Survivable Social Network in a Box

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Agenda

- Communications Infrastructure in Disaster
- New approach: Survivable Social Network
- How does it make a difference
- Current results
- Future Work
Disaster Communications or Communications Disaster?

Loma Prieta Earthquake - 1989

- Land-lines dropped
  - 154 of 160 telephone central offices in lost power.
- Designed to withstand quake
- Still failed

Disaster Communications or Communications Disaster?

Over 20 years later?

- Current cell towers not designed to be as robust as wired systems
- Most antenna sites have 4-6 hours of battery power
- More reliant on communications than ever
- No adequate resilient systems available
Problem

- We are increasingly reliant on telecommunications
- Our telecommunications systems are less resilient
- Expect regional systems to fail during large-scale event

Solution?
Survivable Social Network
Survivable Social Network (SSN)

- Ground-up locally-based data service
- Built with the technology you already have
- Provide all the benefits of networked communication to your neighborhood
  - Phone calls
  - Messaging
  - Data sharing
  - Emergency response
Built Using Technology you already Have

- Laptop
- Wireless Router
- Smartphone
Built Using Technology you already Have

- **Low cost**
  - Already have it
- **Requires no training**
  - Already use it
Built Using Technology you already Have

Smartphone

● SSN is HTML5
  ○ Any device can connect

● User-friendly interface
  ○ Like the social networking tools you already use

● Built for survivability
  ○ Useful information
    ■ Local resources
    ■ Emergency contacts
Built Using Technology you already Have

Wireless Router
● "Backbone" of local Internet service
● VoIP
● Anyone in range of the antenna can connect
Built Using
Technology you already Have

Laptop
- Regular consumer laptop
  - Late model MacBook Pro
- Host SSN web app
- Host phone service
- Open-Source Software
  - VirtualBox
  - Elgg
  - Asterisk
Open Source Software: Virtualbox

- Allows you to run multiple machines from one host
- Provides a different networking options
- Oracle
  - Online documentation
  - Widely used
  - Free
Open Source Software: Elgg

- **Social Networking Framework**
  - Easy install
    - Setup site
    - Install Plug-ins
  - MySQL
    - Flexible Data organization
  - PHP
    - Custom functions
    - Native functions
  - Active Development Community
    - Online support
    - Continuing framework development
Open Source Software: Asterisk

- Voice over IP (VoIP)
  - Free pbx server
  - Provide phone service
- Easy install
  - Freely - available .iso
    - Download
    - Install into virtual machine
    - Register phones
    - Enjoy free local phone service
Simple Setup

- Download SSN files from our server
  - open source
    - free
    - customizable
    - available add-ons
    - developer community
- Follow easy setup instructions
- Organize with popular social networking site
  - Sign users up
  - Customize for your community
    - Special Training
    - Special Resources
Training-less User Interface

Friendly, familiar
Simple Setup

Easy upkeep

- Syncs with popular social network

http://spacecollective.org/userdata/t6yYjjA1/1225196140/barabasi.jpg
Simple Setup

After emergency

- Information is automatically up-to-date
What can it do?

● **Phone service - VoIP**
  ○ Seamless
    ■ Contacts pulled from user setup
    ■ Just like regular cell

● **Social Network**
  ○ SMS-like messages to family and friends
  ○ Pre-set relations
  ○ New relations on-the-fly

● **Contact**
  ○ Friends and neighbors
    ■ check in
  ○ Local Authorities
    ■ Request assistance
What can it do?

- **Resources**
  - Maps
  - First aid
  - Food & water, shelter
  - Contact information

- **Connects to first responders**
  - Two way
    - Users can get info
    - Users can give info back
Rapid Development

● Quakeville 2012 (9/22)
  ○ Version 0.1
    ■ Show and tell
    ■ First Observations
      ● Nature of population - age groups

● DMI (11/4)
  ○ Version 0.2
  ○ Part of unified SVRN disaster response network
    ■ DMI Interop demo
      ● Share data with Scenario Database
      ● Seamless interaction with Hyperwall
      ● Geo-data
Moving Forward

● Global Social Network Connectivity
  ○ Sync SSN automatically with popular network
  ○ Maintains database automatically after setup

● "One-button" installation
  ○ One simple form to set up
    ■ SSN site
    ■ Social Network Group
    ■ VoIP server

● CERT-friendly hierarchy
  ○ Information control through groups
  ○ Escalation

● Mesh wireless networking
SSN Demo
Questions
&
Comments