

# Trustworthy Systems for Search & Rescue

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# What happens once the Internet & phone systems disappear?



- \* Need a Search and Rescue platform:
- \* Coordinate search for survivors & ensure safety of rescue teams.
- \* Must be trustworthy: avoid bogus information and prioritise critical updates.



# Cognitive Adaptive Radio Team (CART)

- \* Provides a “shared filesystem” abstraction, as well as precise indoor and outdoor location information (UWB & GPS).
- \* Able to communicate in adverse network conditions (uses Machine Learning to adapt and predict network conditions)
- \* Designed with Fault-tolerance in mind, but does not cover issues of trust related to Search & Rescue.

# Issues of trust in Search & Rescue

- \* Rescuers must be able to trust their kit unconditionally:
- \* Ensure search is efficient & exhaustive (exactly-once search semantics - if the system says an area has been searched..).
- \* Reliable and timely sharing of hazard indicators (toxic fumes) and critical updates (imminent dam collapse).

# Further issues..

- \* Authentication and security without a central authority:
- \* Maybe we need location based authentication? (I can update info about my location, but only read about other locations)
- \* Verifiable after-the-event auditing (Both for training, portioning blame..)

# Summary

- \* We're hoping to extend our mobile radio platform (CART) to develop a trustworthy Search & Rescue system.
- \* CART is an ongoing DARPA funded project. Collaborators are MIT, Telcordia Technologies and Multispectral Solutions.