



Fail-Proof and Frugal HAM Emergency Communication

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Academic Paper Presentation

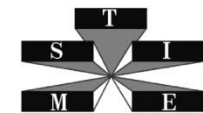
Agenda

- Background 1, 2, 3
- Ongoing Research
- Completed Tasks
- Next Steps



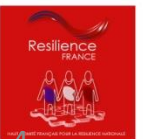
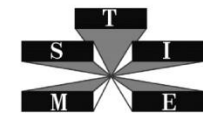
Background 1

- 9,168,861 disaster fatalities in India since 1900 (until 17/11/2021 EM-DAT).
- India most vulnerable to climate change (Paun et al., 2018).
- India - dubious distinction max. fatalities by all types of disasters (Kapur et al., 2005)
- Governments by not setting up amateur radio stations within district EOCs are creating communication vulnerability led disasters resulting in avoidable mortality, morbidity, and infrastructure losses.



Background 2

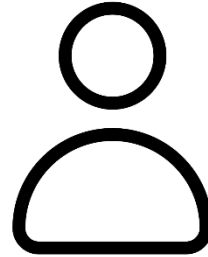
- *When all else fails: 21st century Amateur Radio as an emergency communication medium* (Nellet & Ohto, 2013).
- Examples, including satellite phones not working (Gupta, 2004)
- Permanent amateur radio antennas in hospitals and shelters helped in response to hurricane Sandy in US (Mayers, 2013; Palm, 2013).
- DDMA Thiruvananthapuram, Kerala wrote for establishing amateur radio station as cyclone Burevi was approaching (DDMA Thiruvananthapuram, 2020)
- Why amateur radio works?
- It is absurd to expect person-equipment to perform during disaster, if it is not part of daily living.



Background 3



Communication failures in disasters cause **avoidable mortality, morbidity, and infrastructure losses**



Ham go to disaster with transceiver and antennae (**lose response time**) and restore comm.



Amateur radio provides **fail-proof, frugal**, voice, text, image, slow scan TV, APRS, and other data communication modes

(Baurah, 2015, 2020).

Ongoing Research

Theoretical Level



Academic research to write a white paper that will create awareness for establishing ham club stations within district EOCs in India

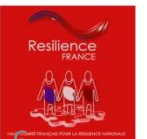
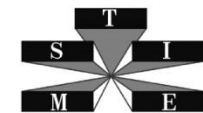
Praxis Level



Establishment of a ham club station at Malaviya National Institute of Technology, Jaipur

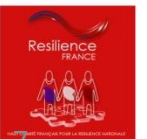
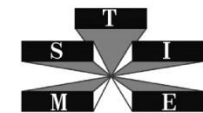
Expected Outcomes from Research

Reduction of mortality, morbidity, and infrastructure losses that generally occur due to communication failures during many disasters



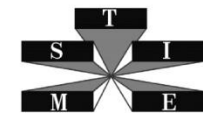
Completed Tasks

- Identified stakeholders and communicated for cooperation. Responses received, including from National Disaster Response Force
- Amateur Radio Society of India is collaborating in research
- Conducted two focus group meetings
- Estimated only \$3 million (Rs22 Crs.) required to equip amateur radio stations within ~ 739 district EOCs in India. Peanuts for India. Will give maximum social benefit return



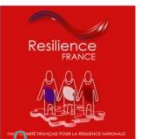
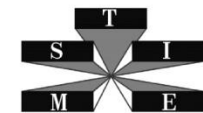
Next Steps

- Write a white paper that includes security concerns and mitigation measures to persuade government for policy change to allow establishment of HCS within district EOCs with incumbent collector or their nominee as custodian, without radio communication rights, unless the custodian is a ham.
- Persuade a district collector, who is a ham to champion the cause.



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QUESTIONS?

- This ongoing research is funded by Coalition of Disaster Resident Infrastructure under CDRI Fellowship 2021-22
- This presentation is academic component of the research.
- The praxis component of the research will be presented after 25 minutes

- Thanks
- Further communications to **kailashgupta@my.unt.edu**

