country and the role of mine action. Additionally, the video aims to show the target audience that greater and sustained attention on the part of the international community is required to deal with the threats caused by EO.

VIRTUAL REALITY–GENERAL AWARENESS RAISING ON IEDs

Country: Germany / USA / Switzerland / Iraq

Organisation(s): Produced in cooperation with the GICHD, NowHere Media and Oculus.

Time: 2018

Description: 'Home After War'[44] is a VR experience that tells the true story of Ahmaied, an Iraqi father who returns to his home in Fallujah, Iraq, only to confront the fear that IEDs might have been left behind in his home or community.

Through virtual reality goggles viewers are invited to walk through Ahmaied's home, which still shows signs of damage from the war. With Ahmaied as their guide, they hear his story and learn about the ever-present fear posed by IEDs and what it is like to fear the home you once loved. The interactive experience is complemented by embedded 360° videos that give the viewer the opportunity to experience first-hand an explosive hazard-contaminated environment and also to witness outdoor scenes in Fallujah and refugee camps.

Overall takeaways

VR and AR have become a valuable training option for organisations across diverse sectors – from humanitarian, medical and emergency services, to retail and tourism. Immersive VR experiences offer an innovative way of allowing staff to learn by doing without the associated risks and expense of physically simulated or actual environments. Through VR, users are mentally, emotionally and physically immersed in a scenario which stimulates their senses, gets them to interact with their environment and ultimately prepares them for real-world situations. With capabilities of merging virtual and real worlds together, AR also provides new transformative opportunities in the fields of education and behaviour change.

ICRC RESEARCHES VIRTUAL REALITY AS A BEHAVIOUR CHANGE TOOL

Through its Innovation Unit, Virtual Reality Unit and innovation blog,[45] the ICRC is exploring new and improved ways of responding to 21st century challenges and putting crisis-affected populations at the centre of solutions.

The Innovation Unit is specifically exploring the efficacity of virtual reality for influence and behaviour change.[46] In this context, an ICRC article published in 2019 titled *The Current State of Virtual Reality on Behavior Change*[47] confirms that, "There is sufficient evidence of VR's capacity for enabling behavior, empathy building, experiencing consequences, projection of the future, feedback and emotional self-regulation."

ICRC's innovation blog also offers a window into innovation at the ICRC in a wide variety of fields while showcasing inspiring initiatives developed by other organisations. Finally, in exploring how technology and behaviour change intertwine, ICRC's Innovation Unit is studying memory retention of international humanitarian law in armed forces through virtual environments.

Potential of XR for EORE

According to the information collected through this review, the mine action sector has only just started exploring the full potential of VR and AR and has used it in a limited number of instances to provide EO awareness sessions for humanitarian actors working in complex environments; to raise general awareness about the humanitarian consequences of EO; to explore ways of delivering EOD training; and to increase message retention for children through two recent EORE AR initiatives.

While it was reported by several XR experts that the use of immersive technologies increases users' engagement, enhances learning, expands experiences and increases knowledge retention, there seems to be a general perception among

EORE practitioners that XR technologies are too cost prohibitive, time-consuming and complex to develop in challenging contexts. Yet one VR company[48] consulted during this review pointed out that VR offers a scalable, affordable and effective way of training people in resource-poor, hard-to-reach areas that require personnel to be prepared to deal with life-threatening emergencies. In addition, recent leaps in AR and VR technologies made by companies such as Oculus, HTC, Google, Samsung and others have made the production of accessible consumer-grade applications and equipment possible. VR headsets for instance may range from USD 10 for Google cardboard used on a personal mobile phone to over USD 1,000 for self-contained headsets.

This said, it was reported that the overall cost to develop AR technologies is slightly higher than those of digital applications, but much cheaper than VR. While VR requires at the very least a phone and a headset, AR is similar to digital applications in that it does not require expensive equipment to run. AR can function on normal devices already equipped with a digital camera such as a smartphone. Also, the cost of maintaining AR after deployment is lower, similar to digital applications.

The examples outlined in this review once again highlight the crucial importance for EORE practitioners to engage in new types of partnerships to explore the full potential that XR technologies have to offer. VR and AR are rapidly evolving fields that present opportunities for the EORE sector, in particular with regard to training (e.g. safety training, training of trainers, teachers, community focal points, etc.), general awareness raising and behaviour change.

RISK EDUCATION TALKING DEVICE (RETD)

Country: Sudan (Darfur), Nigeria (in development)

Organisation(s): UNMAS with the approval from the Sudan National Mine Action Center

Time: 2018–present

Risk Education Talking Device in Darfur

The RETD is a solar-powered audio talking device that was developed to deliver EORE messages in Darfur. It was designed as an innovative way of disseminating messages in hard-to-reach areas by risk education teams as a result of insecurity, bad road infrastructure, weather conditions and/or simply vast areas to cover and where there is limited or no radio/internet connection.

The audio device allows actors to engage communities with low literacy rates, oral traditions, no access to technology and where face-to-face methodologies can be challenging – such as nomadic groups, out-of-school children and farmers/shepherds in remote settings.

The device can withstand the elements and is capable of storing and playing back multiple pre-recorded EORE messages, songs, dramas, interviews and focus group discussions allowing individuals and/or large groups of up to 40–60 people to listen and to repeat important points or play back specific EORE messaging at their own convenience, unlike in traditional face-to-face sessions.

The RETD can be adapted to include different targeted messages or materials tailored to the needs of specific at-risk groups and in different languages/dialects, thereby overcoming challenges related to the training of multilingual community focal points. The messages can be further customised thanks to a memory card that can be updated periodically with securely encrypted new or additional messaging and materials adapted to the evolving EO threats and needs of targeted audiences.

The RETD presents numerous advantages:

- It can be integrated with a larger public address system or connected to a solar-operated radio and does not require an internet connection. The RETD can therefore serve as a substitute when digital connectivity (i.e. internet and telephone) and electricity are absent. It may also include software to extract statistical data from the device on use and user interactions.
- While the RETD requires some initial investment, it is cost effective over the long term due to low maintenance requirements and high adaptability and customisation options through replaceable cards. RETDs are tools that remain with the community and that can be circulated to more than one household throughout the lifetime of the device ensuring that EORE messages can continue to be delivered even after project closure.
- It was also reported that it has the potential to create synergies with local education or health providers, to foster local partnerships and be used as a platform for other awareness campaigns (e.g. COVID-19, small arms and light weapons, etc.).

That said, there were some limitations reported related to dependency on people for physical transfer of the devices and distribution of new recordings.

Recommendations and good practices that have emerged through this review include:

- Using an entertaining approach and offering the possibility of repeat listening helps improve message retention and user ownership. Recent developments in podcasts and storytelling may offer inspiration for enriching content used on RETDs.
- In the case of Darfur, it was reported that the RETD was able to disseminate EORE messaging in a neutral way (as opposed to through other communication means associated with particular political parties).
- Options for visual complements should be explored to overcome fatigue with oral messaging and make the tool accessible to people with hearing difficulty.
- Producing RETD of different colours depending on the targeted group could improve user differentiation.
- An add-on monitoring and evaluation procedure is required to ensure devices are used by everyone and to assess the impact on behaviour change.

MOBILE DATA COLLECTION

Mobile data collection (MDC) refers to the process of collecting information using a mobile device – usually a phone or a tablet. Several respondents reported that MDC tools are being used more than ever before to collect relevant data for EORE practitioners and inform programming, monitoring and reporting. This includes data on the context where EORE activities are planned (e.g. type of EO present, location of threats, accident and victim reports, etc.), the population at risk, and outputs and outcomes achieved. Examples of tasks for which MDC tools have been used to improve EORE are listed below.

Pre- and post-tests conducted on the spot to measure retention and change in knowledge resulting from the participation in EORE sessions

Knowledge, attitudes and practices (KAP) surveys to capture behaviour change before, during and after interventions

Field testing of EORE materials

Built-in guidance for facilitators and evaluations of facilitator knowledge

Real-time tracking of operations and team/partner outputs and productivity, as well as measuring progress against project indicators[49]

Quality assurance of activities where access and in-person monitoring are not possible

Examples

Equally as broad as the range of tasks that MDC can support is the number of tools on offer. Respondents to this review cited using the GICHD's Mine Action Reporting System (MARS), Survey123,[50] Fulcrum,[51] KoBoToolbox,[52] Deduct Demining,[53] and SurveyCTO[54] in particular, as well as custom ArcGIS platforms. It was also reported that most of these software systems require the procurement of a licence and that some cannot be used in certain places due to sanctions imposed by certain countries.

Organisation(s): MAG Iraq

Use(s): To collect monitoring and activity data on community liaison activities, including delivery of EORE sessions and pre- and post-testing surveys.

Takeaways: Training and close follow-up with EORE staff in the first few months of roll-out of the technology is essential to ensure that data entry is accurate. It is dependent on good quality tablets and internet connectivity. Generally, it has allowed for better analysis on outcome indicators and effectiveness of delivery of EORE.

Cost: USD 25 per user/year

Fulcrum

Organisation(s): The HALO Trust Iraq

Use(s): One form was developed to capture basic information on EORE sessions delivered (e.g. location, number of participants, materials used) and to report to the national authority. A second form was recently created to conduct pre- and post-EORE session tests.

Takeaways: The Fulcrum app allows the user to take photographs with the tablet, which is a good source of verification. It also includes fields in its surveys for instructions. Finally, it removes paper survey and allows for the collection of data and to manage workflow in real time.

Cost: USD 14 to 20 per user/year

KoBoToolbox

Organisation(s): The HALO Trust Syria, UNICEF Colombia

Use(s): To capture pre and post knowledge about EORE in north-east Syria.

Takeaways: KoBo doesn't require internet connection at the time of initial information capture. This enables EORE teams to save data from each session in real time and upload it via the internet when available. The data uploaded facilitates the analysis of trends of at-risk groups and helps tailor EORE sessions.

Cost: Free; unlimited number of users

Overall takeaways

While the specific technological features available vary between tools, the following were mentioned as particularly helpful:

- Automatic systematisation of information in a standardised qualitative way reducing human errors and bias;
- Adapted forms compliant with International Mine Action Standards (IMAS)/national authority data collection and reporting forms;
- Information Management System for Mine Action (IMSMA) Core compatible forms (Survey123 and Deduct only);
- Data encryption and ability to share data in a secure manner with all concerned users (from the field to country office to HQs) either instantly through online synchronisation or shifted in time via an automatic upload by the system once connected;
- Customised operational dashboards collating and displaying submitted data that can be easily accessed and understood by the end users;
- Ability to include photographs, which can serve as a source of verification.

The benefits to EORE practitioners of including MDC as part of their information management set-up are multifold. For a start, MDC enables rapid and even real-time collection and sharing of quantitative and qualitative data so as to inform strategic and operational decision-making and facilitate prioritisation and coordination. For example, one stakeholder reported that using MDC to store KAP data allows the data to be easily synced with headquarters throughout the programme cycle, rather than just during stand-down.

MDC is also a time saver, both for those from whom the data is being collected and for the users. Forms are designed to be user friendly and to avoid the constraints of paper forms; they can be quickly adapted, sent via messenger services like WhatsApp, are easily scalable and can be made accessible in multiple languages.

Finally, MDC provides a reliable system for increasing transparency between users while decreasing the likelihood of mistakes or false reporting. Many respondents agreed that MDC tools are particularly useful in volatile and/or emergency environments when dealing with a large influx of people on the move.

To capitalise on the potential of MDC, the following good practices were recommended by respondents:

- When setting up an MDC system, consider what data[55] is needed, for what use, in which format, to be shared with whom. Form design should be straightforward and questions not too long (ideally closed questions, as open-ended questions can be time consuming to complete from a mobile device).
- Choose software compatible with IMSMA Core forms.
- Be aware that there is a cost associated with the development of forms and that although its development may be swift, it might take time before the forms are approved.
- While most MDC tools require minimal technical ability to implement their most basic functions, it is still important to train and closely monitor MDC tools' users.
- Design forms considering pertinence and clarity of criteria, and what the real expected result of the information required is. Pay attention to ensuring proper translations, which play a crucial role in how results can be interpreted.
- Anticipate some operational challenges posed by MDC devices' dependence on batteries and on internet/satellite connectivity to synchronise data.[56] When working in the field, consider providing alternative power sources for phones and tablets.
- Purchase protective covers or cases for the devices that are adapted to the operating environment.
- Allocate sufficient budget for the repair and replacement of MDC devices.
- Always consider the protection of MDC users and data subjects. The use of mobile devices may not be appropriate in contexts where they tend to attract suspicion and insecurity, especially in locations where such items are prohibited by parties to the conflict.

CHAPTER 2

METHODOLOGIES FOR EORE IN CHALLENGING CONTEXTS

The previous section detailed how the mine action sector is leveraging technological advancements to deliver and monitor explosive ordnance risk education (EORE) in challenging contexts, yet there are other ways that the sector is responding to challenges that do not rely on technology. This section begins with a look at methodologies developed specifically for the challenges covered by this review. It then takes a step back, assessing the relevance of broader EORE trends for addressing the challenges.

PART A: METHODOLOGIES SPECIFIC TO CHALLENGING CONTEXTS

SPECIFIC METHODOLOGIES FOR NON-DIGITAL REMOTE DELIVERY

Security and geographical constraints can limit outreach with at-risk populations, preventing EORE practitioners from accessing communities in person. While Chapter 1 focused on technological ways of crossing access barriers, non-digital methodologies are still needed, especially to reach affected communities and vulnerable groups with low to no digital access. Non-digital avenues identified through this review include:

COMMUNITY FOCAL POINTS (CFPs)

CFPs are valuable assets that, once trained, can be mobilised when access becomes restricted, through phone calls or text messages even after a project's end date. CFPs can include those in more traditional leadership roles (e.g. village heads, religious or community leaders or schoolteachers), but they need not be. Other examples reported include youth ambassadors and scout leaders, adult volunteer programmes, parents and certain professionals (such as delivery drivers, utility workers, soldiers and listening group / radio facilitators). In emergency cases, training of trainers can even be done remotely via an internet or video link or through e-learning platforms.

ROADSHOWS

A roadshow is "a series of shows or events that take place in different places around the country, for entertainment or in order to give the public information…" (Cambridge Dictionary). EORE practitioners have employed roadshows in innovative ways to spread EORE messages in areas with limited access. For example, in Iraq, EORE posters were affixed on gas cooking cylinder distribution trucks and water bottle packaging, and drivers received a short training on EORE that they could share. Similarly, motorcycle drivers have been equipped with loudspeakers to broadcast EORE messages.

STRATEGICALLY PLACED VISUALS

Examples include billboards at key transport intersections or border crossing points, large screens with EORE videos at refugee / internally displaced persons (IDP) camps, outdoor posters on walls and taxis, affixing signs or painting messages on delivery trucks, and dissemination of car decals.

MASS AND SMALL MEDIA

Books for children and posting of leaflets on community noticeboards were specifically highlighted, as well as the potential of newspapers, radio and TV.

PARTNERSHIPS

Strategic partnerships with government ministries and/or other sectors can massively expand the reach of EORE. A case study below on integrating EORE in existing national networks and platforms in Afghanistan (p. 67) details several intra-governmental initiatives under the leadership of a national mine action authority, and Chapter 3 highlights collaboration between EORE and public health sectors in light of the COVID-19 pandemic (p. 84).

From this review, several considerations for non-digital remote EORE delivery were identified. First, EORE practitioners should carefully consider the actors that are able to access the given region(s) and how they could be safely mobilised for EORE. These could be transient groups (such as shepherds), private or public sector actors (as with the examples of gas cylinder delivery drivers, construction staff and utility workers), other humanitarian (e.g. Red Cross and Red Crescent National Societies), protection, development or education actors, etc. In all cases, and especially those where active security considerations are at play, applying context and conflict sensitivity in a 'do no harm' perspective is an absolute prerequisite.

Many highlighted the need to take measures to prepare for and mitigate the risks associated with having to reduce or withdraw physical presence. These include:

- Building long-term strategic partnerships with civil society and other sectors.
- Investing in the development of community capacities, including local partners, networks of CFPs and peer to peer educators. Recommendations for this include involving the community and any relevant partners from the outset, ensuring that they are gender and diversity balanced and able to reach all target groups in the area, giving them ownership of implementation and monitoring plans, and following up regularly through prearranged meetings (in person or using video-conferencing technologies) with fixed agendas.[57]
- Using a combination of EORE materials and tools, including at least some that are less people dependent (e.g. risk education talking device).
- Planning a contingency stock of materials for partners or CFPs working in remote settings (more challenging if showing improvised explosive devices (IEDs)–see next page).
- Maintaining flexibility in plans to allow for adjustments and changes as the security environment ebbs and flows.

In contexts where clearance capacities are also limited, for instance due to security concerns, this should be taken into account in EORE messaging so as not to erode community trust (e.g. when reports of explosive ordnance (EO) contamination are not able to be followed up).

Finally, it was observed that for the most inaccessible regions, public information campaigns using billboards or digital means are too often the only identifiable way of reaching beneficiaries. More work is needed to develop and test methodologies for comprehensive, interpersonal EORE sessions that can be delivered remotely, as well as to reach those with lower literacy, lower digital literacy, limited internet or electrical connections, and persons with disabilities.

SPECIFIC METHODOLOGIES FOR IED RISK EDUCATION

In many respects, risk education for IEDs is not that different from risk education for traditional mines. Both respond to threats to the lives of community members that are usually hidden to the untrained eye, both aim to promote safer behaviour, and both rely on the same core principles to be effective. Nevertheless, there are a few notable differences that pose challenges for IED risk education. First, IED placement may initially appear more haphazard than with traditional minefields, and they can be hidden in a variety of contexts that makes their detection more difficult. In some cases, deliberate concealment of IEDs renders their discovery almost impossible unless a technical entry and search of the property has been conducted. Second, IEDs are often made from components and materials that are not obviously dangerous. Third, patterns of IED use are often fluid–they can be both highly localised and change rapidly.

The IED visualisation debate

One of the most pervasive debates in the mine action sector at the moment is on how IED messaging should be handled. While all agree that beneficiaries should have access to the right information and behaviour to protect themselves, opinion is divided when it comes to visualising IEDs.

Excerpt from a children's magazine in Iraq, produced by the Directorate for Mine Action, and Humanity and Inclusion

It was reported that in contexts where many of the IEDs are of the same type, it may make sense to depict the IEDs using images–as has been done in Iraq. In these cases, pictures or drawings of IEDs in their real environment and found during clearance operations have been presented during EORE sessions, while noting that the images are just examples.

Yet there are clear risks involved in doing so, as outlined in the draft Technical Note for Mine Action (TNMA) on IED Risk Education[58] (version 1.0 from June 2018):

> *In recent years, one of the most prevalent containers for IED is a simple plastic canister, often referred to as a 'yellow palm oil container'. So prevalent are these that some IED search and disposal trainers even refer to them by*

their acronym, 'YPOC'. Nevertheless, however common they are as IED containers, it is still a fact that most YPOC encountered are not *IED containers, and it is commonly understood that the only limit to IED construction – and their containment in particular – is the imagination of the builder. Thus, providing extensive pictures of containers that might contain IED is often irrelevant. Furthermore, such an approach could be counter-productive in either (a) encouraging large numbers of false alarms or (b) damaging the credibility of the RE material. Furthermore, the fluidity of IED use is such that, even if an RE poster campaign accurately portrayed (for example) YPOC as the main containment for a particular bombing campaign, there would be very little obstacle to the IED builders changing their preferred container much faster than it would be possible to replace poster sets.*

Especially in contexts where armed conflict is ongoing, there is also concern that materials with detailed pictures of IEDs that are associated with a particular party to the conflict could put the beneficiaries and/or EORE practitioners at risk of reprisal.

Despite these concerns, responses to the survey sent as part of this review showed that the debate is far from settled and that there is no 'one size fits all' response. While many respondents openly questioned the efficacy or ethics/conflict sensitivity of including images of IEDs, few actually reported taking a clear policy on it.[59] In fact, several of the materials shared with the GICHD as part of this review included cautionary images of everyday objects such as teddy bears and the aforementioned yellow canisters. Beyond rumoured anecdotes, the authors were not able to identify concrete evidence (e.g. statistics, studies, even examples) either supporting or refuting the use of IED visuals.

Some stressed that if images of IEDs are used, close coordination between IED search or clearance and EORE teams is vital for the development of message content, as well as early liaison and information sharing with ex-combatants who can identify IED types and hazards. Trends in the use of IEDs should be continually monitored and, where necessary, materials adapted to reflect actual risks. As seen in Chapter 1, digital campaigns offer advantages as they allow for quick adaptation of messages, but if print materials must be used then organisations should try to avoid printing too much surplus stock. Finally, it was reported that using images of IEDs reflecting those used by all parties to the conflict had in some instances helped reinforce the neutrality of the EORE practitioner. Based on the above, it is evident that the sector needs clearer guidance on this question, and until such a point a cautionary approach is recommended.

IED risk education messaging alternatives

Instead of focusing on technical components of IEDs, which is "not the most useful focus of information for more general humanitarian purposes", the draft TNMA on IED risk education recommends "providing information on patterns of use… thus emphasising safe behaviour messages". In other words, it says, EORE practitioners should encourage beneficiaries to "be alert for the presence of the abnormal or the absence of the normal."

Rather than knowing what mines, IEDs and other explosive remnants of war look like, it is… more important to look for clues suggesting the presence of these items, such as signs of prior military positions or combat.

***RASB Guidelines*, ICRC**

In this vein, the concept of ground sign awareness (GSA) is used by some EORE practitioners to draw attention to signals and clues that could indicate the presence of a danger, like unusual combinations of items (wires protruding from everyday objects), disturbed surroundings (abandoned or damaged houses, overgrown areas) or militarily strategic points (narrow paths through wooded areas, ammunition remains, bridges and channels). GSA was reported to be used both for training of staff on explosive hazards but also as part of EORE approaches with at-risk communities. It was emphasised that GSA communication should be based on accident reporting and analysis and that messages should be clear to avoid overburdening the target audience with unclear or unnecessary information. An evidence-based, illustrated handbook on IED GSA, soon to be published by the GICHD, will help the mine action (MA) sector and EORE practitioners to increase their knowledge concerning signs and traces of a presence of an IED and to inform decisions related to IED risk education messaging.

Other traditional means of sharing information that rely on mental images instead of pictures, like oral storytelling (at community level or on the radio), are recommended in the draft TNMA for IED risk education. Personal accounts from survivors and accident reports can also help to elucidate the dangers of IEDs in a realistic and tangible way.

SPECIFIC METHODOLOGIES FOR URBAN ENVIRONMENTS

Urban areas bring with them an added degree of complexity and, often, greater blurring of the boundaries between safe and unsafe. In addition, experience in Syria and Iraq has shown that the rate of post-conflict population return to a large urban environment is likely to greatly outpace survey and clearance. This places extra requirements on EORE practitioners to be able to ensure their staff's safety and security. An anticipated revision to IMAS 12.10 Mine/ERW Risk Education – expected to be adopted in 2020 – states this clearly, indicating that in such environments "EORE practitioners shall conduct a formal risk assessment and take appropriate measures to mitigate any security concerns highlighted", while also always ensuring "that adequate medical support is provided to EORE teams". Some examples of additional safety protocols for urban environments include:

- Only allowing EORE teams to enter an area once it has been checked by a technical team;
- EORE/community liaison teams working with or close to clearance teams, with joint medical and security support;
- More frequent status check-ins by EORE/community liaison teams with appropriate line manager(s); and
- More medical equipment (e.g. vehicles kitted out as ambulances) and more advanced training in first aid and trauma for EORE/community liaison teams.

Mosul, Iraq, 2017

The above measures differ from typical standard operating procedures in rural environments, where EORE/community liaison teams are often the first MA actors to enter a community, have basic first aid training and first aid kits but no medical support, and are able to avoid entering dangerous areas by relying on the knowledge of the communities.[60]

Safety considerations must also be applied for beneficiaries. In contexts where security is in flux and especially where the local population is still a potential target of attacks by an armed group, door-to-door sessions may be preferable to group ones for they are less likely to attract attacks (or be perceived as having the potential to do so, thereby discouraging participation).

Beyond these safety precautions, few examples were provided over the course of the review to illustrate how stakeholders address the challenge of EO contamination in urban areas. Nevertheless, some of the more holistic methodologies for EORE detailed in the second half of this chapter have high relevance for urban settings, thanks to their inclusion of safety messages for communities experiencing urban violence or contamination.

SPECIFIC METHODOLOGIES FOR RETURNING IDPs AND REFUGEES

While not originally explicitly referenced as one of the challenges that this review set out to cover, questions regarding how to provide effective EORE to IDPs and refugees in the context of their return were repeatedly brought up, thus meriting their own section. In fact, the challenges faced in this respect are multifold.

To start with, the window to reaching the target group is usually narrow. As noted in a recent EORE workshop in the context of the Syrian refugee crisis,[61] in Iraq and Syria "there is typically a large spike in accidents during the three months immediately following liberation of a town… with the majority of accidents involving explosive ordnance occurring within the first days and weeks following return".[62] In Afghanistan, returnees from abroad often quickly disperse across the country, including to areas that are not accessible for security reasons, making them difficult to locate afterwards. During the initial period of return when the number of accidents is highest, medical and clearance capacities are usually low, making said accidents even more likely to be fatal. In the case of recently liberated areas where there is not yet local knowledge on the presence and location of EO, data on contamination is usually limited, making it difficult to identify common IED types.

These overlapping challenges raise several questions for EORE practitioners, like where and how they can reach returning refugees or IDPs before they reach their destination and what messages can be given when there is insufficient evidence on the contamination, limited clearance capacity, and in some cases not yet an established national/local authority.

To mitigate some of these challenges, EORE practitioners have targeted refugees, IDPs, migrants and travellers with EORE prior to their return or travel to the affected area, such as at border crossing points. This is often done in coordination with other sectors, such as with the UN High Commissioner for Refugees (UNHCR), International Organization for Migration (IOM) or the International Red Cross and Red Crescent Movement. Messages can be delivered in hydration points, food distributions points, transit centres, encashment centres, strategic corridors and child-friendly spaces. In Afghanistan, 'walk through' areas have been set up at reception centres with information on EO recognition and safe behaviour that all arrivals have to pass through as part of a comprehensive arrival services package—enabling the reach of over 600,000 arrivals in ten-minute intervals over a one-year period.[63]

Border arrival 'walk through' in Afghanistan.

In organising in-person EORE for returnees, it is important to consider that migration flows are often unpredictable and change over time and between locations. Border crossing points can close anytime, or opening times can be extended. Time allocated to EORE sessions must often be short as people also need to receive other types of services and move quickly to other areas. To overcome these challenges, some recommendations and good practices that have emerged through this review include:

- Regularly adjust EORE facilitator workplans. Plan for shifts between teams given the long opening hours of border points and identify alternative communities to be targeted should the border point be closed.

- Design and implement EORE sessions paying great attention to time management by EORE facilitators.

- Establish appropriate gender and diversity balance of teams. For instance, in Afghanistan where most returnees are young unaccompanied males, having an extra male-only team in certain border crossing points has been helpful; whereas having mixed or all-female teams is important to reach returning women and children.
- Use a combination of tools to draw the attention of the different target audiences and enhance the retention of messages.

Mass media campaigns targeting people on the move can further complement the person-to-person sessions and increase reach, as is currently being piloted in five provinces in Afghanistan. In Turkey, workshops are held for NGO workers who are conducting Syrian cross-border activities, and training courses have been provided to community focal points and teachers identified as future Syrian returnees. In Iraq, UN Mine Action Service (UNMAS) has printed risk education messages on gloves targeting cash-for-work employees engaged in rubble removal and reconstruction efforts.

Whether in person or through digital campaigns, stakeholders consulted emphasised that the messages provided to refugees or IDPs preparing to return to their homes should be relevant to their needs, contextualised to the return location and specific enough to not engender further uncertainty or anxiety about the return.

For this and other reasons, coordination across borders is important. In particular, it was recommended that both host and return country authorities and practitioners coordinate to harmonise messages. Ideally, as one respondent noted, the EORE provided should follow the standards of the return country and, in some cases, it may even be appropriate for return country authorities to approve the messages and materials. Where there are mine action authorities in both host and return countries, cooperation can be facilitated. An example given was a recent cross-border visit by the Afghanistan Directorate of Mine Action Coordination (DMAC) to observe EORE in Iran for potential returnees.

In this context, it was also highlighted that working with stakeholders such as UNHCR and IOM can help with prioritising EORE, maximising resources, standardising approaches and targeting at-risk groups. A good example of this is the Regional Durable Solutions Working Group[64] (RDSWG) for Syria that has established an Explosive Hazard Risk Education Workstream to "ensure the development of regional-level harmonized messages, materials and approaches on risk education for Syrian refugees as return preparedness measures".[65] The Regional Operational Framework for Refugee Return to Syria[66] (March 2019)

states that "To address specific protection needs, core protection-related activities are ongoing and being expanded, such as counselling related to return and information on the situation in return areas (including explosive hazard risk education), legal awareness [etc.]". Later this year, the EORE Advisory Group, as part of its 2020 workplan, is expected to provide guidance on key principles and terminology, and recommendations for improving EORE cross-border coordination in sub-regional crises.

Despite the above efforts, it is likely that the standard EORE messaging of risk recognition, risk avoidance and risk reporting ('don't approach, don't touch and report') will not always be sufficient–especially when weighed against competing pressure and strong desires to return home. Against this background, some practical suggestions and examples were shared:

- An EORE practitioner reported providing messages to returning refugees for all three stages of their return journey: prior to return, during return (in unknown areas) and upon return (home).
- Risk profiles have been developed for certain governates of Syria with information on casualties and contamination, and it was suggested that this could be potentially expanded to risk profiles for returnees, especially in the case of unmanaged voluntary return, that include likely risks (EO or otherwise) for the return location, high-risk activities and relevant contact information for reporting.[67]
- In the case of managed returns, it was suggested that more specific information about the risks in return locations could be provided. This could include information on the types of threats, high-risk activities like reconstruction and rubble removal. It could also include information about local authorities and medical facilities, the Red Cross or Red Crescent National Society, local mine action operators active in the area (if any) and how to contact them for more information. It could also include practical information about safe travel, and how to warn and help one another.
- In some cases, EORE practitioners have offered pragmatic advice to minimise risks, such as first sending just one family member, checking with relevant authorities, and/or neighbours for information before entering their home. There is currently little consensus around which additional practical mitigation measures should be provided, although it is hoped that an ongoing joint initiative led by the UN Development Programme Lebanon on explosive ordnance risk reduction will provide insights for the sector.

PART B: GENERAL METHODOLOGIES FOR EORE AND THEIR APPLICATION IN CHALLENGING CONTEXTS

In addition to the above methodologies that specifically respond to the challenges covered under this review, several more general approaches to EORE have been developed or expanded over the last few years with high applicability for challenging contexts. These can be grouped in two ways: those that aim to broaden the scope of EORE interventions (the *what*) and those that aim to deepen their impact (the *how*). These two categories are not exclusive to each other but actually complementary, and it will be shown that many components are shared between the two.

BROADENING THE SCOPE: HOLISTIC APPROACHES TO EORE

It is well established that integrating EORE with other sectors – humanitarian, development, protection, and education included – is crucial to address structural and recurrent barriers to the adoption and practice of safe behaviours.[68] This is because the resilience of communities to EO depends on a wide range of socio-economic and political factors beyond just the scope of mine action. It is this notion of resilience that is at the core of the three holistic approaches to EORE detailed in this section:

- Risk awareness and safer behaviour (RASB)[69]
- Conflict preparedness and protection (CPP)[70]
- Armed violence reduction (AVR)[71]

All three of these take a broader approach to EORE in at least one way – whether it be in terms of the weapons or risks that they aim to address, messages they promote, or complementary services/responses to which they link. The table below shows what the approaches have in common, and what sets them apart. These 'unique value additions' are explored in more detail below.

	RASB	
Short description	RASB was developed by the ICRC and Norwegian Red Cross for the Red Cross and Red Crescent Movement as a holistic risk management approach to help affected communities mitigate the dangers and increase resilience in weapon contaminated environments. It is based on guidelines set out through the guidebook *Increasing Resilience to Weapon Contamination through Behaviour Change*	
Used by	ICRC, Red Cross/Red Crescent Movement	
Contexts	All contexts, but gives specific examples during armed conflict, during urban violence and other situations of violence, in post-conflict situations, and in conflict-prone contexts	
Scope of risks covered	Conventional weapons: small arms and light weapons (SALW), explosive remnants of war (ERW), landmines, IEDs, booby traps and ordnance stockpiles, and chemical, biological, radiological and nuclear weapons	
Evidence-based	Yes ***Unique value addition**	
Inclusion of safety messages for active conflict environments	Yes	
Integrated programming	Yes ***Unique value addition**	
Addresses root causes of conflict	No	

	CPP	AVR
	Started in 2015, CPP is a broad approach that aims to mitigate the effects of armed conflict by empowering civilians to better protect themselves from the conflict-related threats they are likely to face	By reducing the risks and effects of armed violence, AVR aims to contribute to building resilience and socio-economic development, and ultimately to transform the dynamics of inequality that contribute to armed violence in the first place. Humanity & Inclusion's (HI) online practical guidebook for implementing AVR activities include activity factsheets and practical toolkits
	Norwegian People's Aid, UNMAS	Humanity & Inclusion
	Before, during and after conflict/ attacks. Especially for conflict-prone and urban environments	Particular focus on emergency and open conflict contexts
	Not explicitly defined, but includes wide range of threats from conflict including from incoming projectiles, fires and ERW	All arms, including conventional weapons (mines, ERW, unexploded ordnance (UXO), abandoned explosive ordnance (AXO), SALW, ammunition and IEDs
	Yes	Yes
	Yes ***Unique value addition**	Yes
	No	No
	No	Yes ***Unique value addition**

Unique value additions

Evidence-based

A bottom-up, comprehensive needs analysis is one of the core principles of effective EORE and will be taken up in more detail in the following section on behaviour change approaches. All three approaches use participatory methodologies to involve communities in the process of needs definition. The Red Cross and Red Crescent Movement's RASB guidelines stand out in particular for their strong needs analysis framework that includes assessing the weapon contamination situation; capacities and vulnerabilities of the affected communities to weapon contamination in a gender and diversity sensitive way (including risk awareness and existing behaviours, as well as barriers to adopting safe behaviour); and roles and capacities of the implementing organisation and partners.

Safety messages for active conflict/conflict-prone environments

While each of the three approaches includes suggestions for safety messages in regions experiencing conflict, such as for aerial bombardments or shelling, it is the CPP methodology that was developed specifically for this purpose. According to an analysis of over 500 tests delivered at the start of CPP sessions in Palestine shared by UNMAS, over two thirds of beneficiaries were already equipped with basic awareness of EO safety measures, compared to just a third who knew what to do during and after attacks and less than a fifth who were aware of precautions they could take to prepare for conflict – illustrating a clear gap in the risks from which community members were being empowered to protect themselves.

It is this gap that the CPP approach aims to address, with particular relevance for urban environments. Thus, in addition to 'Explosive remnants of war (ERW) awareness', CPP training sessions also include messages for before, during and after conflict, as well as life-saving tips and basic fire safety. Examples of topics covered range from preparing emergency kits and making houses safer, to safety procedures in buildings and outdoors during attacks, safety positions, and safety during evacuations.

Integrated programming

Behaviour change is a complex process that inherently involves factors crossing many sectoral lines. Integrated programming, a key feature of RASB, aims to reduce the push factors that compel individuals to knowingly take risks. Examples include providing or restoring safe access to water, fuel, sanitation facilities, shelter, farming land and equipment, etc. where access is blocked by EO contamination,

Preah Vihear Province, Choam Ksan District. An ICRC field officer and a member of the Cambodian Red Cross Society are visiting a beneficiary of the Cambodian Red Cross Society's microloans programme.

as well as "granting microloans or providing training and equipment for alternative income generation in places where livelihoods are threatened".[72] The latter is particularly relevant in contexts where scrap metal collection is a common cause of accidents involving EO.

Some of the complementary activities mentioned in the RASB guidelines also have particular relevance for hard-to-access areas – like the provision of internet access and mobile phone charging facilities in areas without power, or radios or other communication equipment (with training on how to use them) in areas where there is poor information access.

Integrated programming is more common among organisations with mandates that go beyond mine action and thus have the in-house capabilities to provide the complementary services, but this should not be a limiting factor. Mine action organisations would greatly benefit from partnering with other actors for this purpose.

Addressing the root causes of conflict

AVR is the only one of the three approaches that explicitly aims to address the "structural and social root causes" of conflict. It applies a conflict sensitivity lens and creates space to reflect on how a project impacts on the context and how to adapt it accordingly.

This seems to be based on an argument that mine action, when delivered inclusively, empowers people to feel safer and more resilient, which in turn has the power to "challenge injustices and restore human relations"—thus breaking the cycle of violence.

Inclusion is therefore at the heart of AVR, implemented through what HI calls an "intersectional approach to disability, gender and age". Each activity factsheet included in the AVR Practical Guide features inclusion tips. Implementers are also encouraged to begin any intervention with an analysis of the roles, interactions, interests and influences of stakeholders at different levels and, where appropriate, conduct a thorough conflict analysis to "minimize the negative impact of activities and, where feasible, transform conflict dynamics". To further ensure conflict sensitivity is embedded in activities, all AVR projects are required to "dedicate specific time, resources and spaces to conflict sensitivity during the project inception and implementation phase".

Overall takeaways

The three holistic approaches outlined above—RASB, CPP and AVR—have much in common. All take a wider approach to risk management, limiting themselves not to a particular type of weapon but rather aiming to address the full range of risks to which communities are exposed. All emphasise the importance of a thorough and bottom-up needs analysis and are grounded, to at least some degree, in behaviour change theories. And finally, all bring a unique value addition to the sector.

Yet all three approaches are almost exclusively used by a single organisation or group, often the one that developed it. Rather than more approaches, what is needed now is:

- Wider piloting and implementation of the approaches, also by other organisations than the ones traditionally associated with them—and sharing of lessons learnt and good practices as implementation expands.
- Evidence on the effectiveness and impact of the approaches, including in challenging contexts. Since all are relatively recent developments, there appears to be few (if any) studies or assessments that have been completed in this regard.

More partnerships are also needed—both within the mine action sector and beyond. One of the lessons learnt shared from the CPP approach is that establishing partnerships with education authorities and key local organisations can (a) have a multiplier effect on the scope and reach of the project in areas affected by armed conflicts and (b) enable benefits from economies of scale. Partnerships across sectoral lines, such as through integrated programming,

can also help to address the many risk factors that people living in EO-affected areas face and reduce their need to make impossible choices. This was further highlighted through a study on Integrated Approaches to EORE in ASEAN Member States[73] published in May 2020 by the Association of Southeast Asian Nations (ASEAN) Regional Mine Action Center (ARMAC).

CASE STUDY

INTEGRATING EORE IN EXISTING NATIONAL NETWORKS AND PLATFORMS IN AFGHANISTAN

To address an increase in IED-related accidents and the massive influx of people on the move, DMAC in Afghanistan has worked to integrate EORE in existing networks and platforms to facilitate the dissemination of life-saving messages. This includes:

- An EORE technical working group, led by DMAC and bringing together MA stakeholders as well as other humanitarian and development actors;
- Membership of bodies such as the National Security Council, Civilian Casualties Mitigation Board and the UN International Children's Fund's (UNICEF) Child Protection in Emergencies sub-cluster;
- Memoranda of Understanding signed with various government ministries, including the Ministries of Agriculture, Irrigation and Livestock; Education; Information and Culture; Public Health; and Transport and Civil Aviation, as well as with the Independent Directorate of Kochis;
- EORE training of trainers for field officers of humanitarian organisations working to ensure the protection of children; and
- EORE mainstreaming in community-based schools using UNICEF infrastructures such as child-friendly spaces.

Synergies are also being built with victim assistance and mental health and psychosocial support, and livelihood activities are being developed to address structural challenges forcing intentional risk taking.

It was noted that the formal integration of EORE into other sectors' projects is not without challenge. Constant advocacy from EORE stakeholders is needed to make sure EORE is genuinely integrated, rather than sidelined as just a complementary activity. Optimisation of the use of available resources such as community networks and health campaigns, as well as regular communication between groups, clusters and sub-clusters, are key.

DEEPENING OUR IMPACT: BEHAVIOUR CHANGE APPROACHES TO EORE

EORE outcomes can be measured on a continuum – with knowledge change (increased awareness of EO risks) leading to attitude change and ultimately the practice of safer behaviours around EO. Social and behaviour change communication (SBCC) encourages practitioners to design initiatives with this end goal in mind, whilst also recognising that the process is highly complex and not necessarily linear. While there are many approaches and methodologies that fall within the overall family of SBCC, they usually share several common elements:

- A focus on addressing and leveraging social norms. Behaviour change approaches call attention to the informal rules that guide human and group behaviour and thus have the power to prevent or enable behaviour change.
- Clear definition and understanding of target audience(s). This is usually achieved through a rigorous and participatory consultation process that "involves engaging communities and listening to adults and children as they identify problems, propose solutions and act upon them".[74]
- Multi-faceted communication strategies that allow repetition of messages across multiple platforms (at least some of which are interactive) to encourage and sustain positive behaviours.

This section focuses on two particular subsets of SBCC that have already been applied in the field of EORE. The first focuses on the *analytical process* that informs the development of EORE messages, and the second relates to the *means* by which EORE messages are communicated.

Behavioural Drivers Model

The Behavioural Drivers Model[75] developed by UNICEF and the University of Pennsylvania is outlined in the UNICEF publication of the same name and further elaborated through the practical guide 'Everybody wants to belong'.[76] It starts from the fundamental question 'Why do people do what they do?' Practitioners using this methodology are encouraged to involve community members to map the psychological, sociological and environmental factors that drive behaviours among the target audience(s).

Everybody Wants to Belong

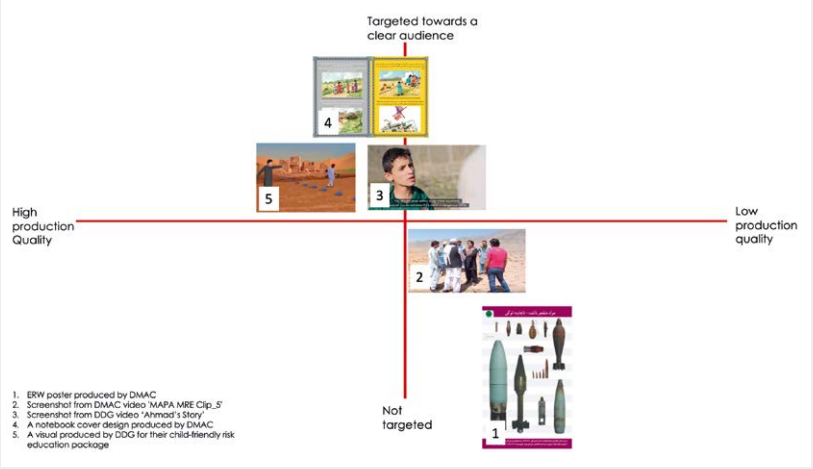
UNMAS recently led a process together with DMAC to completely overhaul its approach to EORE using an SBCC approach. The case study below details how the Behavioural Drivers Model was operationalised for the analytical phase of this process.

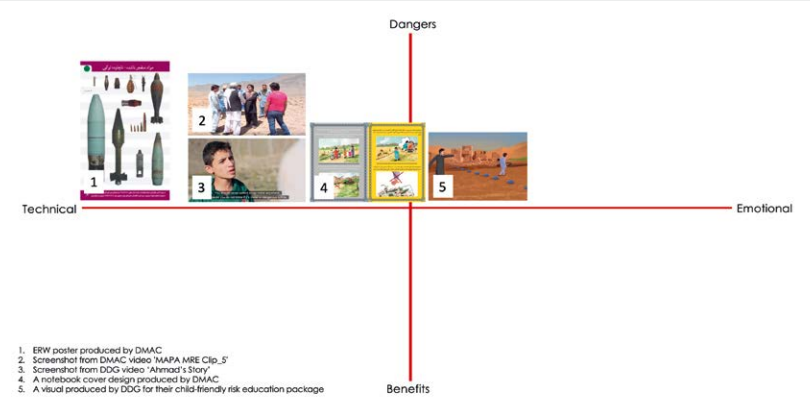
CASE STUDY

IMPLEMENTING THE BEHAVIOURAL DRIVERS MODEL IN AFGHANISTAN

In 2019, UNMAS Afghanistan kicked off an analysis aimed at informing a complete reinvention of the programme's approach to EORE. This analysis included several activities either conducted in-house or using existing resources:

- Analysis of current trends using available accident data, knowledge, attitudes and practices survey results and a survivor survey conducted using a random sample from an already existing database of EO survivors;
- Analysis of the strengths, weaknesses, opportunities and threats of current EORE practices in the country;
- A material audit of current EORE materials, through which the materials were positioned along four spectrums: 1) technical vs emotional, 2) focus on dangers of EO vs on benefits of safe behaviours, 3) low vs high production quality and 4) not targeted vs targeted towards a clear audience;





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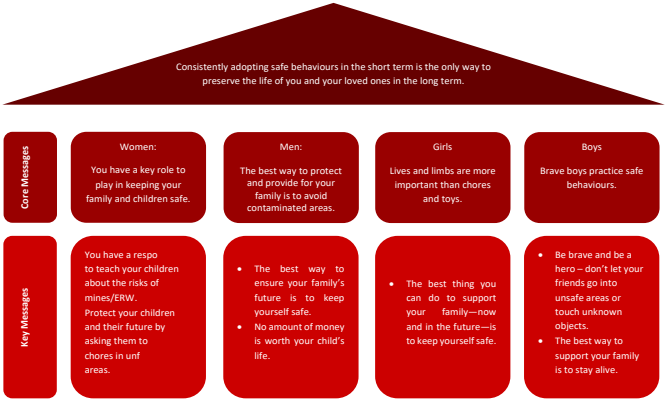
- Media analysis looking at trends in media use; and
- Political, economic, socio-cultural and technological (PEST) analysis of Afghanistan.

In addition, UNMAS contracted an SBCC/marketing company to research the psychological, sociological and environmental behavioural drivers for different groups in Afghanistan and develop audience segment profiles. Based on this comprehensive analysis, a core communication idea and message house were developed:



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Recommendations were also developed – such as including behaviour-linked questions on accident forms to give a better picture of what was happening at the time of an accident – along with a list of high and medium priority interventions to inform the strategic design and implementation of the project.

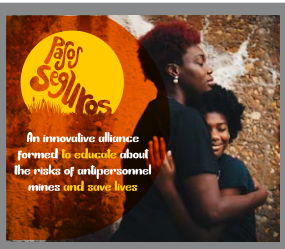
From the experience of UNMAS Afghanistan and other organisations that have used behaviour change to inform their EORE initiatives, the following lessons learnt and recommendations have emerged:

- Audience segmentation is pivotal. It is important to ensure that the right groups are included at the right levels. This can be done according to demographic factors like sex and age (e.g. women, men, teenagers, younger children, certain ethnic groups), risk category (e.g. uninformed, misinformed, intentional risk takers, etc.) or other context-relevant groupings (e.g. IDPs or refugees, travelers, truck drivers, scrap metal collectors, etc.).
- Paying specific attention to the 'messenger' is also key. Who is trusted and respected in the community, who the people listen to, who they trust, who the role models are, etc. are essential questions that will help define the most appropriate communication channels and ensure that messages are effective.
- Costs can vary depending on what is already available (e.g. surveys and accident data). Much of the analysis can often be done in-house, which reduces costs. That said, a behaviour change approach takes time to develop and scale up so should be planned and costed accordingly.
- Pooling resources with other actors to develop common audience profiles could help to reduce costs. One suggestion could be to collaborate with Communications with Communities (CwC),[77] an OCHA-led initiative that aims to support the information and communication needs of people affected by crises.[78]
- When translating, ensure that the intended message is still getting across and will resonate with the audience. This can be done through field testing.
- Positive messaging that focuses on emotional aspects tends to be more effective than technical or negative messaging. This especially resonates for risk education on IEDs, for which overly technical messages have already been shown above to be ineffective and counterproductive.

- Trends in contamination and accidents involving EO should be continually monitored and flexibility maintained to adapt the approach to meet evolving needs.

Communication for development (C4D)

C4D is another behaviour change approach that focuses on how information and communication technologies can be used to achieve greater impact. In particular, it encourages the use of multiple platforms to target the intended audience and achieve a viral effect. The table below shows examples of two EORE 'edutainment' packages developed using a C4D approach.

	 **Colombia: Pasos Seguros (Safe Steps)**	 **Ukraine: Superteam Against Mines**
Description	Designed and implemented in cooperation with the Colombian Office of the High Commissioner for Peace (Descontamina), this ongoing project is led by an innovative alliance between four development, communication and education actors: the US International Development Agency, the Fundación Barco, Discovery Communications and Computadores para Educar. It targets children, youth, women and teachers, as well as local authorities and civil society representatives.	UNICEF implemented a four-year C4D digital advertisement campaign using geo-targeting and internet surfing history to target children and youth in EO-affected areas of Ukraine. A main feature of the campaign was the "Superteam Against Mines" – a team of four superheroes, each representing a basic mine safety rule (notice, step back, report and don't panic).

Channels used	• 3 TV clips • 9-episode miniseries[79] • Training module for students • Video game for use in schools • Website with educational content • Advocacy training for civil society • Training for local authorities; youth and female leaders; and teachers • Virtual reality game	• Videos with information and featuring celebrities popular locally • Websites with information and games • Comic books and colouring books • Screening of comic cartoons on an international film festival website • Billboards, school posters, signs in trains • School sessions • Peer-to-peer training

The following advice was shared for the design and implementation of effective C4D campaigns:

- Embed multimedia, games and digital campaigns in wider EORE initiatives that include a combination of both mass and interpersonal EORE. This has the dual benefit of reinforcing messages through repetition while also ensuring the widest possible audience can be effectively reached, including those with different learning styles or limited digital connection.
- Coherence can be achieved between the different parts of the campaign by using common branding elements or even characters. The superhero team from Ukraine is an example of this; a similar approach has also been taken by Norwegian People's Aid as part of its CPP initiative.
- C4D has strong potential for use with teenagers, who tend to be less receptive to traditional media and eager to try new things.
- It is important to regularly consult and test the product with the target audience(s), as communication channel preferences can change quickly, especially among children and teenagers.
- Gamification and the use of learn-by-play or education games can boost engagement, particularly of younger audiences. That said, it was reported that initial increases in engagement may be due to a novelty effect that, once worn off, leads to a decline in use over time if the game is not entertaining enough to hold the attention of the target audience.

- The use of anthropomorphic (non-human) characters facilitates the universalisation of messages and identification processes of both girls and boys.
- Positive, empowering messages should be used—especially for audiences who have experienced conflict and may be traumatised or experiencing psychological distress.
- EORE design and messaging is enriched through partnerships with information technology, virtual education and gamification experts who bring an external perspective, and reduce the likelihood of technical jargon making it into communications messaging. Testing of products with multidisciplinary teams of experts from different sectors—in addition to the target audience—is also good practice.

Overall takeaways

During the course of this review, social and behaviour change approaches were often referred to as 'common sense', and in a way, they are. At its core, SBCC is about learning as much as possible about those at risk—their capacities and their vulnerabilities, what excites them, what motivates them, and what drives them—and designing EORE initiatives that are responsive to these strengths and needs.

SBCC approaches have great potential to improve the effectiveness and efficiency of EORE in all contexts, and especially in challenging environments where a more rigorous approach is needed (although they may not be feasible to implement, at least initially, in rapid response emergencies). The approaches recognise that changing behaviour through EORE is a complex process and as such requires time and resources. More advocacy is therefore needed by partners and donors to increase investment in EORE initiatives grounded in SBCC. The sector would also benefit from specific guidance on the strategic design of EORE initiatives using SBCC, as well as on how participatory processes can be employed in contexts where access to affected communities is not possible.

CHAPTER 3

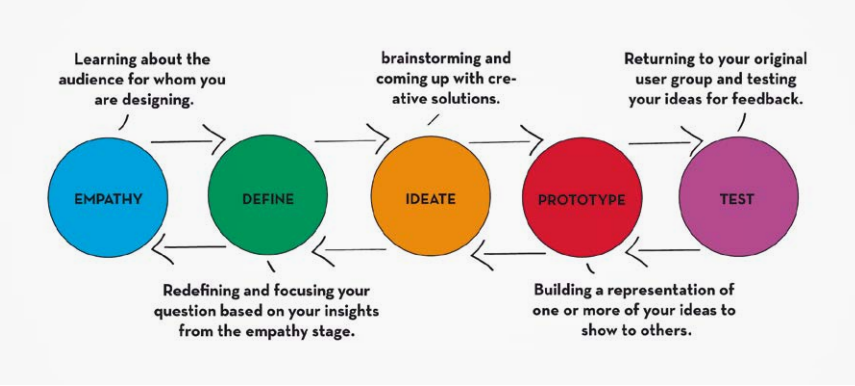
OTHER INSPIRING INNOVATIONS AND PRACTICES

This third chapter presents other innovations and practices identified during the review that have the potential to be used, adapted or enhanced to address the needs of the explosive ordnance risk education (EORE) sector. It does not pretend to offer an exhaustive list of all relevant existing opportunities, but it is hoped that it will trigger ideas and open up new ways of addressing key challenges.

INNOVATION STRATEGIES

It was reported that gaining understanding of and using methodologies centered on innovation could offer new and radically different ways of approaching some of the key challenges addressed through this review.

Although innovation is not a linear process, there are various structured methods that can help foster innovation. Design Thinking[80] is one of the most commonly used approaches to solving problems taking the user/beneficiary as a focus point. It is a human-centered and iterative process used across sectors to understand end-users, challenge assumptions, redefine problems and create innovative solutions to prototype and test through five steps:



Design Thinking

Other approaches such as human-centered design[81] or user experience (UX) design[82] could also be explored by the sector. That said, it was also highlighted that innovation can only thrive when it is embedded in an organisation's culture and structure. A study on innovation carried out by ALNAP[83] suggests that for innovation to be successful, three sets of conditions need to be fulfilled:

- The right people in the organisation, with the necessary skills and capacities, are involved in the process;
- The organisation has effective relationships with key internal and external stakeholder groups; and
- The organisation has a culture and structure which allows innovations to occur, to be developed, implemented and disseminated.

According to innovation experts, additional characteristics that facilitate successful innovation processes include divergent thinking, risk taking, failure tolerance, agility and flexibility. While it is key to develop space for innovation within individual organisations, some also highlighted that successful EORE innovations require collaborative dynamics and willingness to work across organisational and national boundaries on challenges of mutual concern.

Finally, some general recommendations with regard to innovative processes were shared such as: start small, identify one project or problem, use a dedicated cross-functional/interdisciplinary team, drive out fear, create an innovative culture, embrace failure, think differently and reward innovation.

RESPONSIVE INFORMATION STRATEGIES

Responsive information strategies aim to provide target audiences with the information that they need, based on their own requests and expressed needs. The two initiatives outlined below use digital technologies with a strong user-centred and people-driven approach. They are based on a two-way communication process allowing users to tailor their engagement, express their needs, provide feedback and shape their responses. Not only do these projects help minimise dependence on face-to-face interactions, but they also empower those who depend on the information for their own well-being and/or security.

Signpost[84]

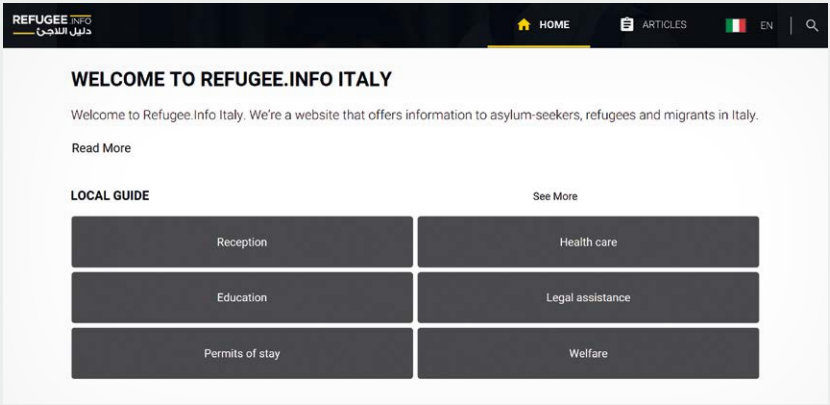
Countries: Greece, Italy, Jordan, El Salvador, Guatemala and Honduras

Organisation(s): International Rescue Committee (IRC), Mercy Corps (MC) and technology companies

Time: 2015–ongoing

Description

Signpost is an information and community engagement project that uses social media and digital platforms to get critical information to those affected by crises. It was launched by IRC and MC in 2015 at the height of the European refugee crisis and was developed with the support of technology companies such as Google, Cisco, TripAdvisor, Twilio, Box, Facebook and Zendesk. On IRC's website, Signpost Director André Heller describes the project as follows: "We meet people where they are – digitally – in a way that recognises their needs and personal circumstances, and deliver contextualised information based on the unique and specific problems that they and their communities are facing."



Signpost currently has operations available in three different regions/countries: Refugee.Info[85] for Greece and Italy; Khabrona.Info[86] for Jordan; and CuéntaNos.org[87] for El Salvador, Guatemala and Honduras. Each Signpost version relies on a team of moderators who communicate directly with communities through a variety of platforms, including an internet website and social media such as Facebook and WhatsApp. They respond to comments, answer messages, help find the right information and make sure that the information is delivered in the best form, always based on the needs expressed by the users.

Takeaways

A white paper on the Signpost[88] project highlighted how responsive information services present easily scalable solutions for remote community engagement and delivery of accurate and timely information to affected populations – in contexts where digital solutions are possible – including in complex and fast-changing crises. Some of the key takeaways of this review of the project can be summarised as follows:

- The project is easily scalable thanks to strong partnerships with technology companies, the private sector and the use of open-source technology tools;
- By sustaining two-way engagement/communication with communities, responsive information services have multiple comparative advantages. They empower users to make informed decisions in times of crisis; increase resilience; build trust and confidence in response efforts; enable community participation and action; generate community ownership; ensure that the responses answer community needs; and help combat misinformation commonly spread through social media.

U-Report[89]

Countries: Over 60 countries

Organisation(s): UN International Children's Fund (UNICEF)

Time: Ongoing

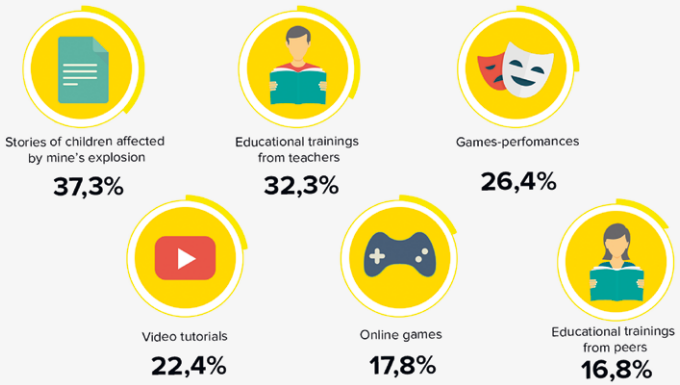
Description

UNICEF's Office of Innovation[90] developed the U-Report[91] platform. It is a global messaging service that enables and empowers young people to speak out and provide their perspective on a wide range of issues in their communities. They can become 'U-Reporters' in their country and text in their opinions and ideas about important topics that matter to them.

The platform has three components: polling which enables real-time data collection; one-on-one communication; and access to important information on a regular basis through the use of 'bots' or artificial intelligence. U-Report is available via messaging, social media (Facebook, Twitter and Instagram) and SMS channels, and works on a basic mobile phone. It is free, anonymous, accessible in many languages, easy to use and has been adapted in 60 countries, reaching 10 million young people.

U-Report Ukraine[92] reported having used the platform in 2018 to carry out a poll on mine safety in the Donetsk and Luhansk Oblast regions. Over 368 U-Reporters under the age of 21 participated in the poll, and the results of the survey were used by UNICEF to improve subsequent EORE delivery and planning.

Results from the poll to the following question:
What measures would be the most effective in informing pupils about mine safety?



Takeaways

Through U-Report, UNICEF gains an understanding of the challenges facing youth across a large number of countries and priority sectors (e.g. health; education; water, sanitation and hygiene; child protection; and emergency response) which in turn informs, influences and shapes the organisation's programmatic design and deployment. The potential of U-Report for EORE programming has yet to be fully explored.

Overall takeaways

When face-to-face interaction with vulnerable communities is not possible, responsive information services provide a ready-made solution to digital transition of community engagement. Signpost[93] and U-Report[94] have adapted to provide contextualised community-based information on COVID-19 through their multiple digital and social media platforms (WhatsApp, Facebook Messenger and Viber). Rather than creating new platforms specifically for risk education, EORE practitioners can seek, when appropriate, to build on wider initiatives that address multiple risk factors.

RISK COMMUNICATION AND COMMUNITY ENGAGEMENT (RCCE)

RCCE has been used in public health emergency response for years and has proven to be vital for community uptake of public health interventions to prevent and control the spread of diseases. It has played a key role in the success of responses to outbreaks such as Ebola and Zika. In March 2020, the International Federation of Red Cross and Red Crescent Societies (IFRC), UNICEF and World Health Organization (WHO) released an *RCCE Action Plan Guidance for COVID-19 Preparedness and Response*[95] aimed at helping key stakeholders engage and communicate effectively with identified audiences.

The following elements[96] outline why RCCE is important and what constitutes effective RCCE:

- People have a right to be informed and understand the health risks they face, in addition to receiving practical advice on how to protect themselves and their loved ones;
- The perception of risk in affected and at-risk populations often differs from that of experts and authorities. Effective RCCE can help bridge that gap by determining what people know, feel and do related to a disease, as well as what they ought to know and do to bring the outbreak under control;
- Effective RCCE helps transform and deliver complex scientific knowledge, in a way that is understandable, accessible to and trusted by communities;
- Effective RCCE uses community engagement strategies to involve communities in the response and develops acceptable yet effective interventions to stop further amplification of the outbreak and for individual and group protective measures;
- RCCE helps build trust in the response and increases the probability that health advice is followed. It minimises and manages false rumours and misinformation that undermine the response and may lead to further disease spread.
- It is without question that the EORE and RCCE sectors have much in common and that EORE practices can benefit from RCCE tools, methodologies and approaches.

CASE STUDY **EORE AND THE COVID-19 PANDEMIC**

The COVID-19 pandemic has shown just how rapid and far-reaching an impact such a crisis can have on the mine action sector, with a wide range of consequences on EORE programming over both the immediate and long term. These have included forced adaptation of working methods to align with local regulations and WHO recommendations, as well as in some cases suspension of activities in whole or in part. At the same time, the pandemic has propelled the sector to seize new opportunities such as:

- Accelerating investment in technologies and methodologies for remote delivery of EORE messages: in a webinar on EORE and COVID-19 organised on 1 April 2020 by the EORE Advisory Group,[97] over 40 percent of participating field programmes reported continuing or beginning to remotely deliver EORE despite the suspension of face-to-face EORE activities. At the same time, the pandemic has underlined the power of mine action's networks of community focal points (CFPs) to reach remote areas with safety messages even where physical access is not possible and digital connections are lacking.
- Strengthening coordination between mine action, other humanitarian, protection and public health sectors: with the support of WHO, RCCE groups have been established in many countries around the world. Stakeholders from health and protection clusters, including the Mine Action Area of Responsibility (MA AoR) or mine action sub-clusters, are coordinating to look at protection measures and how to best engage with communities to convey safety messages and optimise the use of available resources. Joint resources have also been made available – for instance by WHO,[98] Global Protection Cluster[99] and MA AoR – and have been increasingly drawn on by EORE practitioners to ensure their activities do no harm.
- Pioneering integrated approaches that address the multitude of risks that communities face: a number of EORE practitioners have combined forces with health actors to integrate COVID-19 messages in EORE initiatives. Two concrete examples of this are explored in more detail below.

Example 1: Integrating COVID-19 messages in EORE interventions

In Iraq, the EORE workforce switched temporarily to a COVID-19 campaign under the authority of the Iraqi Kurdistan Mine Action Agency. When regulations permitted it, the Iraqi Health and Social Care Organization conducted daytime door-to-door risk education sessions for households of 3–5 family members, integrating EORE and COVID-19 messaging (provided by WHO in liaison with the Ministry of Health). COVID-19 hygiene kits were also distributed with EORE stickers affixed to them, and existing EORE campaigns in rural regions and camps were adapted to include COVID-19 messages. Finally, during curfew hours, EORE and COVID-19 messages were shared on social media platforms and via SMS in cooperation with telecommunications companies.[100]

Example 2: Joint EORE and COVID-19 messaging

One of the earliest examples of mixed EORE and COVID-19 messaging was shared by the UN Mine Action Service Palestine through the International Mine Risk Education Working Group. In this case, the EORE core statement of 'don't approach, don't touch, report' was adapted to include COVID-19-specific messages as follows:

Translation

Dangerous objects are sometimes invisible like coronavirus, and at other times tricky and hidden like ERW.	
At this time due to COVID-19:	At any time, due to the presence of ERW:
Stay home and maintain a social distance	Stay away from suspicious items and keep a safe distance from contaminated areas
Avoid touching your face and wash your hands regularly	Avoid touching any dangerous items and never keep them as souvenirs
If you become symptomatic, report to the nearest healthcare centre	If any suspected dangerous item is encountered, leave the scene and report to police immediately
You can protect yourself and your family	

The COVID-19 messages were validated by WHO and UNICEF and further adapted to the Palestine context, including adding the appropriate emergency numbers.

Takeaways

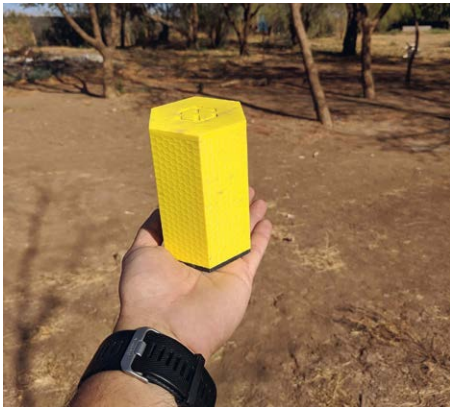
While the COVID-19 pandemic was not foreseen at the time of the design of this review, the sector's response has offered several important takeaways for delivering EORE in situations of risk. To start with, EORE networks of CFPs proved to be valuable assets not just for the continued delivery of EORE but also for other actors to reach remote areas with COVID-19 messaging. This reinforces the conclusion of earlier chapters that it is important to invest in building community networks and trust while access is still possible. A second takeaway has been the importance of working with appropriate authorities from the health sector to ensure the principle of 'do no harm' with regards communities and staff, as well as to seize opportunities for joint interventions. These connections will be useful to maintain even after the COVID-19 pandemic. Finally, as with most technologies and methodologies presented in this review, there are many outstanding questions regarding impact assessment – in particular, how to measure the effectiveness of integrated EORE and COVID-19 campaigns – for which more case studies and guidance are needed.

OTHER TECHNOLOGIES

Beekee Box:[101] A learning platform that works anywhere without the internet

Researchers at the University of Geneva[102] have designed a box that allows users to log on to a learning platform without an internet connection or electricity supply. The Beekee Box was designed to help teachers and instructors deliver training in complex environments.

Once turned on, the box creates a local wireless network that learners can connect to using their own devices to collaborate in real-time, share and retrieve documents, and even follow complete training courses. The Beekee Box works with any smartphone, tablet or computer. It comes preloaded with Beekee apps and can be adapted or tailor-made to cover specific needs. Médecins Sans Frontières has used this technology to deliver interactive digital training programmes in challenging contexts. This tool could be explored by EORE practitioners to deliver training courses in areas with limited infrastructure.



Battery life

1.5 hours with an internal battery and up to 10 hours with an external battery

Range

Up to 40 metres

Number of concurrent users

Up to 25 users

Storage

64 GB (up to 256 GB)

LEAP mHealth knowledge platform:[103] interactive mobile training in the health sector

LEAP is a mental health platform delivering interactive mobile learning solutions for training healthcare workers in Africa. It is available on both basic and smart mobile devices, through SMS and audio technology.

The LEAP model could serve the sector to address challenges related to remote training and support of teams, partners and community facilitators in situations of limited access. It aims to equip users with knowledge and skills by delivering accurate, timely and appropriate content, tapping into already accredited or customised content. It allows the measurement of learners' progress through evaluations, quizzes and practical exercises, as well as real-time performance reports and supervision tools. It enhances peer learning by allowing all learners to interact and share knowledge with their peers through group chats. A helpdesk system is also in place to enable learner support.

Viamo:[104] a private sector company offering mobile technology to speed up effective humanitarian response

With its origins in Northern Ghana, Viamo is a global company that creates mobile technologies for data collection and information sharing with vulnerable communities. The company has worked with the IFRC, IRC, MC and the World Food Programme.

Taking advantage of a combination of channels (voice, SMS, web apps, IM bots, etc.), Viamo provides solutions in contexts where technology infrastructure is poor, language diversity is present, and education and literacy levels are low. It has been used to develop social and behaviour change communication campaigns, set up hotlines, integrate interactive voice response into surveillance programmes and early warning systems, leverage feedback with people in high-risk areas, and connect community-level data to national and international tracking systems or databases such as the Information Management System for Mine Action (IMSMA). Local private sector companies such as Viamo are already supporting the humanitarian sector in a wide variety of contexts and can provide innovative avenues to respond to EORE needs in complex environments.

TikTok:[105] a video sharing platform

TikTok is a video-sharing social networking service which aims at developing creativity. The TikTok mobile app allows users to share short videos that often feature text, stickers and music in the background. It is particularly known for its viral challenges – which can be either organic or sponsored and combine elements of text, sound and dance.[106] TikTok employs artificial intelligence to analyse users' interests and preferences through their interactions with the content and display a personalised content feed for each user.

TikTok has been used by various actors such as the IFRC, UNICEF, UN High Commissioner for Refugees, and the International Fund for Agricultural Development to reach hundreds of millions of young people, in particular through viral campaigns. In a LinkedIn article about their early experience of exploring the

app and partnering with TikTok, Dante Licona (Senior Social Media Officer at IFRC) gives an example of how humanitarian actors can proactively engage new technologies:

> *It all started thanks to Damien [Fulton-Nayler]. He's a #digitaltrends spotter & suggested back in November 2018 we should take a look to an emerging app called #TikTok. At first we couldn't imagine how our organization could have a meaningful presence in the platform. We reached out to the TikTok #forgood team asking for best-practices & support, and as we spent time in the platform, we saw the opportunity of being the first global humanitarian organization in the platform…*[107]

While specific attention must be paid to data protection, TikTok offers the potential to the sector to connect, engage and mobilise people (especially pre-teens and teens) wherever they are. Launching awareness campaigns and creating opportunities to transform target audiences into effective participants who create and share videos can allow EORE messages to be disseminated on a large and cost-efficient scale. However, drawbacks of this tool relate to the fact that it is limited to its user base so may not be useful in contexts where TikTok is not used. As a bottom-up tool, it is also not possible to control or even predict which videos will 'go viral' or which challenges will widely catch on; chances of this happening can be maximised, but there are no guarantees.

Bots and chatbots: artificial intelligence that provides a two-way communication experience

A software bot is a programme designed to automate tasks. Typically, these tasks are simple, repetitive, and routine. A software bot can perform them quicker, more efficiently than a human could and can take several different forms. For example, one of the most well-known types of software bots today is a chatbot.

A chatbot is a computer programme that uses artificial intelligence to interact with users through a messaging service in a way that is designed to seem like a conversation. They are widely used across sectors (e.g. finance, marketing, media, tourism, etc.) to interact directly with users. The healthcare sector in particular uses chatbots to provide personalised real-time assistance and medical advice accessible through mobile apps. They are designed to enable users to access health diagnoses based on the information provided by the patient and to chat with a robot-doctor.

While the artificial intelligence used in chatbots has a long way to go before it can replace all human aspects of dialogue, it can provide an alternative to foster

community engagement, gather data and educate communities who are otherwise inaccessible but are in need of answers to their unique situations.

In March 2020, WHO launched a chatbot[108] in several languages with partners WhatsApp and Facebook with the latest news and information on coronavirus including details on symptoms and how people could protect themselves and others. WhatsApp users can simply type 'hi' or its equivalent in different languages to activate the conversation, prompting a menu of options to help answer their questions about COVID-19.

According to a study[109] conducted by the Digital Humanitarian Network, "chatbots can fill the gap where community members lack direct access to organization members because of location, local cultural norms or a shortage of staff. Although the interaction is more limited than personal face-to-face interaction, it still allows community members to obtain information, provides the organization with feedback and fosters a sense of inclusivity." The study also highlights how chatbots can provide innovative solutions to reach overlooked populations such as the illiterate and semi-literate and people with disabilities.

While it is difficult to know what the future holds for conversational agents and artificial intelligence, is it clear that the future will see more mobile users and more digitally connected populations. The potential of chatbot technologies as a means to foster community engagement, monitoring and evaluation, and education in the EORE sector is yet to be explored.

CONCLUSION

This review is a testament to the fact that the explosive ordnance risk education (EORE) sector is evolving and reviewing its practices, tools and approaches to improve its quality and address challenges. In recent years, EORE practitioners have made several tentative strides to adopt new technologies, yet there still remains much unexplored potential to take full advantage of technological progress, while also mitigating the associated risks. Partnerships with technology companies and other sectors could help stimulate growth in this direction. The review also confirmed that innovation is not always about chasing the latest and greatest technological development; sometimes, returning to 'the basics' in a fresh and thoughtful way can be just as valuable.

Meanwhile from a methodological perspective, EORE practitioners are actively challenging the boundaries of what has been traditionally understood as risk education. Holistic approaches have been developed to confront a broader range of risk factors facing communities, and behaviour change theory is being drawn on to deepen the impact of EORE interventions. These developments hold great promise for the potential of EORE to more comprehensively address the needs of at-risk women, men, girls and boys.

In terms of the three challenges that it set out to address, this review found:

- Despite a lack of sectoral consensus on the question of their visualisation, most EORE practitioners agreed that **risk education for improvised explosive devices (IEDs)** should above all emphasise situational awareness – being 'alert to the presence of the abnormal or the absence of the normal'. This is perhaps best encapsulated through the concept of ground sign awareness. Where visuals of IEDs are used, it should be done in close coordination with IED search and clearance teams to ensure accuracy, and be continually updated in line with trends in IED use. Digital technologies that can be instantly updated present advantages in this respect, as well as the use of mediums that support situational awareness (like oral storytelling and virtual or augmented reality).
- Conducting **EORE in urban environments** where there is greater blurring between the boundaries of safe and unsafe, presents additional security constraints compared to EORE in post-conflict, rural settings. It is important for EORE practitioners operating in urban areas with a high threat of explosive ordnance contamination to carefully assess the operational context, to account for contextual complexities and put in place appropriate risk assessment and security measures to protect the safety of both their staff and the affected community.

- A wide range of both digital and low-tech tools are available to EORE practitioners to reach at-risk populations where there is **limited to no physical access**. That said, digital tools and strategies are most effective when complementing, not substituting, interpersonal interventions. Community-based networks which can maintain community presence are high value investments, and in contexts where access fluctuates, EORE practitioners can take measures to prepare for and mitigate the risk of having to withdraw their physical presence. Looking forward, the sector would benefit from more remote methodologies for delivering interpersonal EORE in an inclusive way.

Innovating, establishing partnerships across sectors, building evidence, engaging at-risk communities in a participatory way, learning, evaluating, sharing and scaling up – these are all key steps in the delivery of effective and relevant EORE that require time, financial and human resources in all contexts, and even more so in challenging ones. It is the shared responsibility of affected states, States Parties to conventional weapons treaties with specific risk education obligations, donors, the mine action sector and the wider international community to drive this process and keep the momentum going.

ANNEX

LIST OF STAKEHOLDERS CONSULTED

ORGANISATIONS

ARMAC: **1**

Association for Aid and Relief, Japan (AAR Japan): **1**

Catholic Relief Services (CRS): **1**

DCA: **1**

Demining Agency for Afghanistan (DAFA): **1**

DMAC: **1**

DRC-DDG: **4**

FSD: **4**

Fundación Restrepo Barco: **1**

GICHD: **2**

HI: **5**

ICRC: **6**

Iraqi Kurdistan Mine Action Agency (IKMAA): **1**

IOM: **1**

LibMAC: **1**

LMAC: **1**

MA AoR: **1**

MAG: **9**

Mine Clearance Planning Agency (MCPA): **1**

National Commission against the Proliferation of Small Arms and Light Weapons (CNLPAL): **1**

NPA: **2**

Office of the High Commissioner for Peace (Descontamina): **2**

One Shot Immersive: **1**

OSCE: **1**

PM/WRA: **1**

Snail Aid – Technology for Development: **1**

Tetra Tech: **1**

The HALO Trust: **7**

UNDP: **2**

UNHCR: **1**

UNICEF: **7**

University of Balamand: **1**

UNMAS / UNOPS: **12**

+ Independent: **2**

COUNTRIES

National Focus

Afghanistan: **12**

Burkina Faso: **1**

Colombia: **7**

Iraq: **9**

Lebanon: **4**

Libya: **2**

Myanmar: **1**

Nigeria: **2**

Philippines: **2**

Somalia & Somaliland: **2**

State of Palestine: **1**

Sudan: **2**

Syria: **7**

Ukraine: **3**

Vietnam: **1**

Yemen: **3**

Regional Focus

Middle East: **5**

Sahel: **1**

Southeast Asia: **1**

Global Focus: 20


Comportamientos seguros en zonas urbanas
Contaminación por armas
CICR

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