



# Communicating through disaster

## What role should satellite broadband have?



TUANZ  
Rural Broadband Symposium  
2008



# About BayCity Communications

- BayCity Communications is the NSO for IPSTAR satellite communications in New Zealand
  - IP based data services (satellite broadband)  

  - Residential and corporate resellers
- Satellite broadband connections can be delivered anywhere in New Zealand and are typically used for
  - Remote / rural connections
  - Disaster recovery
  - Mobile communications



# Disasters, Civil Defence and communication

- What happens when there is a natural disaster in New Zealand?
  - People expect that Civil Defence and our emergency services will “swing into action” and establish shelters, support etc
- A key role for civil defence will be ensuring communication into and out of a disaster zone



# Information will be a life saver during a disaster

- 20 years ago the expectation for communication link was about 1 dimensional knowledge transfer
  - Phone, fax, 2-way radio
- Today the expectation is the transfer of content rich information (digital revolution)
  - Video, images, animations, monitoring
- How is Civil Defence and our emergency services planning to communicate and get information into and out of a disaster area?



# Is broadband seen as a key communications link?

- Is there a role for content rich broadband?
  - Broadband could be a life saver during and following a disaster by enabling the transfer of information
    - Video conferencing and rapid transfer of photos / visuals
    - E-mail and network connections to government agencies
    - Telemedicine
    - Logistical co-ordination of food, medicine and other emergency supplies



# Researching Civil Defence and Telecommunications

- BayCity commissioned independent research of New Zealand's regional Civil Defence offices
  - Telephone based survey
    - 17 regional councils plus police and other emergency services
- Objective to understand how Civil Defence would use telecommunications?
  - What technologies will be used to communicate?
  - Could we be better prepared?



# #1 High reliance on communication links

- Reliance on Telecommunications
  - (scale 1-5: 1=not essential, 5=essential)
    - During Non-Emergency 4.69
    - During Emergency 4.75
- As expected Civil Defence and the emergency services see telecommunications as essential at all times



## #2 Preparedness

- Preparedness for disaster
  - (scale 1-5: 1=not at all prepared, 5=totally prepared)
    - Average score 3.11
- Civil Defence's level of preparedness is perceived as adequate.



## #3 What communication technologies will be used?

- Landline and mobile telephones
  - These are regarded almost universally the two most important communication channels for Civil Defence
- 2way radio
  - is a close third and mentioned by all respondents
- Broadband, e-mail mentioned only by some
- Video conferencing, data rich content not suggested




## #4 Will these technologies meet needs?

- Meet current needs?
  - Current technology expected to meet all needs
    - Yes 93%
    - No 6.25%
    - Don't know 6.25%



## #5 Comparison to international

- How does New Zealand's preparedness compare to overseas countries
  - (scale 1-5: 1=not well at all, 5=very well)
    - Average score 2.35



## #6 The key overall requirement

- The key telecommunications requirement for Civil Defence personnel in an emergency situation is to have three layers of redundancy
  - different ways of getting messages in and out,
  - Independence of connectivity



# Broadband access would increase diversification

- Broadband has diversified and improved home and business communications, it can do the same for Civil Defence
  - VOIP enables a voice alternative for phone and mobile
  - E-mail is a preferred means of communication today
  - Video conferencing can provide unique benefits
  - WAN links to regional / central government / agencies provides access to organisation's information




# Will this requirement be met during a disaster?

- Phone infrastructure is likely to be effected during and after a disaster
  - Broken lines, downed poles, not available in remote areas
- Mobile phone is likely to be effected during and after a disaster and would suffer from overloading
  - Cell towers damaged, not available in remote areas
- 2 way radio is reliable but has limited coverage




# China 2008

- Significant Earthquake on a global scale
  - Magnitude 8.0 on Richter scale
  - 100,000km<sup>2</sup> affected, mostly rural and mountainous
- Significant impact on Telecommunications
  - 3,897 switch centres destroyed
  - 28,765km of cable destroyed
  - 142,078 telecommunication poles flattened
- Restored optical cable rebroken by aftershocks



# How could broadband be delivered to a disaster zone?

- Modern satellite communications can deliver broadband diversification to Civil Defence
  - IPSTAR-1 is a dedicated broadband satellite
- Coverage is virtually everywhere in New Zealand
  - 99% geographical coverage
  - Wireless options to connect multiple services
- Powered from generators (less than 1 kW required)
- Complete portability
  - 84cm or 1.2m dishes



# Innovative councils are already using IPSTAR

- Emergency Management Office in Hutt Valley uses a custom portable solution
  - The two components of the system.
    - The Router, WiFi Hub, UPS and VOIP Phone
    - Dish mounted on its tripod.
  - All of the equipment packs into the transport case. The system is powered by a small 240 VAC generator or alternatively a 12VDC supply.



## Used successfully in disasters in the area

- The Parahora forest fire in Feb 2008.
  - Communications were almost nil at this fire due to its remote location.
  - IPSTAR system was deployed immediately
    - provided e-mail, VOIP Phone, streaming video
    - wide range of Internet services (eg fire weather, rain radar, etc)





# Search and Rescue

- System deployed recently at the 5 day search at the Rimutaka Forest Park.
  - Search HQ was at a remote location in the Park,
  - Satellite Broadband deployed
    - full Internet, eMail and VOIP phone services were available to the search management team.
  - These services contributed significantly to the search effort and flow of information to the and from the HQ





## Via iNetVu high bandwidth connectivity

- Vehicle mounted option makes transport with emergency teams automatic
- Provides higher bandwidth which can be shared across multiple applications
  - Up to 4Mb/s
- Little requirement for user training





# Satellite provided life saving services in China 2008

- 2300 satellite mobile handsets deployed
- >100 IPSTAR terminals for broadband and VoIP deployed
  - Video, teleconference, telemedicine
  - Mostly used for mobile base stations and operational within 72 hours
  - All generator driven



First picture from the disaster area  
sent via satellite



Satellite dishes connect an emergency shelter



# International they have adopted satellite broadband

- Chinese earthquake 2008
- New Orleans (Hurricane Katrina)
- Myanmar
- Indonesian Tsunami



## What are the implications?

- Civil Defence and the government should seriously consider the benefits that satellite broadband can deliver
- Broadband funding to provide access for our emergency services
- Business should listen, its not just a the emergency services that need to operate through a disaster