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Conference Proceedings

Title: Utilising mobile mesh networks for disaster management

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http://nectar.northampton.ac.uk/4239/
Disaster management process involves two main phases:
- Pre-disaster processes that include disaster mitigation and preparedness
- Post-disaster processes involve
- Response: Quick overall response from emergency services, i.e., paramedics, police, and anti-terrorist squad as well as specialist disaster recovery teams
- Recovery: mobilising support, services and resources

Disaster Management System Communication Model

- Design a System that addresses Preparedness, Response and Recovery phases of disaster management system
  - **Preparedness**: Design a web-based system, available at a Control Center to hold profiles of subscribers to iSurvive Mobile Application
  - **Response and Recovery**: Design an application for mobile phones, iSurvive, to facilitate communication using ubiquitous mobile mesh networks between:
    - Victims - People in the disaster area
    - First Responder - Onsite specialist disaster management team
    - Control Centre – Offsite specialist disaster management team
- Additional extensions to the System to include security in communications between different entities

Communication entities

- Mobile application, iSurvive, is initiated by victims, in the Disaster Area.
- iSurvive kick-starts communication process using wireless and mobile communication technologies from GSM, 3G, WiFi, Bluetooth and probably GPS and helps to set up ad-hoc networks using functioning mobile phones within Disaster area.
- These Self-Configurable Ad-hoc networks facilitate two-way communication within the disaster area, with Control Centre and First Responders using instructions, messages, images and videos.
- Recovery phase starts after the connection between victims and first responders are established
- Data from within disaster area is gathered by first responders to pass on to Control Centre for analysis, validation, guidance and instructions.
- The Control Centre uses iSurvive to guide first responders and victims and offers additional services including Data Validation, Monitoring and Logging communication.
- The Control Centre uses the information received from disaster area to track victims’ profile, already available on web-based system, for purposes such as contacting next of kin etc.

Issues:

- User Interface design
- Battery Life of Mobile handset
- Security and Data Validation