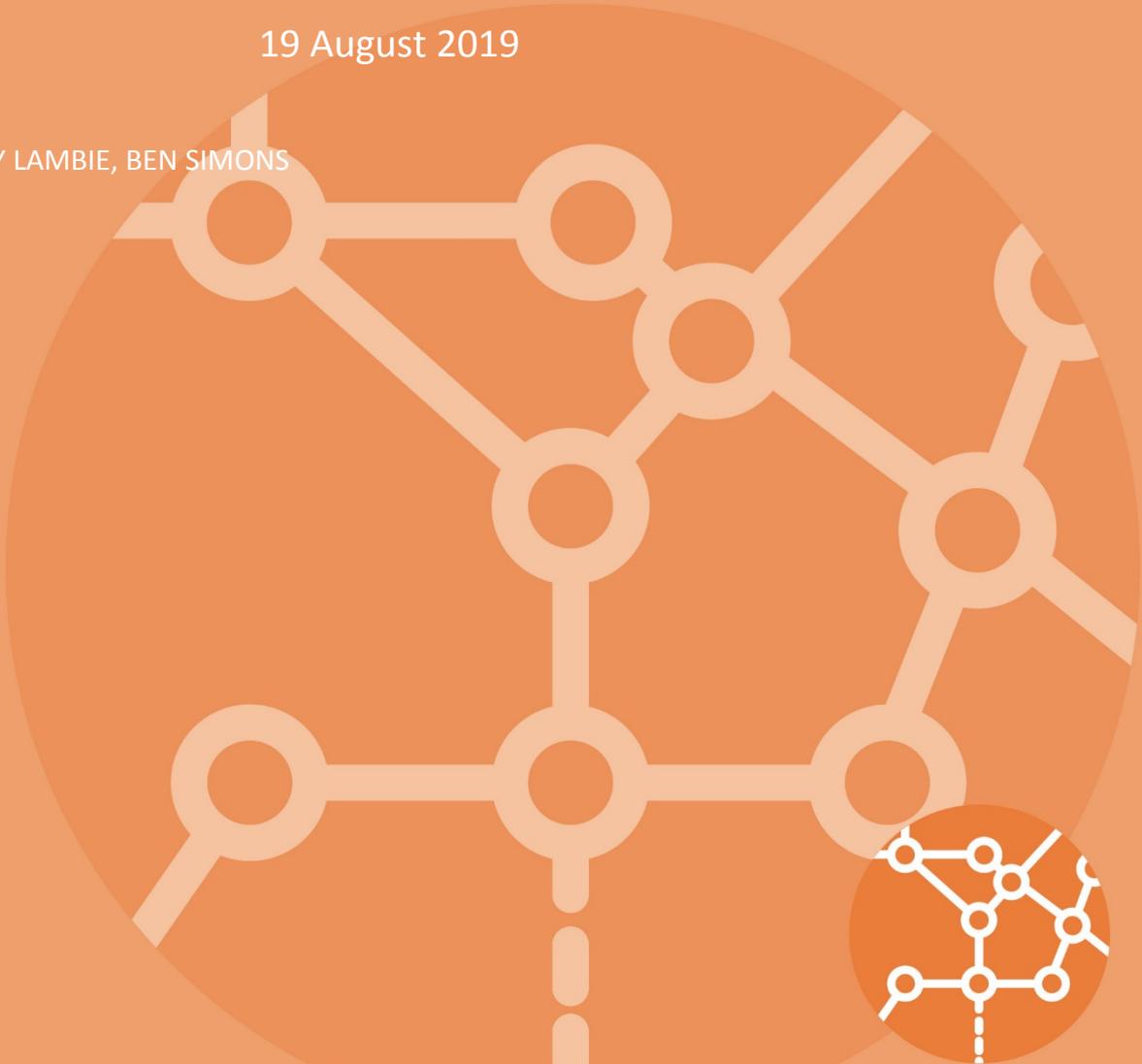


Smart Resilient Cities Workshop Report Notes

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Urban

RESILIENCE
TO NATURE'S
CHALLENGES

Kia manawaroa
– Ngā Ākina o
Te Ao Tūroa

National
SCIENCE
Challenges

Smart Resilient Cities is a co-funded project exploring the capabilities of emerging technology and data processing tools for Disaster Risk Reduction.

The aim of the workshop was to:

1. work with stakeholders to define how the project could add value/what is the science we can offer and;
2. start to scope the work and identify resources needed

Round-table discussions from each group are presented by Breakout session.

Break Out Session #1 - What are we already doing?

Group 1

- Citizen science
- Localised weather
- Conversion of raw data to relevant information
- Social media
- EQR sensors
- We have data from technology but we don't know how to use it
- Data can be noisy – how do we move from data points to information?
- Set public perceptions and behavioural responses
- What is the data that will make a difference?
- Wellington Water network
- Capability, API

Group 2

- Most councils already have sensor arrays
- We need real time, accessible data
- Lower Hutt – EQR sensors in preliminary phase
- MEMA sockets – starting small trials
- Need data stocktake
- Wellington – CCTV footage (most people don't fully understand)
- Barriers: ethics and protocols
- What data do the public and researchers want?
- Many building inventories exist
- Need baseline data for data we want to use
- Many population exposure databases
- Stats NZ linkages
- Lots of data exists that is not being used
- We need database protocol for large NZ entities about data storage
- We need to use collective resources; replicate not duplicate
- Need common protocols

Group 3

- Building sensors
- Warning systems – mobiles, sirens, media, people
- Satellite / GPS mapping
- CCTV
- Traffic sensors
- Police / security
- Air and water quality
- FMCG tracking – fuel
- Smart electrical meters
- Telecom networks

Why?

- Efficiency
- Marketing
- Compliance
- Intelligence
- Warnings
- Navigation
- Security
- Resource management and allocation
- System design
- Financial management
- Urban planning
- Public health

Collaborations

- Leveraging of BIU
- Government, private sector and academia

Obstacles

- Silos
- Bureaucracy
- Ethics
- Privacy

Group 4

- A smart city is a city that uses data to assist with decision making, i.e. it is accessible, usable and processes are in place to use the data for good
- We have data and have intelligent ways of using it to make cities work better
- But technology is outstripping policy

What are we doing now?

- EM texting, e.g. if in the tsunami zone
- Structural plans of city
- Sensors on Cuba St that can detect broken glass (audio and camera)
- GeoNet
- Air quality monitors
- Google maps

- QuakeCoRE and councils need to collaborate
- We can look to Singapore as a model smart city

Break Out Session #2 - What data is available and what data is shareable? What is possible?

Group 1

What data is available?

- Social media
- CCTV
- City-wide heat maps
- Data in people's houses, i.e. smartphone, Alexa
- PGA
- Response Spectra
- M.M.
- Shaking and structural health monitoring data, horizontal and vertical movement
- Building specific data – complex structural monitors

Concerns

- Business owner concerns with sharing vs. the public good / obligation to the community
- Ethical and privacy concerns
- Sharing data between cities both an opportunity and a concern
- Risk of fragmentation
- Misuse of data – people have differing thresholds and sensitivities
- Economic repercussions

How could data be used better?

- Format
- Accessibility
- Timeliness
- Connection with end user
- Integration issues
- Filtering through the noise
- Standardised data collection

We need a:

- National conversation about how we want to use this opportunity
- National protocol for common understanding
- Balance between what's good for the public vs. building owner concerns

Group 2

- Satellite
- Mobile phones
- Electrical networks
- Traffic
- CCTV

- NEWA sockets
- WiFi networks
- Social media
- Seismic
- Counters (cars, pedestrians, etc)
- Market view
- Transport cards
- EFTPOS
- Population stats
- Need protocols to make data useful
- Ethics of data usage understood
- Standardised data collection – guidelines, informing / teaching campaigns
- Have to make specific list stating the specifications (checklist)
- Data ethic protocols need to be developed to gain trust – people need context to make decisions
- What is the quality of the data being collected?
- Data over time important

Group 3

1. Guiding questions

- How much safer is the city?
- What is awareness and preparedness? How do we improve this?
- How can we target recovery support?
- How do we ensure warnings are effective?
- What happened? What might happen next?
- Encryption/Anonymisation

2. Data	3. Possibility
	Smart speakers in disasters <ul style="list-style-type: none"> • Verbal • Two way
CCTV Call centre	Safety Transportation options Behaviour patterns
Mobile data	Demographics targeting support Location tracking
Surveys?	All
Tax info (IRD etc.)	
Health / MSD / Corrections / Police	
Satellite / drones	

Group 4

What data is available?

- Limited by:
 - What are people prepared to give?
 - What purposes will they allow it to be used for?

- Issues with social media
 - So useful
 - But big issues with ethics
- Use of photos during and after an event
- Regulatory framework
 - Need methods to access in an emergency event, e.g. facial recognition
- Maybe ground movement information
 - Can we use any kind of data
 - Not on buildings – may be sensitive
- Aggregation and anonymization needed
- What is possible in our legislative environment?
- Community discussion – “what am I willing to give?”

Break Out Session #3 - What do we want to achieve? How are we going to do it?

Group 1

How can we add value?

- Replicability
- Cross-context relevancy
- Wider and more structured conversations
- Developing concrete goals
- Translation to a common language
- Comparable framework
- Ethics ----- this requires a series of conversations
- At what point do we engage with the public?

Problems:

- Pace of process
- Technology isn't going to wait
- What controls are there?

Group 2

What should we aim to do?

- Background tasks:
 - PhD lit review
 - Protocol implementation
 - White paper
 - Guidelines (for councils)
 - Case studies of effective implementations of above
 - Augmentation of current data to add value
- Ethics
 - Who is responsible? How do we encourage buy-in? Is there any way to optimise this process?
 - Action: build researcher resource data base / best practice
 - This should be co-developed with governance stream

- Emerging technology
 - How to optimise before mass uptake?
 - Use pre-existing data
 - What can be done with existing data, including fibre, home smart sensors, etc.?
- Modelling
 - What can we do with pre-existing data in this space (machine learning, agent based models, etc.?)

Group 3

- Communicating risk to the general public and to target end user groups
- Data to risk
 - If the public contribute to data they are more likely to understand data
- Smart cities / communities allows new pathways for groups to engage
- Leveraging of STEM through interest groups
- Hard to track people (who/where/needs) in recovery
- Business (what/where)
 - Building owner (initially less important)
 - Who is inside

Group 4

- Need to improve:
 - Data confidence
 - Confidence ratings
 - Data triangulation
 - Uncertainty – how is this captured?
 - Better conduit for data decision making
 - Integration of data for decision making
 - Collaboration of data science
 - More discussion with central government
 - Public outreach
 - Identifying opportunities to add value to existing (non-controversial) data sources
 - i.e. infrastructure networks
 - Digital divide (e.g. people who don't have smart phones)
 - Cultural sensitivities around data use
- How can people collecting data make it more useful
- Cost/benefit analysis
- PhD project?

NSC2 Urban Theme: Smart Resilient Cities Workshop Attendance List

Grace DeLeon	Christchurch City Council
Hamish Avery	CSI: Canterbury Seismic Instruments Ltd
Marion Tan	PhD candidate JCDR
Scott McSorley	Communication Coordinator, JCDR
Laura Session	Hutt City Council
Mike Mendonca	Wellington City Council
Sophia Tang	PhD Candidate Auckland University
Nick Horspool	GNS
Dan Neely	WREMO
Graham Leonard	GNS
Nilani Rangika	PhD Candidate JCDR
Joe Mcleod	Epuro hands International Ltd
Derek Baxter	Wellington City Council
Geoff Kilgour	GNS
Yasir Syed	PhD candidate, JCDR
Kirstin Stock	Massey University
Jan Lindsey	Auckland University
David Johnston	JCDR
Raj Prasanna	JCDR
Max Stephens	Auckland University
Emily Lambie	JCDR