

# RESILICOMM: A Framework for Resilient Communication System

---

Sonia Gul, Nurul I Sarkar, Jairo Gutierrez and Edmund Lai

# Acknowledgements

---

- Department of Information Systems, School of Engineering, Computer & Mathematical Sciences, Auckland University of Technology (AUT)
- Network Security and Research Group (NSRG), AUT

# Talk includes

---

- Motivation: Overview of Disaster aftermath
- Proposed Framework (RESILICOMM)
- Effects of Disaster on Telecommunications lifeline utility
- Importance and Role of Telecommunications lifeline utility
- Design Challenges and Implementation aspects
- Conclusion

# Motivation– Disaster aftermath

---

- Disaster – A catastrophic event, cause destruction/human suffering

Can strike **anywhere** at **anytime**

- Affects – Lives

Infrastructure

Health

Food

Communications and many more

**DISASTER  
STRIKES**

# Two recent events ...

---



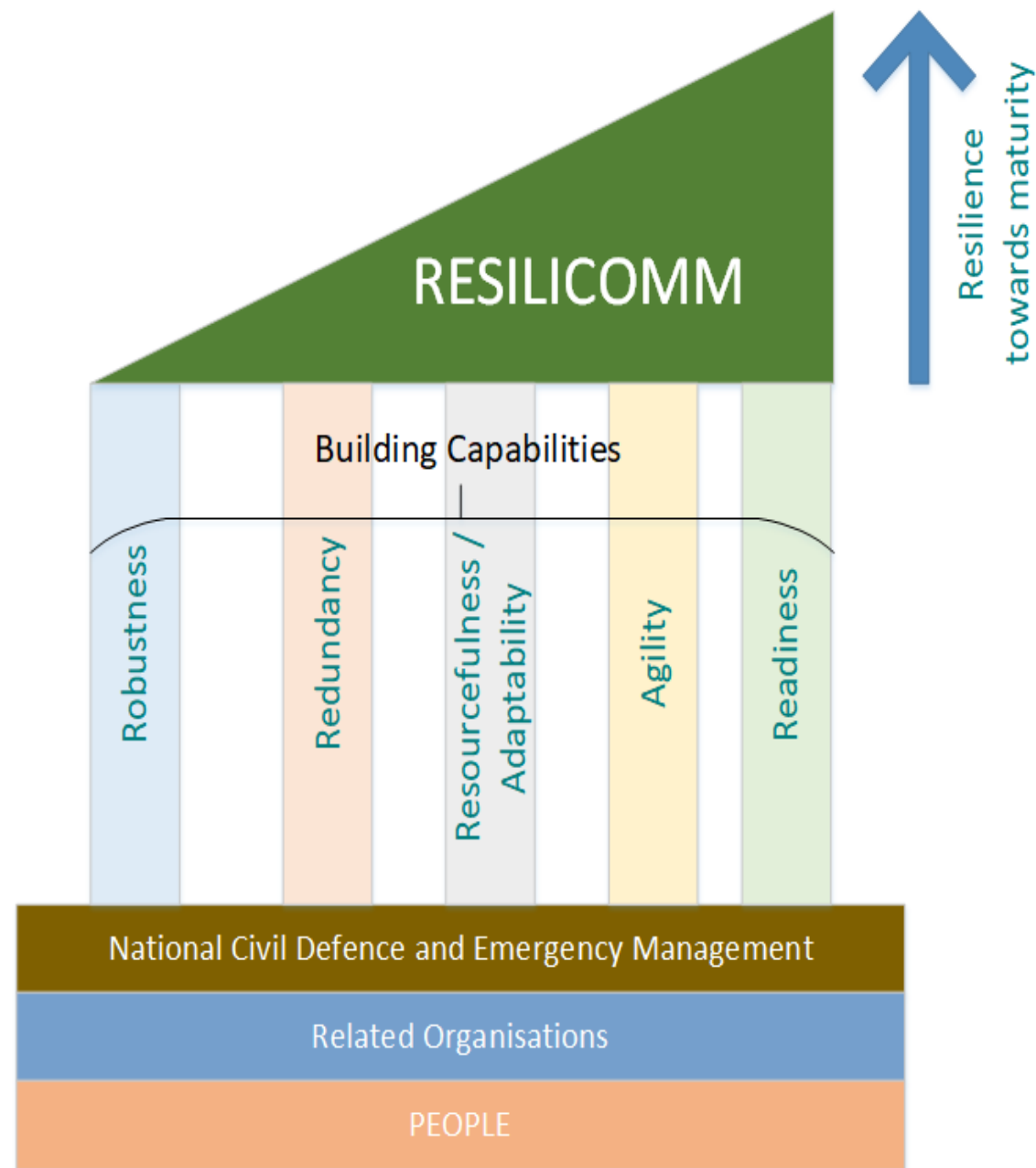
Cyclone Gita, NZ Feb 2018



Typhoon Yutu, Philippines Nov. 2018

Source: [www.theguardian.com](http://www.theguardian.com)

# RESILient COMMunications



# Telecommunications

---

# Importance of Telecommunications Lifeline Utility

➤ Lifeline utilities – Water

Electricity

Transport

Telecommunications



➤ Telecommunications – *Vital Lifeline utility*

*Needed for control equipment*

*Needed for Emergency response activities*

*“When disaster strikes, Telecommunications save lives” – ITU-T*



Source: [www.civildefence.govt.nz](http://www.civildefence.govt.nz)



# Effects of Disaster on Telecommunications Lifeline Utility

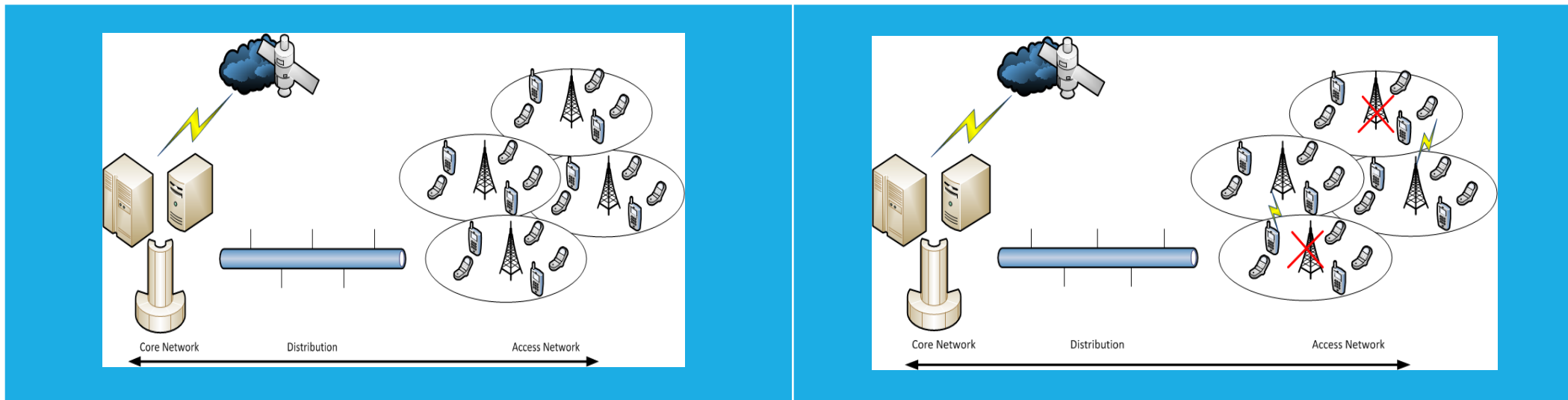
- Physical damage to network components
- Disruption in other supporting networks



- N



# A Typical Operating and a Post-disaster Communication Infrastructure



(a) A communication network scenario (normal operation)

(b) A post-disaster communication network scenario

# Design Challenges and Implementation

- What can be done to detect the disaster incidents instantly and automatically?
- How smart phones and other internet-enabled handheld devices can be used for disaster response and recovery?
- How victim's mobile phones can form ad-hoc networks for emergency communication in the absence of an infrastructure?



# Summary

---

- Need to prepare for disasters
- Telecommunications – vital lifeline utility
- Needs to find practical solution to various challenges
- Working towards *Resilience Maturity*

Q & A

---

THANK YOU

