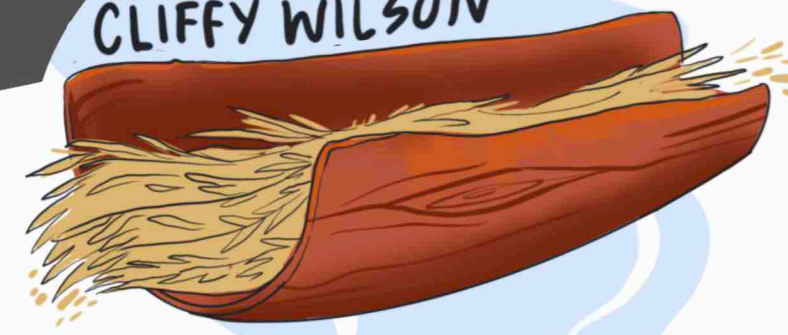


WELCOME TO KAURNA COUNTRY  
 "ONE BLOOD"  
 KURMA Kaam  
 KAURNA LANGUAGE

We do a Smoking ceremony so that our Ancestors can recognise our scent on Country and protect us. It also is a cleansing smoke to keep our spirits strong and healthy.



MACHELLIA  
 "THANK YOU"  
 NAKKARA  
 "SEE YOU SOON"  
 CLIFFY WILSON



ARTICULATE THE SPECIFIC CHALLENGE AN ORG. HAS.

BRING TO THE RESEARCHER NETWORK-FORMALISE PROJECT.

# NATURAL HAZARDS RESEARCH FORUM-2024

THOUGHT LEADERSHIP  
 Doing the same is not enough. Small changes won't get us there.

Be ahead of Ready!

YOUR ROLE  
**PROVOKE INSPIRE CHALLENGE BE INVOLVED!**

THINK BIGGER + BOLDER

DO DIFFERENTLY AIMING FOR BIG CHANGE



COMMONWEALTH Disaster Spending.

THEN 2014  
 \$977.7 vs \$31.1  
 Response Recovery Reconstruction + Resilience

NOW 2024  
 \$87.1 vs \$13.1  
 Response Recovery Reconstruction + Resilience

188 LOCAL GOVERNMENT AREAS IMPACTED!!!



BRENDAN MOON  
 COORDINATOR GENERAL, NEMA

"If by your work you can provide us with the confidence that those choices are based in science and fact we will get a long way down the track in delivering what needs to be done into the future!"

CHOICES FOR NATIONAL CAPABILITY

- To Create Change:
1. Scale systems to be able to respond and recover across the Nation.
  2. Locally-led recovery with capability support from State + federal Govs.
  3. Economic Investment into Risk + Resilience.



Collaboration with and across the sector orgs.

End-user Focused by allowing people to put forward research concepts.

**AUSTRALIA'S CURRENT CHALLENGES**

Increased frequency and severity of Natural hazards.

Early warning systems to overcome public apathy and meet needs.

Communities across Australia are resilient BUT ARE NOT READY FOR A CLIMATE CHANGED WORLD.

GROW

NATIONAL CAPABILITY IN SCIENCE AND RESEARCH

CURRENT FOCUS  
 # Trucks  
 # Air support  
 # Volunteers

FUTURE FOCUS:  
 Research and critical choices for impact.

Don't forget the INSURANCE SECTOR!!!

USE OF RESEARCH FOR IMPACT!!

OPENING CEREMONY

# KEYNOTES 1-4 BIG THINKING INNOVATION

## WHAT MIGHT INSPIRE US?

**Imagine A.I, robotics and Emergency management**

Dr. Sue Key - Future Work Group  
AI's fundamental purpose to predict the future with high accuracy.

RETIRING EXPERTS TAKE KNOWLEDGE → COLLECT & ACCESS ANYWHERE → AI

IBM BIG → 20 YRS TO TRANSFORM → 20GBs Computer, Communication, Sensors, Etc.

Large language models, trusted autonomous systems for community resilience + safety

Dr. Justin Fidock  
Department of Defence

LOOK BEHIND THE HYPE FOR BUZZ WORDS + HYPE FOR QUALITY INVESTMENT

SCENARIO: THE CHALLENGE OF SEAMLESS HANDOVER!

"Tele-control" OPERATED BY A JOY-STICK

"Autonomous Systems" SOMEONE WATCHING

TRUSTED MACHINES = RAPID TRANSITION BETWEEN HUMANS GIVING/TAKING CONTROL

Plan for automation early! Think about how robots, drones and humans can work together.

Look towards existing technologies from the MINING AND SPACE SECTORS!

**Fire response and opportunity for innovations!**

Brett Loughlin - SACFS

CHANGE HAPPENS SLOWLY IN THE FIRE SECTOR

Better Data is within reach!

Resource Management "Dear God, please solve this!"

Generation → Analysis → Utilisation

CURRENT MANUAL CARD SYSTEM → To TRACK → # Trucks → Crew → Location

INNOVATION - 200 YEARS OF TRADITIONS, INCLUDING EARLY 1900s SPRINKLERS ON HATS.

Beyond the Stratosphere - The role of space technologies in management of Natural hazards

Prof. Andy Koronios - Smartsat CRC

SPACE TECH GAME CHANGING CAPABILITIES

1. AI enabled Earth Observation Predictive Capability
2. Early warning systems
3. Highly independent + connected communication
4. Public information + preparedness.

LOTS OF EVERYDAY TASKS RELY OR COME FROM SATELLITES AND SPACE TECH.

# RESILIENT COMMUNITIES AND COUNTRY

# #NHRF24 DAY TWO - RESEARCH STREAMS

## Community-led recovery: evidence, dimensions and supports for COMMUNITY RECOVERY COMMUNITIES

Dr. Kate Brady, Dr. Colin Gallagher - University of Melbourne

Must be mindful of continuing power dynamics within governance spaces.

Different and diverse groups of people. Which they should be!

I want to create a COOKIE CUTTER APPROACH

On the ground we need flexibility and nuance!

"His whitefella's job to do the work to decolonise their work."

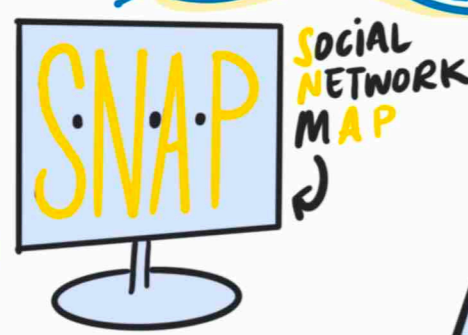
## COMMUNITY RECOVERY TO LEAD LOCAL RECOVERY

COMMUNITY/GROUPS

Organic

PRONE TO BURNOUT

USEABLE TOOLS



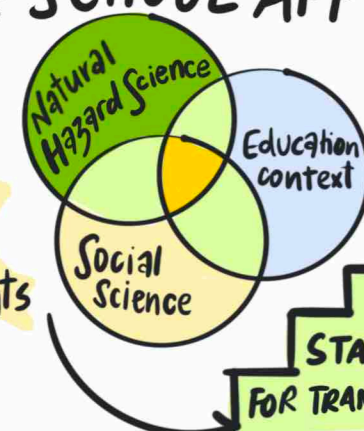
"I can attest for the NEED for these tools. For Local Groups access to these is a GAME CHANGER!" - Attendee

## PHD-Building community resilience to natural hazards through school education: a social and transformative model of practice

Belinda Davies - Monash University

### A WHOLE SCHOOL APPROACH FOR COMMUNITY RESILIENCE!

We want Guidance! - Teachers + Students



10 STEP STAIRWAY FOR TRANSFORMATION



UNDERSTAND THE SPHERE OF INFLUENCE OF THE SCHOOL COMMUNITY

## Awareness, education and communication for Compounding Natural Hazards

Dr. Gabi Mocatta, Dr. Erin Hawley - Deakin University

DEVELOPING COMMUNICATION IN COMPOUNDING DISASTERS

APPROACH:

NEXT STEPS FOR COMMUNITY RESILIENCE



x22 Different terms for COMPOUNDING DISASTERS

VIC QLD NSW FIELDWORK

Confusion from multiple sources

Difficult to communicate during + post.

EMERGING THEMES

- Activate emerging knowledge
- Awareness of vulnerable cohorts
- Disaster definitions, language + literacies
- Combatting apathy + avoidance.

## Cultural land management research and Governance in South-east Australia

A/Prof. Tim Neale - Deakin University. Oliver Costello - Jangun Alliance

### WHY COLLABORATE?

- Laws (legal + cultural)
- Always was, always will be!
- Accountability
  - Embed self-determination
  - Cultural practices as BAU.

NON-INDIGENOUS + FIRST NATIONS PEOPLES TWO WAY PARTNERSHIPS

### OUR RESEARCH:

PRINCIPLES FOR ENHANCED COLLAB.

CL.M.P.G. FRAMEWORK TO EMPOWER RELATIONSHIPS

"Don't need to wait for policy change. We can sit down, talk and CREATE CHANGE!"

## Foundations in Indigenous Disaster Resilience

Bhiamie Williamson, Nell Reidy - Fire to Flourish

Indigenous people are vulnerable to natural hazards and disasters!

### WE ASKED COMMUNITY: WHAT IS A DISASTER?

⚡: Floods, Heatwaves, Cyclones

Don't consider hazards a disaster.

- Response
- Patterns of Colonisation
- Slow and ever present in their lives.



HISTORIC INVISIBILITY

ONLY SINCE 2009 HAVE GOVERNMENTS BEGUN TO SEE FIRST PEOPLES RESILIENCE NEEDS.



# RISK INFORMED DECISION MAKING

# #NHRF24 DAY TWO - RESEARCH STREAMS

## PANEL DISCUSSION

SOME BARRIERS

- A lot of inputs needed; research, data and co-design.
- ⚠️ Data licencing impacts the already tight timeframes.
- 💡 Need to build this into initial discussions + contracts.
- As a First Nations Researcher it's difficult to find a long term home for projects.
- Navigating the diversity of Aboriginal Peoples.
- ★ - for universities, rapid outcomes need a clear benchmark!

METHODS THAT WORK FOR INPUT

- ♥ Build relationships and connection to understand each other.
- Sharing how much time researchers need and balancing with Emergency Services' SUPER LIMITED CAPABILITY to engage.
- 📅 Fortnightly, 30 minute project check-ins that help everyone to keep momentum + input.
- Be clear to Agencies on what you need as input.
- 🕒 Clear on time needed for research and ways of working together.

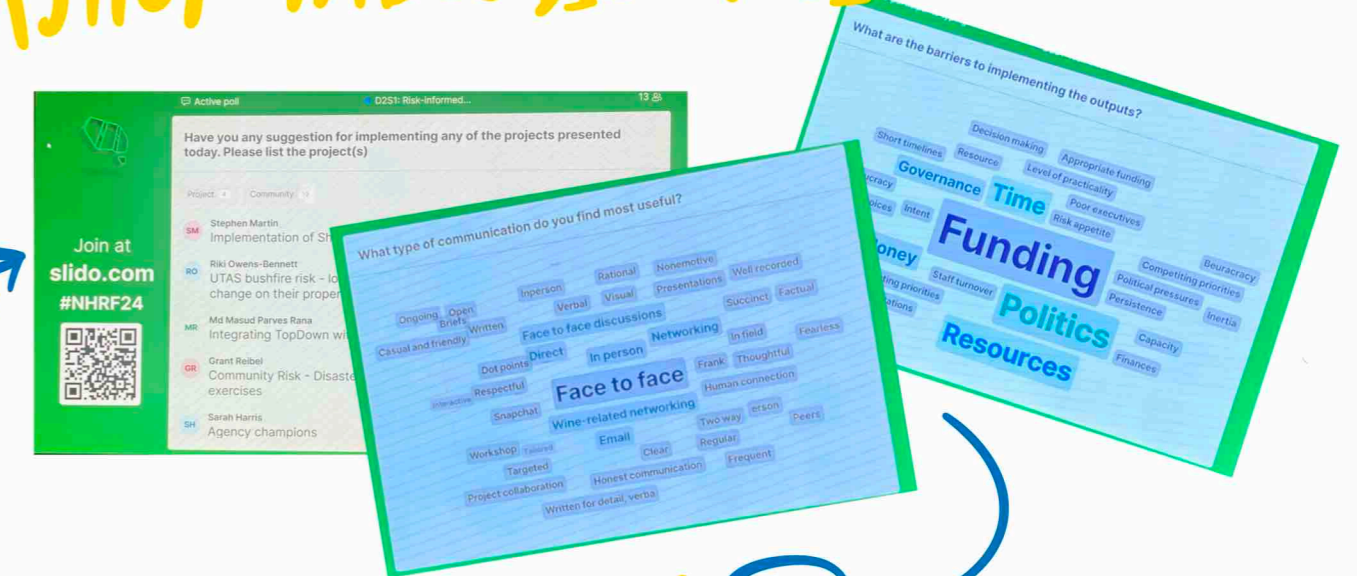


### Q&As

- PROVOCATION  
Uni vs Researcher  
I.P. Ownership blocking  
Sharing outputs and  
implementation.
- Utilisation lies with the  
institution that requests  
the research.
- ASK + DESIGN TO, "WHO IS  
GOING TO RUN/USE THIS TOOL  
IN 5YRS TIME?"
- We need to align First  
Nations Land Management  
through: treaty processes  
and using a 'RIGHTS BASED APPROACH'  
instead of a 'STAKEHOLDER APPROACH'.
- When institutions propose  
a research question, we must  
still discuss and align to  
THE REAL CHALLENGE!
- Researchers must understand  
policy constraints, so that  
solutions are ABLE TO BE  
IMPLEMENTED!

## WORKSHOP TABLE DISCUSSION

TALKING + DATA CAPTURE



### THEMATICS

1. Embrace the diversity of perspectives and gather them together.
2. Networking and Connection is best and needs more opportunities to come together!
3. Researchers want to propose research areas and NHRA is working to deliver this.
4. Everyone understands the iterative process of research across; briefing/scoping and delivery to measures and outputs.
5. PhDs are about PIONEERING but the focus has changed to outputs and R.O.I  
Let's return to exploring KNOWLEDGE.



# SITUATIONAL AWARENESS

Flash flood case studies to improve predictions and communication of uncertainty  
 DR. Carla Mooney - BoM

Long-range flood outlook for strategic preparedness  
 DR. Navid Ghajarnia - BoM

## CASE STUDIES FROM THE BUREAU OF METEOROLOGY

FLASH FLOODS HAPPEN IN 6 HRS

**SURVEY RESULTS**

- X 'Flash flood' is not well understood by BOTH EMERGENCY MGMT + THE PUBLIC!
- ✓ Have a good response and behaviours during an event!

**WARNING SYSTEM CHAIN**

Build a configurable warning chain across the various stakeholders.

COMMUNICATION = HARD BECAUSE OF THE DOUBLE UNCERTAINTY

Quantifiable ↔ Nonquantifiable eg: social impacts

MAINTAIN TRUST + MANAGE 'FALSE' PREDICTIONS BY CLOSING THE LOOP. Why did an event not happen?

**NEXT STEPS:**

- Finalise and share analysis
- Upcoming workshop
- Preliminary guidance.

CURRENT: SHORT-TERM FORECASTING  
 STREAM FLOW DATA 7 DAY LEADTIME  
 Rain mm → Post process

GAPS:  
 ❌ Multi-week for hydro models  
 ⚡ Connect historic + future models  
 Multi-week forecast capability

FUTURE: LONG-RANGE PREDICTIONS  
 ✓ Seasonal Climate  
 ✓ Surface water balance  
 ✓ Fire-risk data  
 ✓ Seasonal 3-month streamflow

Developing an integrated predictive capability for extreme rainfall and inundation  
 Paul Fox-Hughes, Dr. Carlos Velasco - BoM

**Fire Case Studies**

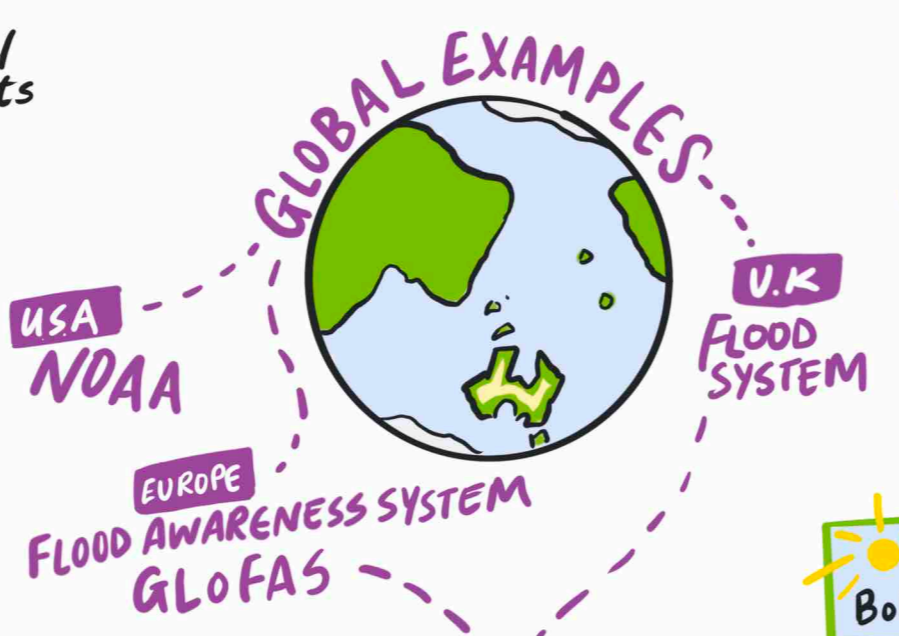
Sam Sauvage, Dr. Jeff Kepert + Dr. Mika Peace - BoM

Radar + Smoke plumes + Multi-agency Approach

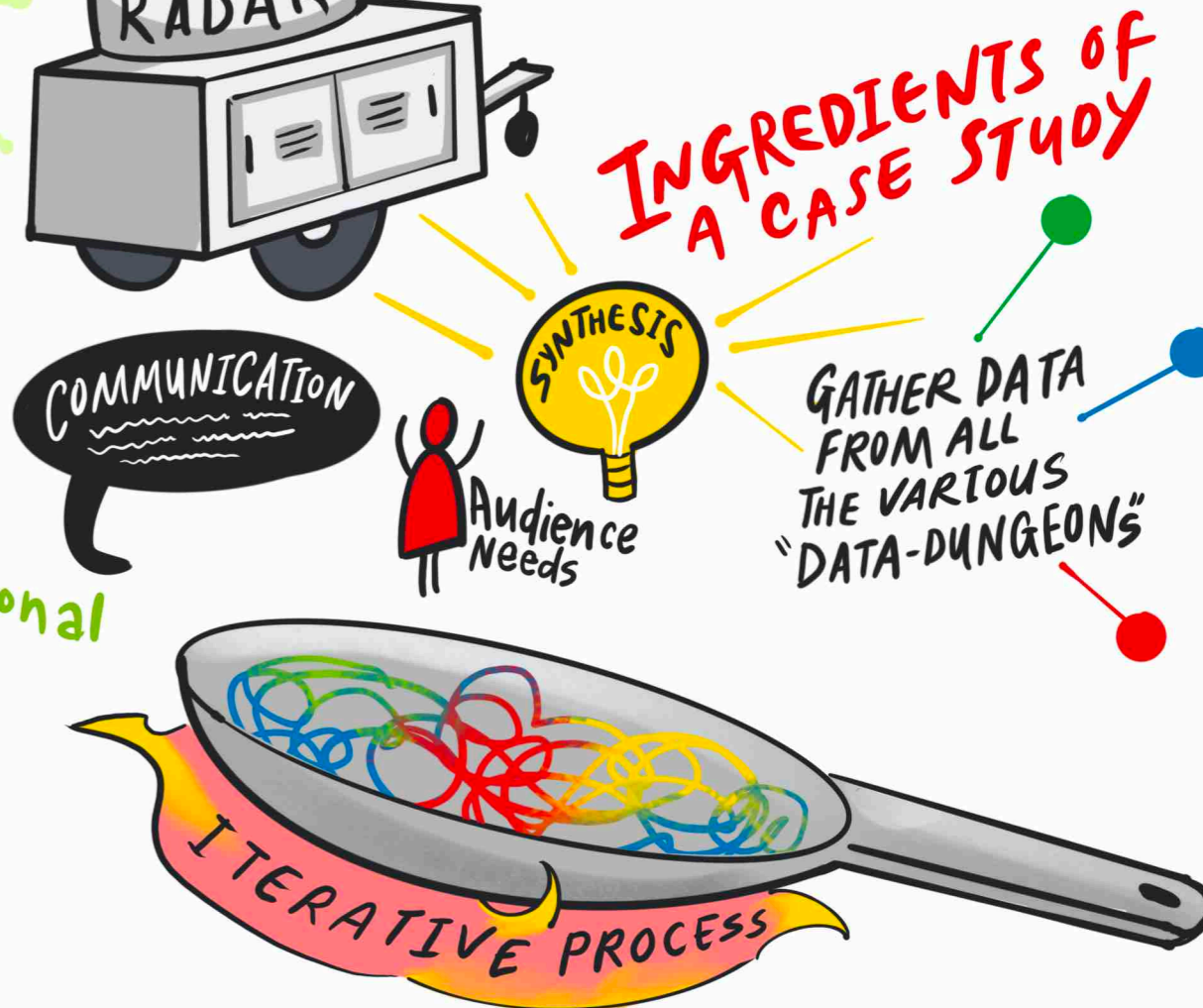
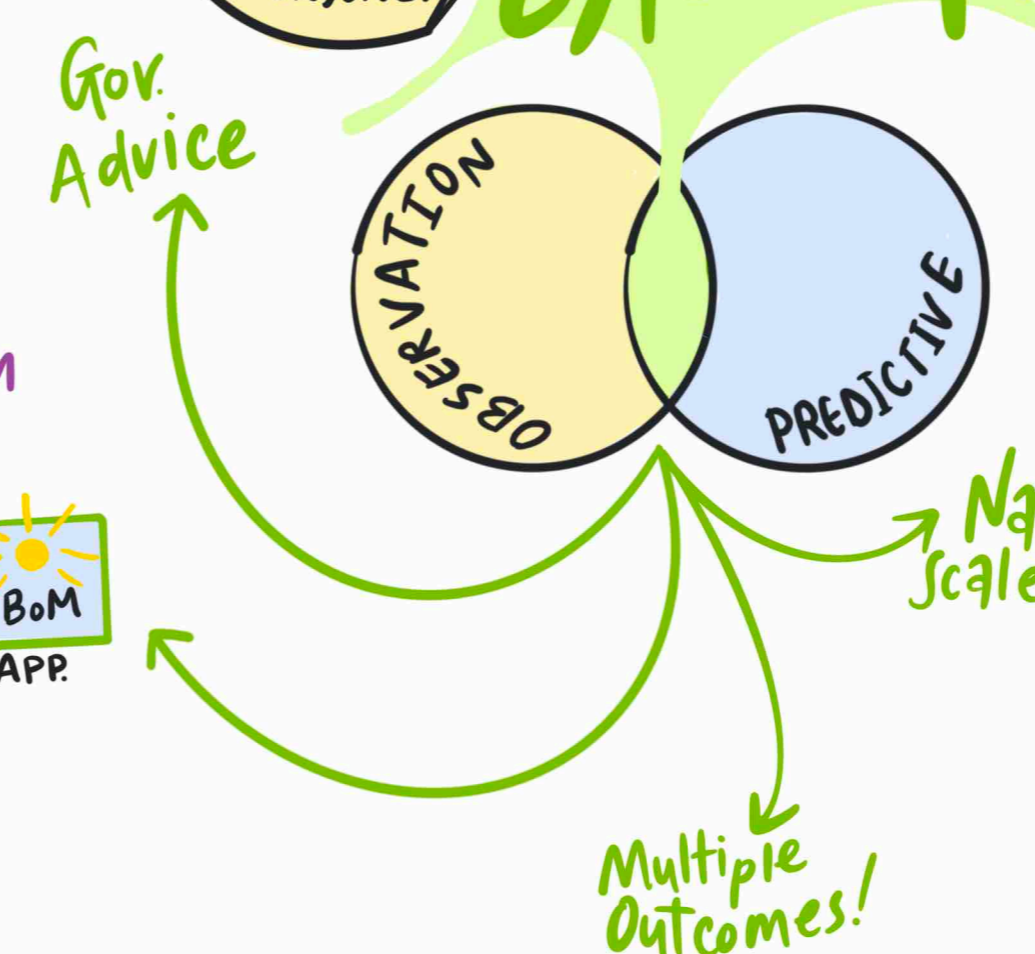
SCIENCE AIMS	COOPERATIVE AIMS
<ul style="list-style-type: none"> <li>• Fieldwork</li> <li>• focus on fire plumes</li> <li>• Take measurements</li> <li>• Detect wind shifts, ash + embers.</li> </ul>	<ul style="list-style-type: none"> <li>• Leverage WA's historic research</li> <li>• Multi-agency w/shop</li> <li>• Learning and development</li> <li>• Summary report.</li> </ul>



BENEFITS:  
 45 min deployment  
 Scan in any direction  
 But can get bogged!



Adapt for Australia to forecast the likelihood vs the impact to a L.G.A.



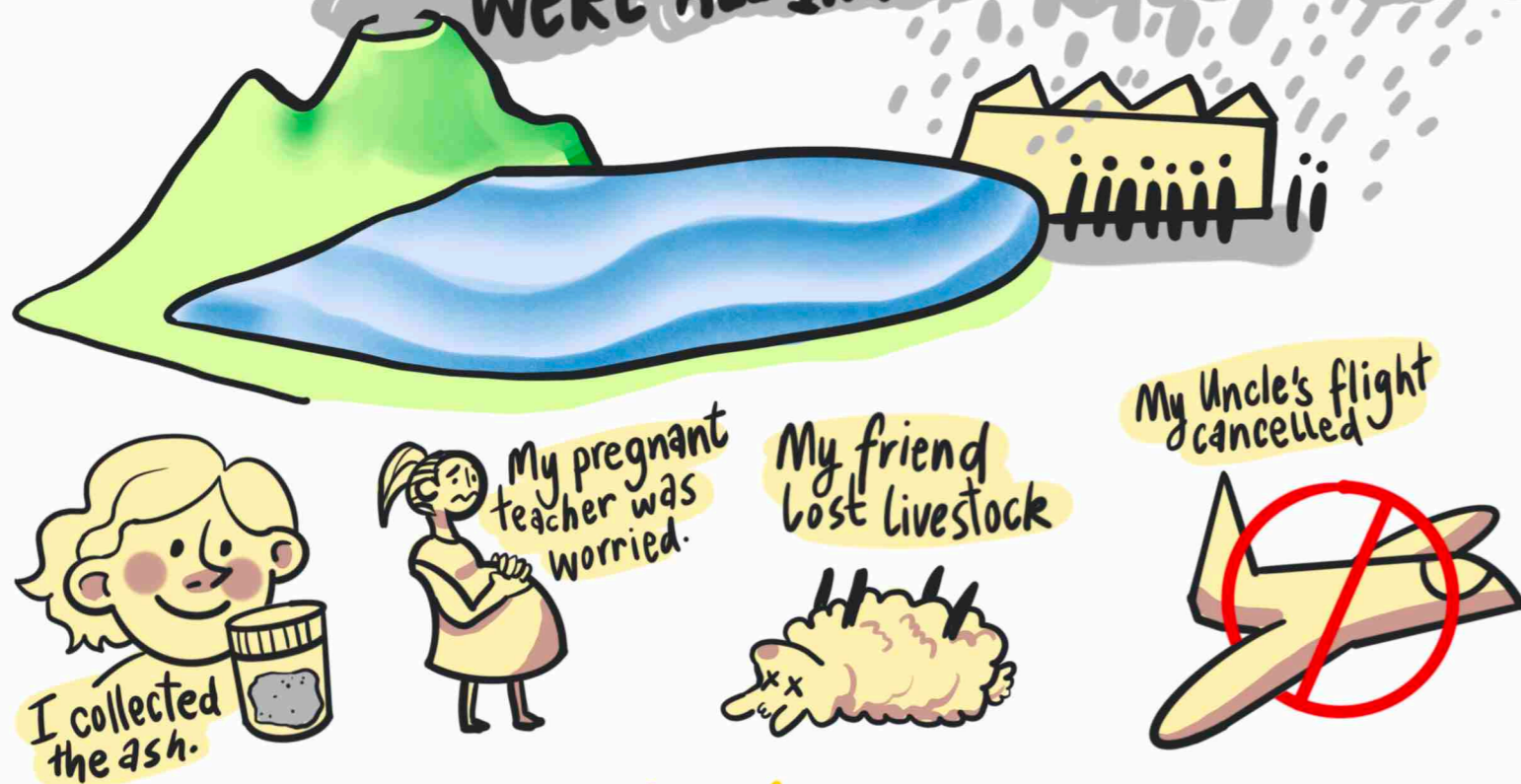
# KEYNOTE #5

# PERSONALISED NATURAL HAZARD WARNINGS

Dr. Sally Potter - GNS Science  
New Zealand/Aotearoa

# #NHRF24 DAY TWO - KEYNOTE

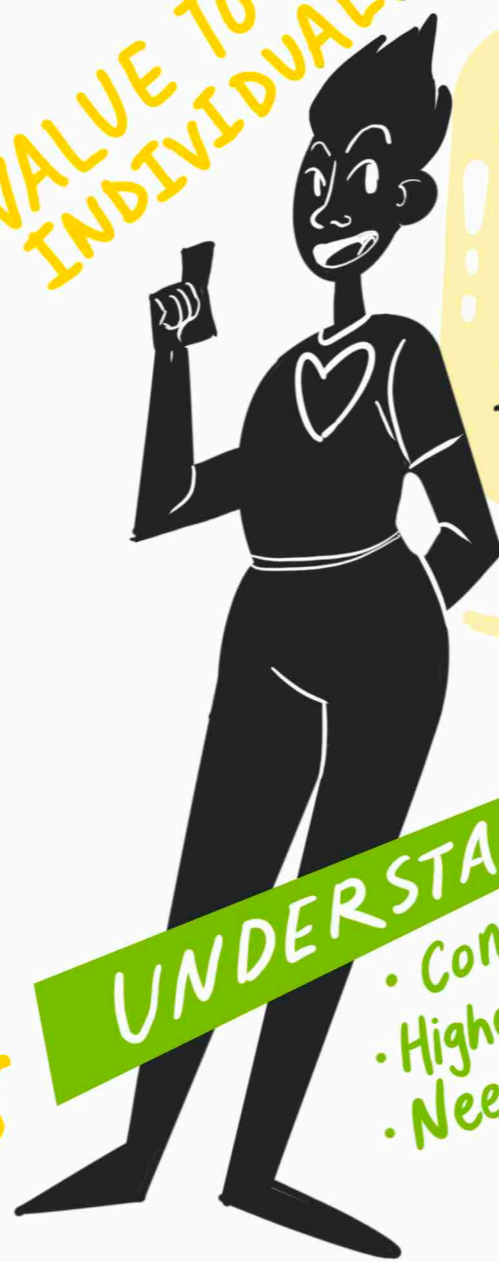
1995 RUAPEHU ERUPTION WE WERE ALL IMPACTED DIFFERENTLY



I reflected that everyone had different things going on in their lives.

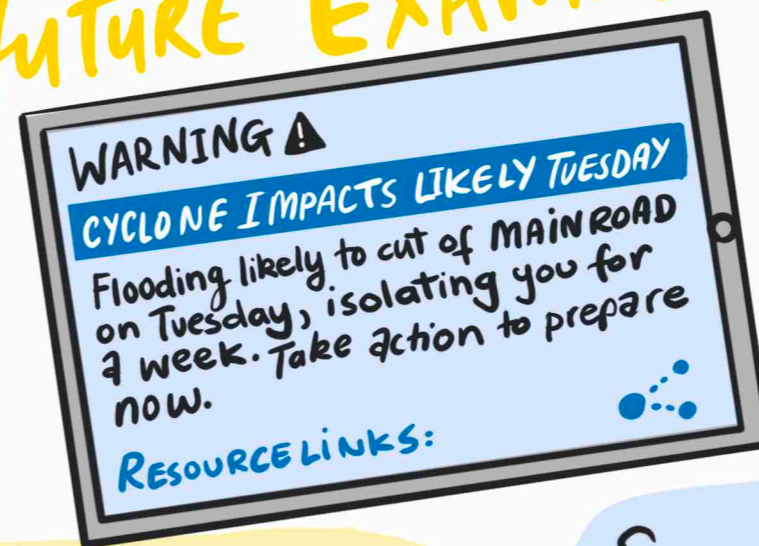
## WHAT IF WE HAD WARNINGS THAT TOOK THAT INTO ACCOUNT?

VALUE TO INDIVIDUALS



I can see impacts to my:  
• family  
• property  
• livelihood.  
I was only warned when I was at risk!

## FUTURE EXAMPLE:



Pulls in big data to use an individual's **DIGITAL FOOTPRINT** as a curated data source and written by AI.

Some questions I'll ask:

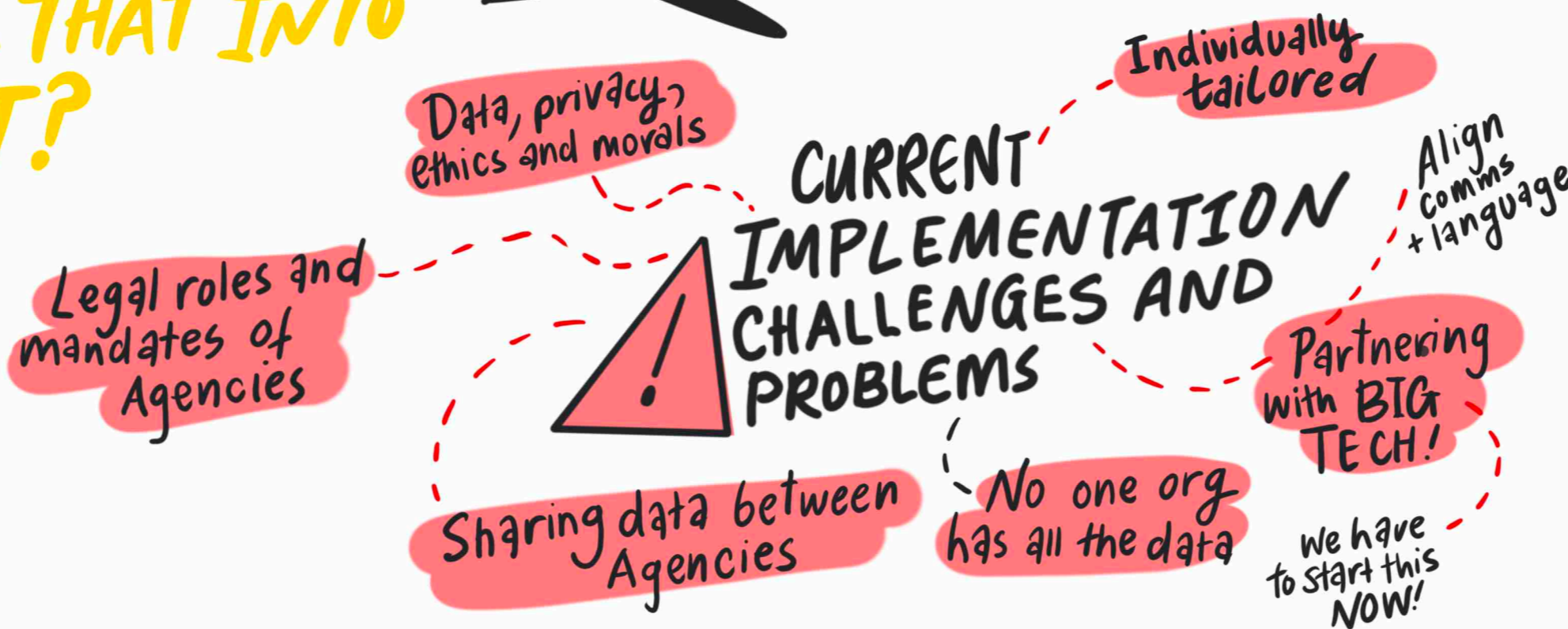
- Can I trust this source?
- How do they know what supplies I have?
- Who wrote this warning?

UNDERSTANDING OF:

- Consequences
- Higher risk
- Need to take action.

## We must research EVERY ASPECT to create quality, trusted and ethical PERSONALISED WARNINGS!

## CURRENT IMPLEMENTATION CHALLENGES AND PROBLEMS

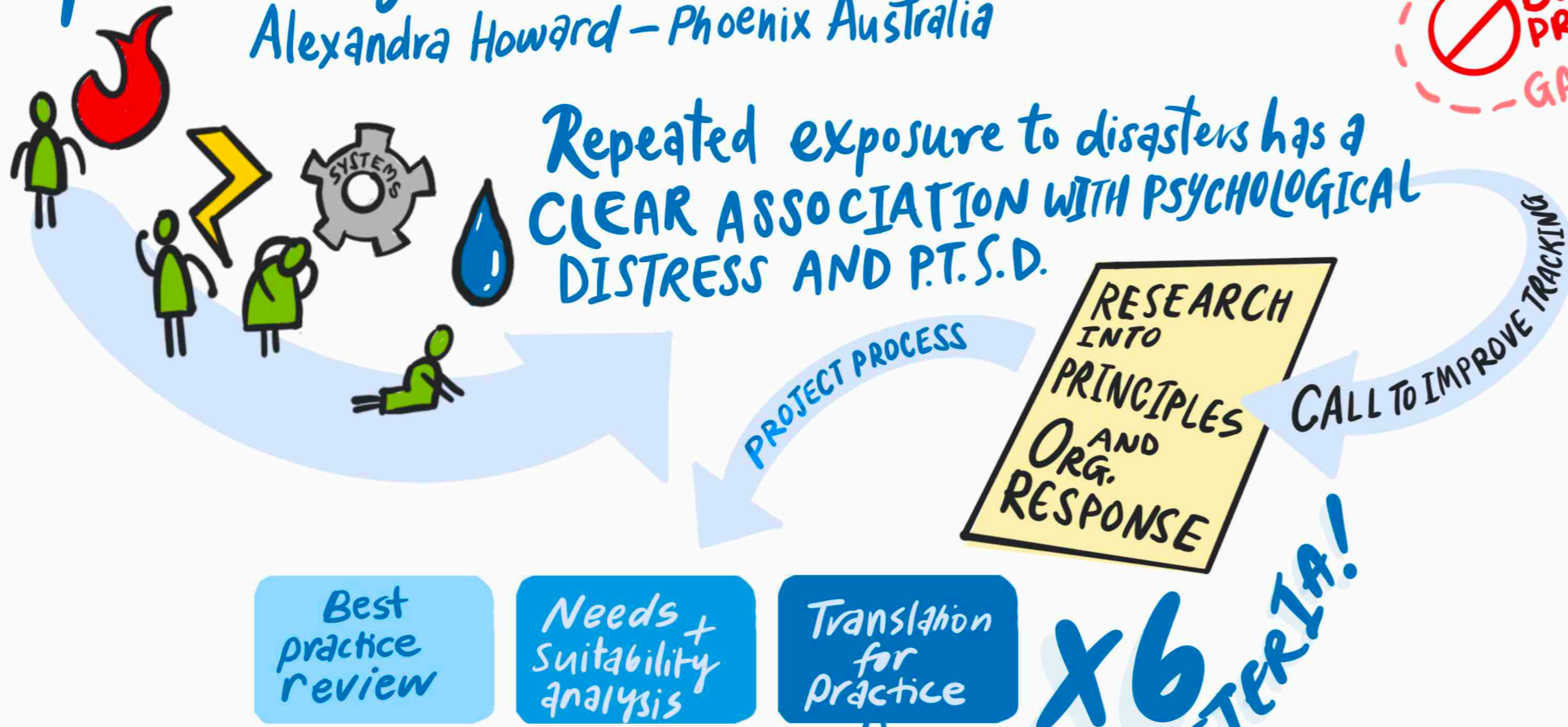


# WORKFORCE



Best practice for tracking and responding to potentially traumatic event exposure.

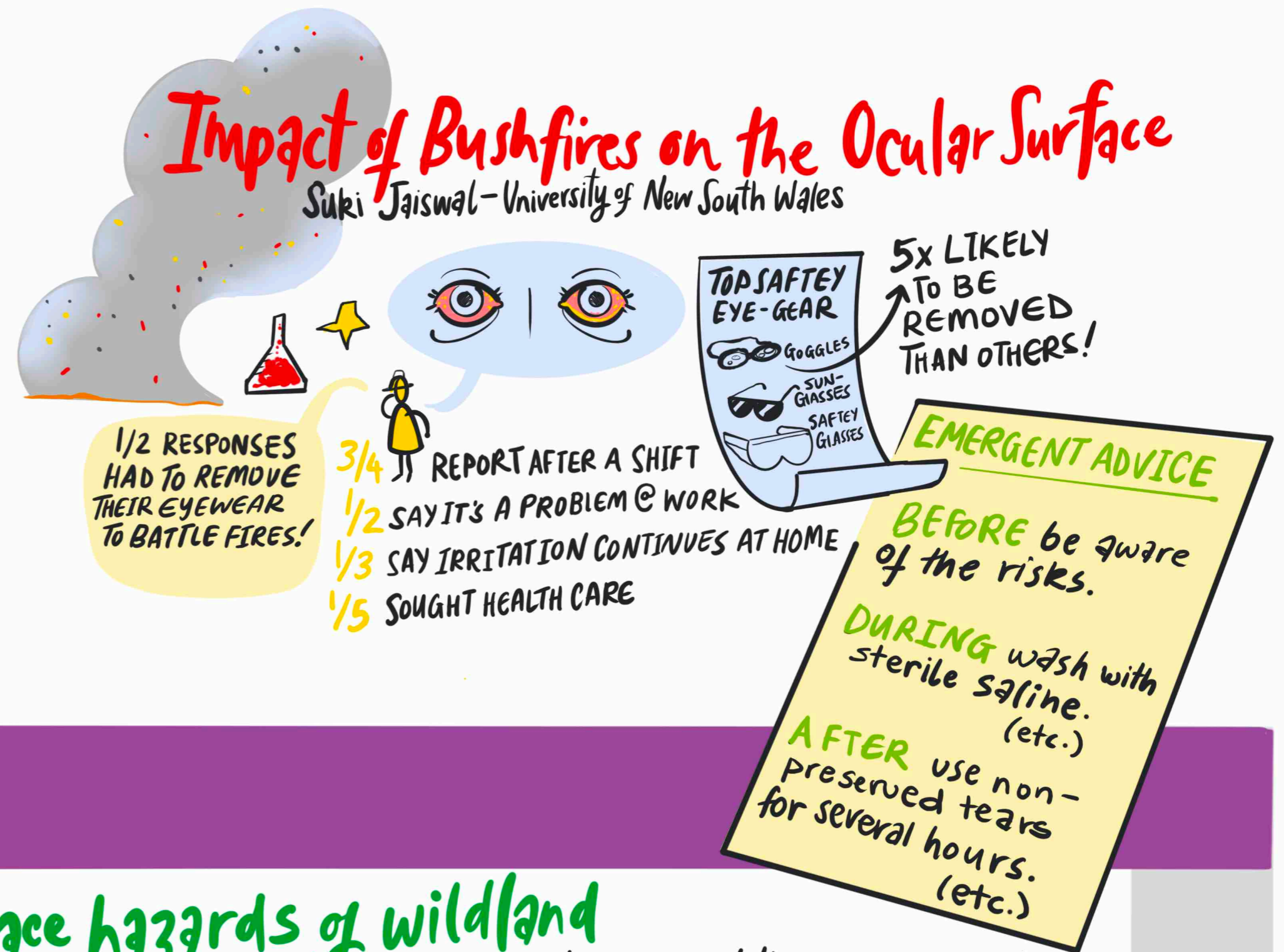
Alexandra Howard - Phoenix Australia



KNOWLEDGE BEST PRACTICE GAP

## Impact of Bushfires on the Ocular Surface

Suki Jaiswal - University of New South Wales



## Workplace hazards of wildland firefighters in W.A.

Kiam Padamsey - Edith Cowan University



## Enhanced decision-making in emergency management

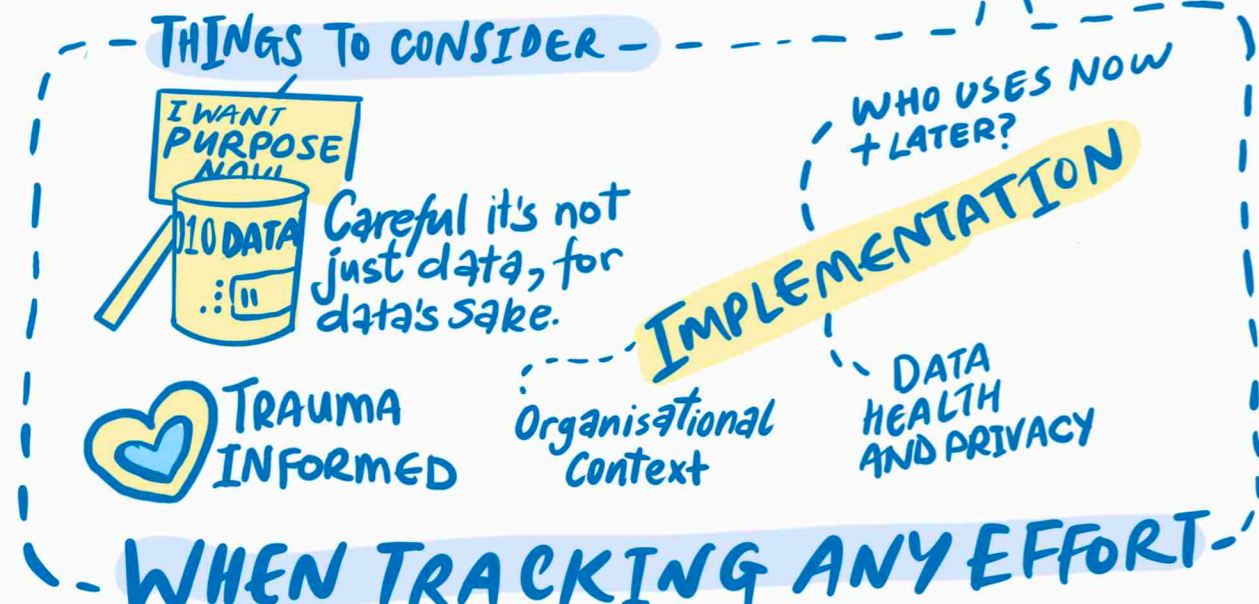
Dr. Peter Hayes - CQ Uni  
A/Prof. Greg Penney - Charles Sturt Uni.



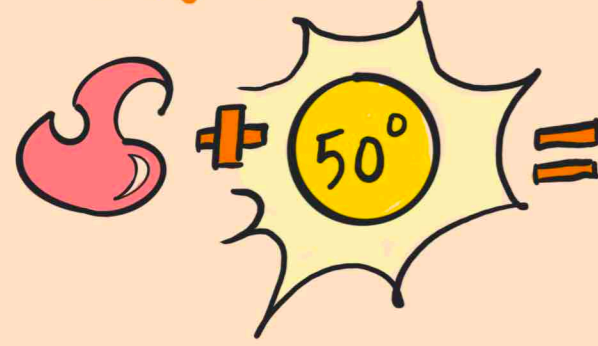
EXPOSURE + Good training for decision-making UNDER PRESSURE! as a core skill.

BENEFITS:

- ✓ Team cohesion
- ✓ Confidence
- ✓ Safety outcomes
- ✓ Leader wellbeing



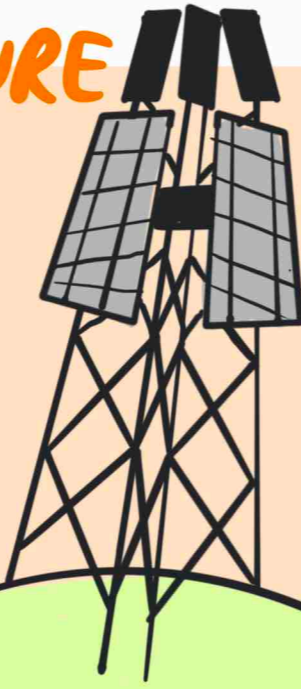
# PANEL DISCUSSION THE ROLE OF CRITICAL INFRASTRUCTURE



Might be a moral call on what fire services will attend or not.

I'm done fixing risk on my site... but what about that hill?

WHAT THEN?  
RESEARCH +  
PRIORITISED  
ADAPTATION



People forget that staff who work in infrastructure providers are disaster impacted communities and others and themselves.

LONG TAIL OF IMPACTS AND ORGS. ON HOUSEHOLDS

POST MARIBYRNONG FLOOD



IN CONSULTATION IF PEOPLE ARE EMOTIONAL WE TOOK THEM TO A SEPERATE SPACE AND LISTENED. EMPATHETIC TO ALL!

POWER'S BIGGEST HAZARD

I remember the ELECTRICAL FIRE started by faulty cables....



HARD JOB



When critical infrastructure fails - Australians are deeply impacted.

Ask a 'Citizen jury' representative of Community what do you:  
- WANT  
- VALUE  
- SPEND + INVEST

Customers are wise and hold you accountable.

## COMMUNITY INSIGHT

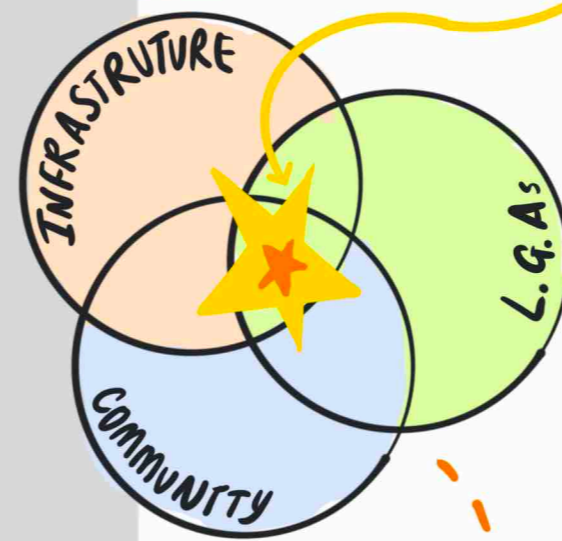
- Rely on WARNINGS

Leverage existing public inquiries like: the YOORROOK JUSTICE COMMISSION

Terms and language share to align

## RESILIENT

TO STOP GOLD PLATING



## CROSS SECTORAL

- Physical and Social Scientists

Collective common outcomes

## BUILT ENVIRONMENT

## INVESTING \$

Even if every site was adjusted, we'd still never get @GOLD STANDARD!

Humans are the answer, not pipes!

Link R.O.I to impacts  
→ Societal  
→ Socio-economic  
→ environmental.

NEED GUIDANCE TO RESPOND AND BE FLEXIBLE OVER TIME!

## CHANGING CLIMATE

Recovery and temporary housing.

STREAM #6

# INFRASTRUCTURE - PLANNING FOR A



**KEYNOTE # 6**

**FUTURE URBAN PLANNING POLICY IN A NATURAL HAZARDS CONTEXT**

Prof. Barbara Norman - Chair of Urban Policy Forum



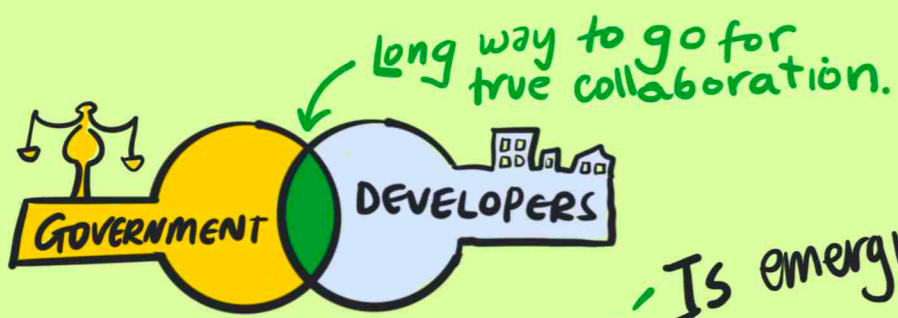
US States are pulling out of insurance

"If we continue to build in places we shouldn't... who is going to pay for recovery!"


**PANEL DISCUSSION**

BRENTON GREAR GREENING ADELAIDE

**"Cooler, Greener + wilder"**  
Using natural systems to adapt and mitigate the impacts of a changing climate.

Focus on the whole chain and policies that enable the process across all orgs in the chain.



Better resourced councils are leading globally (because they can afford it).

**GOOD URBAN PLANNING**

Stop building in dumb places!

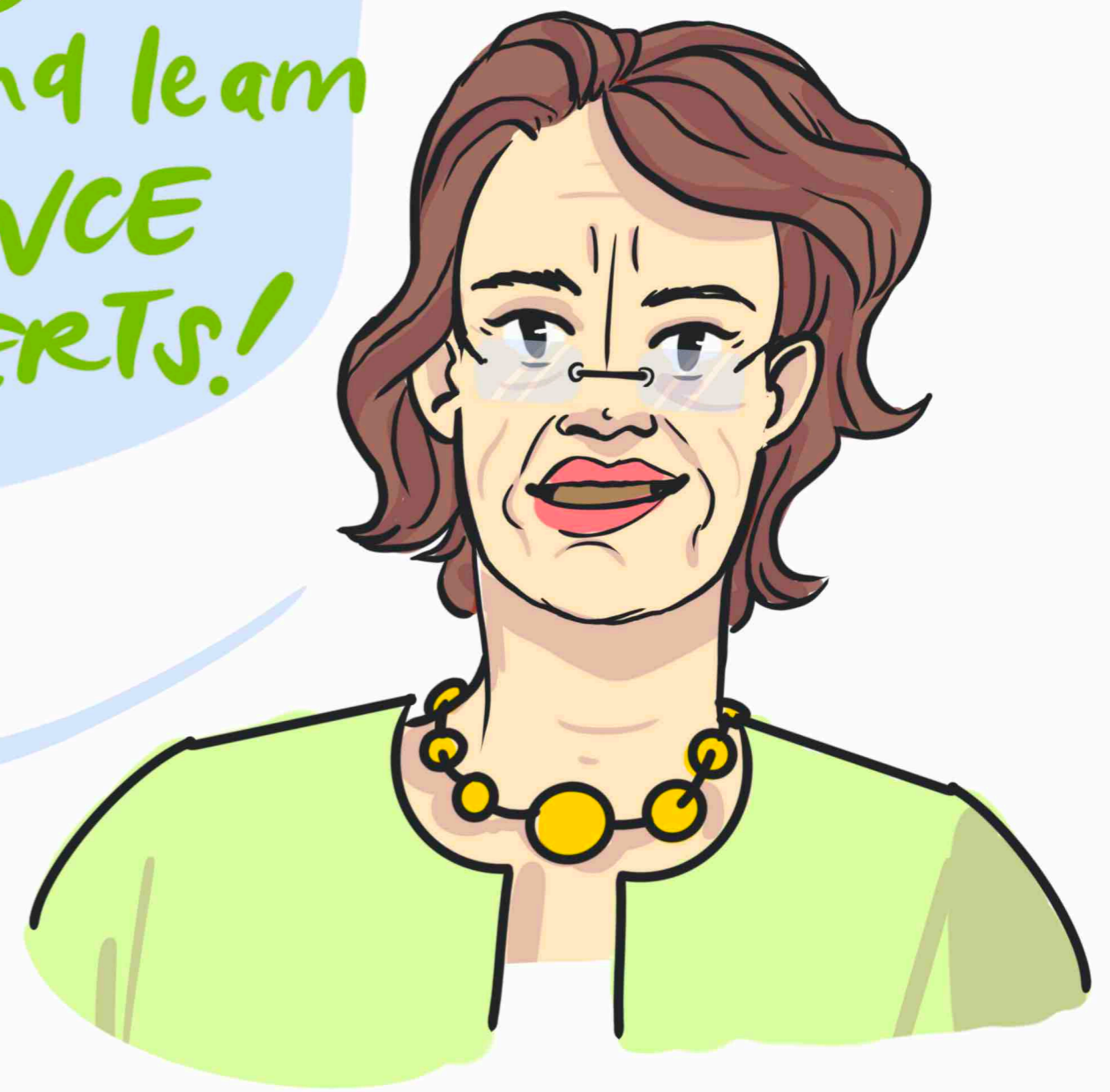
HER EXCELLENCY, THE HONOURABLE  
**FRANCES ADAMSON**  
GOVERNOR OF SOUTH AUSTRALIA

I acknowledge the Kurna Elders, leaderships and people and that we meet on their land.

Everyone here is encouraged to **THINK BIG + INNOVATE!**

When disaster strikes we are all affected and need dynamic information - found in places like the NHRA - to respond to the growing intensity of natural hazards.

From cities to local trees, and communities we must adapt and learn **FROM EXPERIENCE AS MUCH AS EXPERTS!**



**CLOSING REMARKS**

