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Bureau of Meteorology

Making Better Decisions

Public Services Transformation
High Impact Services

Baden Hall

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Background and Context

Public Services Transformation	
Contribute to Zero Lives Lost through Natural Hazards	**Contribute to $2b of added Social and Economic Value by 2022**

Key outcomes:

- Providing customers with an **outstanding experience** every time they engage with the Bureau
- Delivering products and services that provide the **highest impact and value** for the Australian community
- Ensuring the Bureau's operations are **resilient and sustainable**

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Current Situation

Forecast

Certainty in the forecast

Reliability of the forecast

Context of the situation/ forecast

If we have **exposure** and **vulnerability** information then these five considerations can be provided as **impact**

i.e. **what will the weather do**?

as opposed to what will the weather be?

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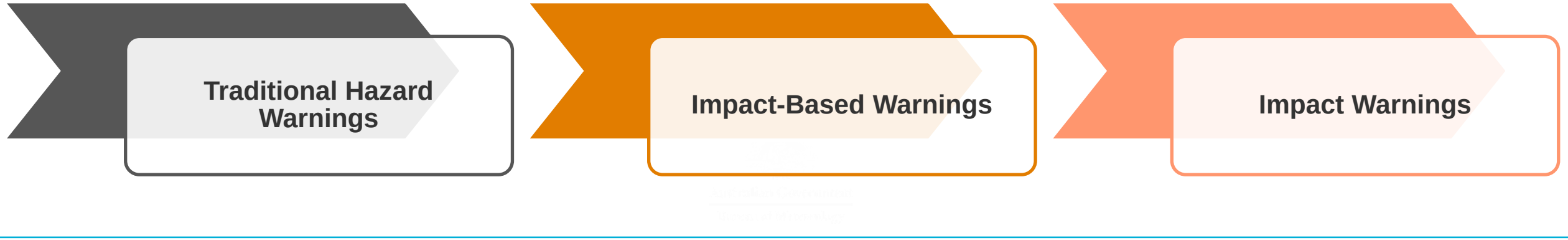

Hazard only	Hazard + Vulnerability	Hazard + Vulnerability + Exposure
Strong winds reaching 80-100 km/h are expected	Strong winds are expected, which may lead to some disruption to transport networks and interruption to power supplies	Ferry services for the island will most likely be cancelled tonight due to strong winds
Scattered thunderstorms with a risk of hail are expected in the area	Thunderstorms with hail are expected to affect the area, which may result in localised damage to vehicles	Your car is at risk of damaging hail this afternoon. You are advised to move your vehicle under cover if possible

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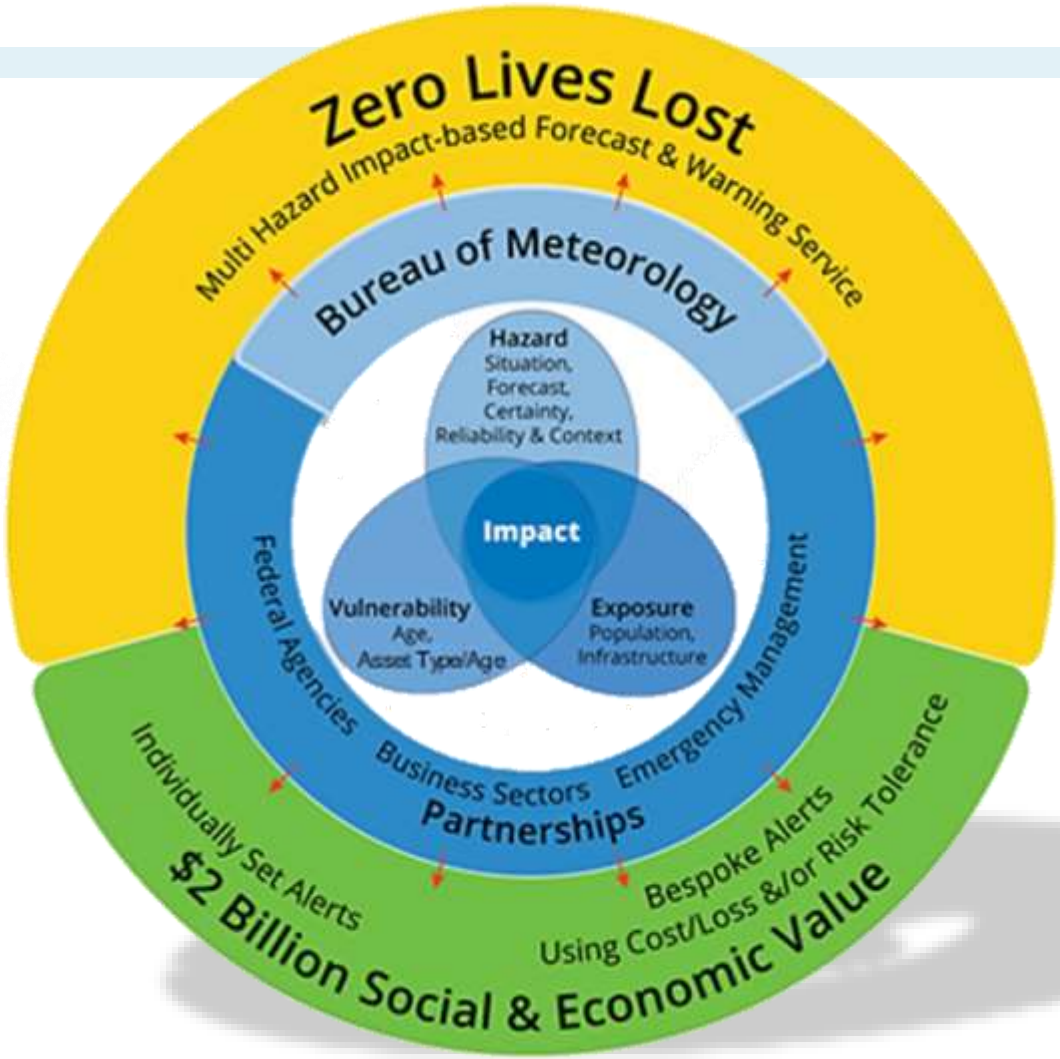
The Australian Safety Alerting Program (ASAP)

Vision

To reach the right **people**,
through the right **channels**,
at the right **time**,
with the right **information**
to **prompt the right response**



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i) Uplift

… **existing warnings** towards the Goals set out in the **Future Warnings Framework** guided by a **Future Warnings Roadmap**

ii) Knowledge Integration

… **to provide customisable alerting and visualisation capability** to enable **Decision Support teams** to systematically **capture customer needs, sensitivities and risk tolerance**, and help us support our customers to make better decisions

iii) Customisable Alerting

… enabling users to set **configurable thresholds**, specifying **personalised vulnerability and exposure parameters** and receive **tailored alerts** through desired **delivery channels**

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Part (i): Uplifting existing warnings

Future Warnings Framework and Total Warning System

- Define policy case for action
- Identify warning attributes
- Map existing warnings to target state
- Identify gaps and uplift required
- Agree prioritisation
- Product Manage through Bureau Delivery Model

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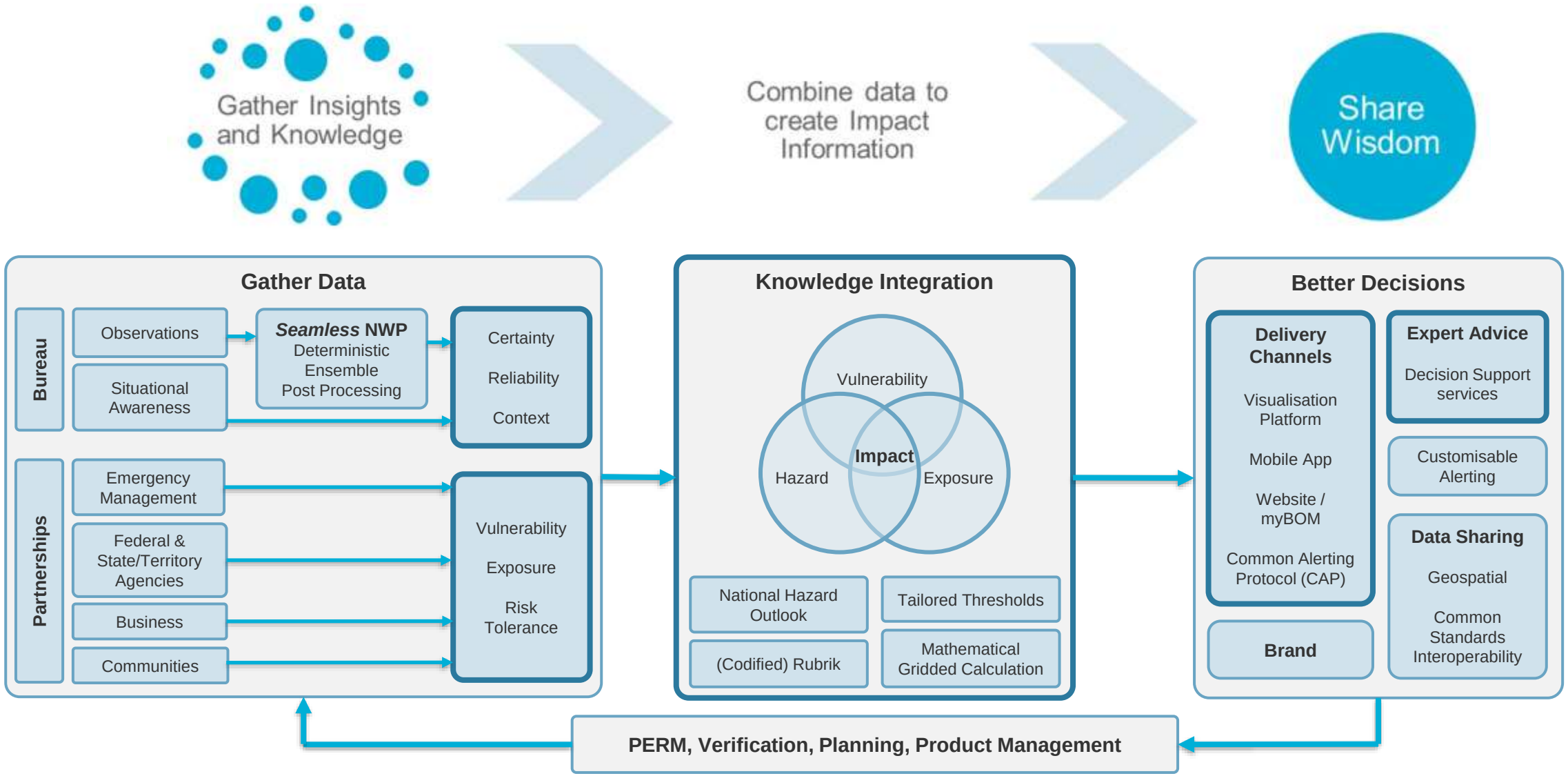
Part (ii): Knowledge Integration



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Part (ii): Knowledge Integration – User Story

As a member of the Decision Support team working with the healthcare sector, I need to integrate our growing knowledge of the effects of air quality on people's respiratory health to provide expert advice to our partners on impacts and risk to those vulnerable in the community and support planning and response activities.

Gather Insights and Knowledge

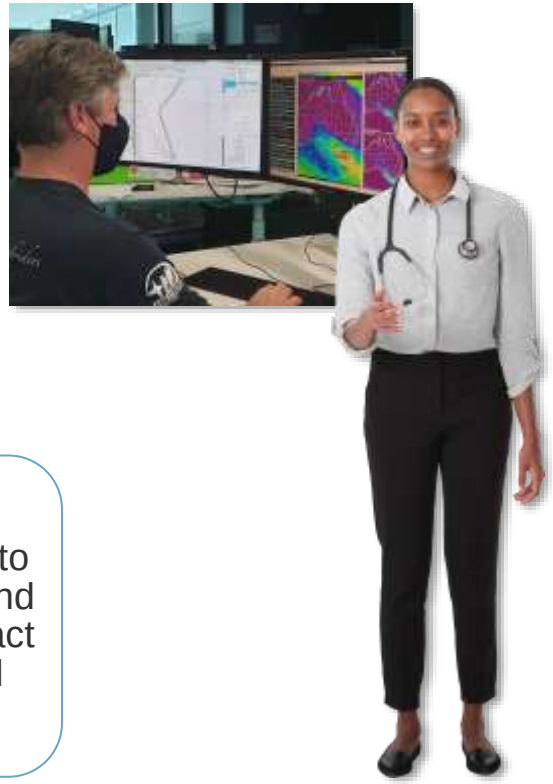
Decision Support team works with Health sector to determine vulnerability and exposure of at-risk groups to poor air quality and plan response

Combine data to create Impact Information

Bureau air quality data combined with data on community vulnerability and exposure to poor air quality using knowledge integration capability to determine impact and risk information

Share Wisdom

Decision Support team works with Health sector to plan, prepare response and inform community of impact and risk through agreed channels



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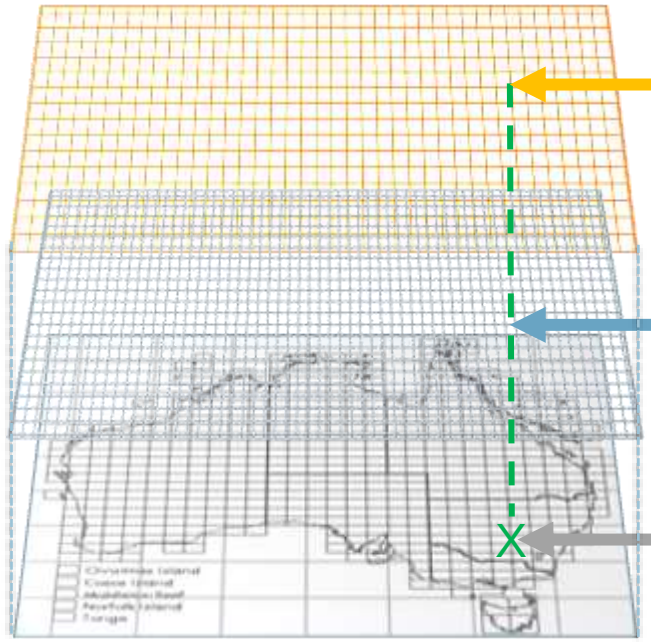
Part (iii): Customisable Alerting

Gather Insights and Knowledge

Combine data to create Impact Information

Share Wisdom



Hazard (forecast) data – includes probability information across seamless timescales

Customer sets thresholds for their vulnerability to impacts (and risk tolerance)

Customer specifies their location(s)

Generate automated alerts when these coincide in space and time

i.e. weather hazard(s) exceed threshold(s) at given location(s) in relevant time window, and probability of impact exceeds customer's risk tolerance

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Part (iii): Customisable Alerting – User Story

As a stone fruit farmer, I am concerned about brown rot affecting my fruit, and require specific alerting when my farm will be affected by conditions likely to impact my crop.

Gather Insights and Knowledge

Farmer uses accessible technology platform to input location and weather hazard thresholds at which crops are vulnerable to fungal diseases

Combine data to create Impact Information

Customisable Alerting capability combines Bureau hazard data with farmer's configured location(s), vulnerability and risk tolerance criteria to monitor for impactful conditions

Share Wisdom

Farmer receives tailored alerts when hazard, vulnerability and exposure criteria are met with sufficient confidence, prompting a response by farmer to mitigate impacts

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Challenges and Keys to Success

- **We can't do this alone** – it will rely on great customer engagement and close partnerships with other organisations, agencies and industry
- **We need to align with and leverage investment elsewhere in the Bureau** – new technology, processes and skills
- **We need to work with others internationally** – to agree things like standards, approaches and data sharing
- **Predicting impacts is hard** – they vary from user to user and can combine through compound and multi-hazards
- **We need to measure success** – verifying impacts and the actions people take as a result is not straightforward
- **We must be ready to innovate and use new technologies** – AI, Machine Learning, Augmented Reality, Social Media, IoT… all open up new possibilities

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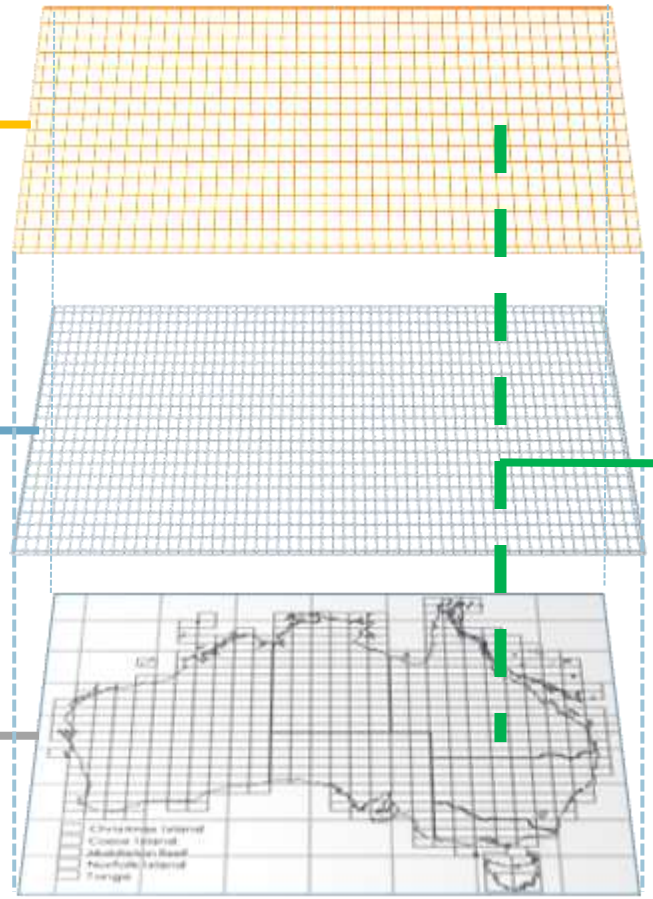
Questions?

Bureau hazard information, including probability, across seamless timescales

Customer thresholds, sensitivities and risk tolerance

Customer-specific locations



Combine in space and time to create impact and risk information to help people make the right decisions to protect themselves, their activities and their livelihoods

ASAP on one page