

Introduction

Accurate and timely information during the initial phases of a CBRN incident is the first and possibly the most important step for planning and executing an operational response. In recent years, there has been a significant rise in the uptake of audio visual (AV) technology. Despite the widespread adoption of AV technology, it has seen limited use in CBRN incidents.



One of the main aims of this research is to provide guidance for a more user-centric and cost effective utilisation of resources for the research and development of communication methods during a CBRN incident.

Methods



Literature Review

Analytical overview of the literature published in the field of emergency preparedness, response and communication technologies.



Data capture and analysis

Interviewed a wide range of CBRN specialists from government and the emergency response community.



Questionnaire

Created a questionnaire which captured valuable data from health practitioners and CBRN specialists.



Criteria pairwise comparison

Systematically evaluated the CBRN communication decision elements by comparing them to each other two at a time.



Framework and validation

Created a holistic hierarchy based on policies, procedures and findings, validated from the end users.



Prototype

Created a working AV prototype system utilising cutting edge hardware and the latest live video streaming technologies.

Results and outputs

Developed a hierarchical framework for CBRN communications and quantified the main decision elements by making comparisons between each possible pair in each cluster using Analytical Hierarchy Process techniques.

Quotes from UK CBRN specialists

To go into the hot zone you have to be trained - if you're a commander of such an incident and you can see/receive information from inside the hot zone without actually being there, that would enhance your decision making process exponentially. **"Police Gold Commander"**

If you went to a scene, and you were able to stream-in a bus full of people that appear to be dead for example, it would have influence were I commit resources/people into a dangerous environment, for a futile effort. So being able to picture the scene and picture the incident, would influence the command decision. **"Ambulance Silver Commander"**

We've been into jobs and people have said, we've tried to describe it and I'm not articulate enough to describe everything I'm seeing, it's too much, takes too long. A picture paints a thousand words as well. You can capture so much more with video than you can by description. **"Fire Rescue Bronze Commander"**

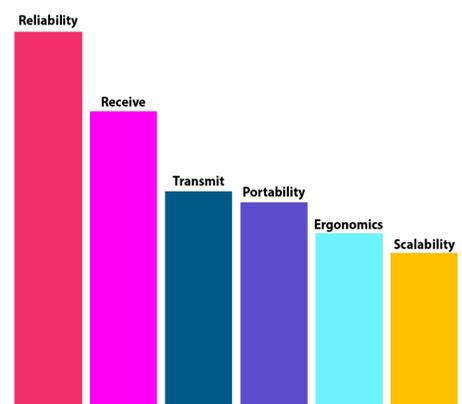


Figure 2. Rankings showing paired comparison results for CBRN communication technological enablers

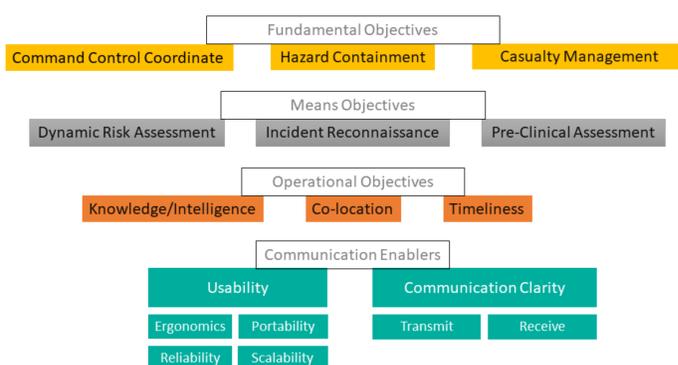


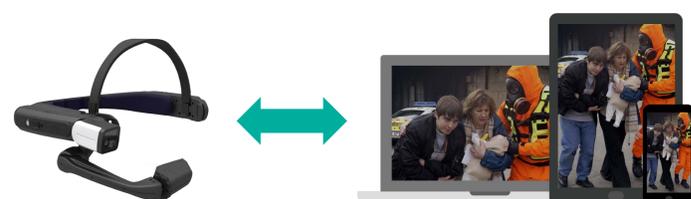
Figure 1. Communication Framework for CBRN and HAZMAT incidents

Captured the information requirements of emergency response professionals and identified practical and technological constraints.

We don't want to be wasting 20 minutes with someone running back and forth from hot to clean just to relay messages. **"Police Bronze Commander"**

In an ideal world we would all have a tablet. Everyone who's involved with emergency response and it would all be able to talk to each other. **"Public Health England - Specialist Advisor"**

Having hands free will present benefits. If you're wearing PPE and you're going into a hazardous environment then if you could see what I was seeing, and therefore it needs to be near my eyes rather than my body that would probably be better. **"Police Gold Commander"**



Created a prototype system which contributes towards the development of methods for the secure transmission of real time video over low bandwidth cellular connections.

References

Contact

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