

Communication With Smartphones Where There Is No Cellular Infrastructure

(=NZRC *Succinct Data*)

Matthew Lloyd

The Elephant in the Room

No matter how (amazingly, fantastically, *we are having a 3 day UN workshop about it*) useful it is, there is *no* social networking if there is *no* communications infrastructure.

NZRC is working on a solution.

Problem

The smartphone has great computing power, useful sensors, and is *very* good value for money, but... without a cellular infrastructure it is no more than a PDA.

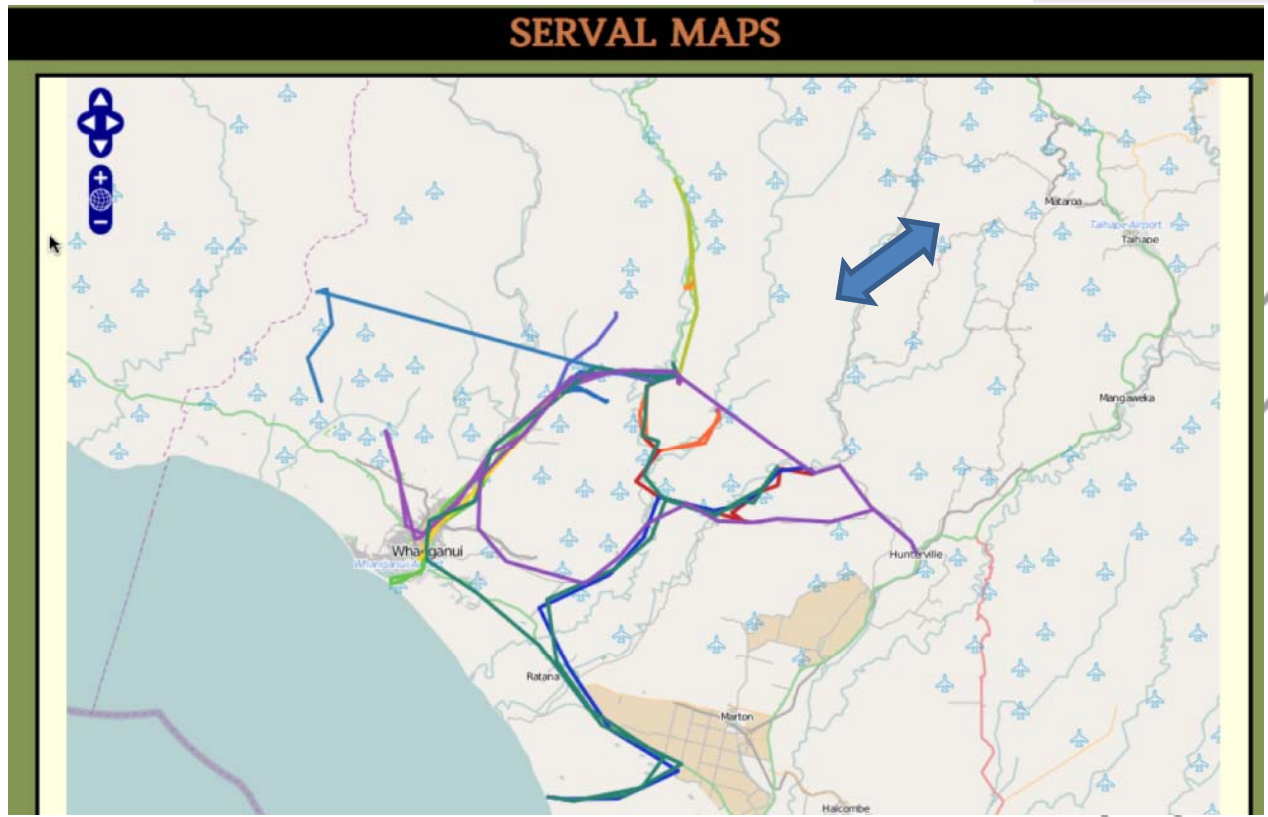
The smartphone cannot function without its network.

Solution

- Create alternatives to established infrastructure where and when required:
 - Wi Fi Mesh with data store and forward
 - Text via satellite

Project Serval

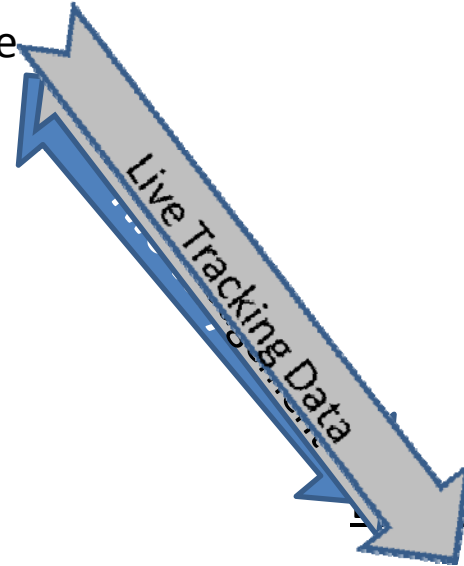
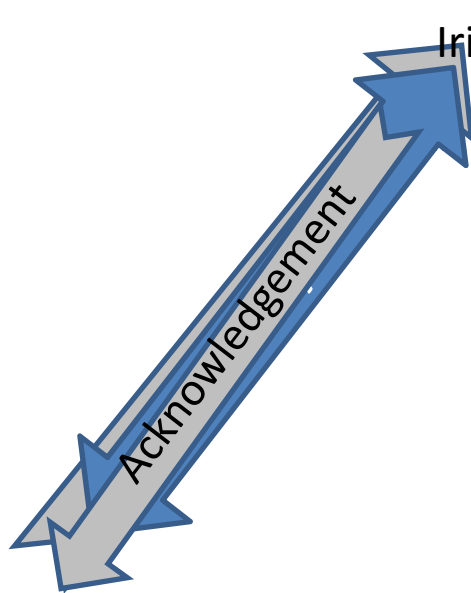
Wi Fi Mesh



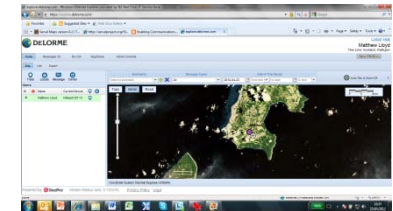
DeLorme inReach



Iridium Satellite



DeLorme Web Page



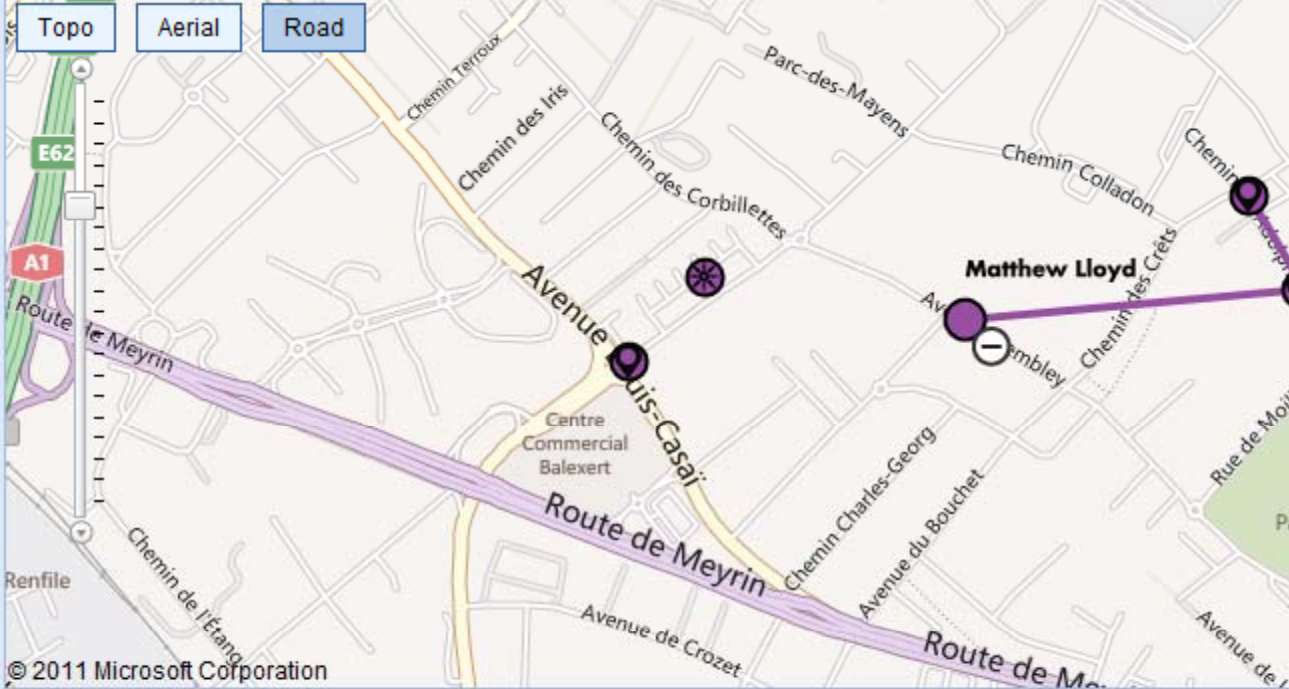
<https://explore.delorme.com>



Users

| ID | Name | Current Device |
|----|---------------|----------------|
| | Matthew Lloyd | InReach BT V1 |

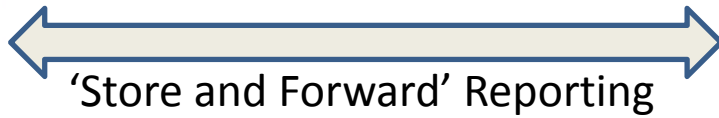
Bookmarks: Select a bookmark + X
Message Types: All
Date & Time Range: 2012-04-29 from time to date



Kestrel Technology Group

Electronic Forms and Data Fusion

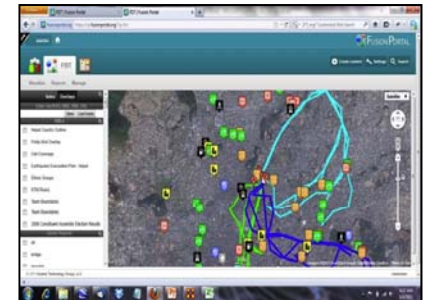
Gather Reporting
Application



Backhaul
(3G)



Kestrel FusionPortal

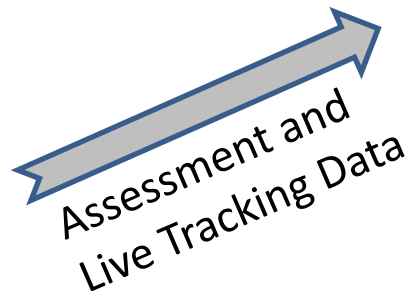


<https://pe11.fusionportal.org>

Inable Reporting
Application



Serval Mesh
Network



NZRC Succinct Data

Gather Reporting Application



'Store and Forward' Reporting



Backhaul

Kestrel FusionPortal

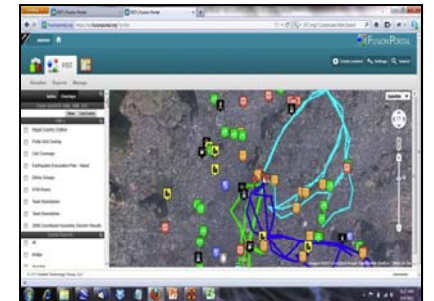
Inable Reporting Application



SMS Gateway

XML Reports

Reporting



Live Tracking Data

<https://pe11.fusionportal.org>

Serval Mesh Network



Live Tracking Data



Succinct Data in the Field



Succinct Data on the Move



Benefits 1

- Real time tracking for safety and management of personnel
- Two way communication without infrastructure yet without range limits
- Formatted data is collated, analysed and displayed without delay or transcription errors

Benefits 2

- Path diversity creates a robust system
- Hardware costs less than a radio
- Most personnel are more at ease with a cellphone than a radio
- Costs less to use than satphones
- Fits in your pocket

Benefits 3

- Integrates with cellular where available, same tool can be used before, during, and after the disaster
- Cellphones, Wi Fi, and satellite beacons are much easier to move across borders than radios and satellite terminals (voice or data).

Thought Experiment

- The same technology could also provide text communication for the general public when all infrastructure is destroyed:

Succinct Data as a Public Call Box

Succinct Data as Public Call Box

- Install a weather tight module on a lamppost at eye level, containing:
 - Solar panel
 - Battery
 - InReach
 - Smartphone

Succinct Data as Public Call Box

- Have instructions on the outside explaining how to join the Wi Fi mesh
- All cooperating smartphones can now use that InReach module to send text.
- All cooperating smartphones can receive messages sent to that InReach

The End

Any Questions?