Rain Cloud to Receiving Water

The road to high value digital twins

MOTT MACDONALD | SMART INFRASTRUCTURE

What if we could optimise interventions around strategic outcomes ?

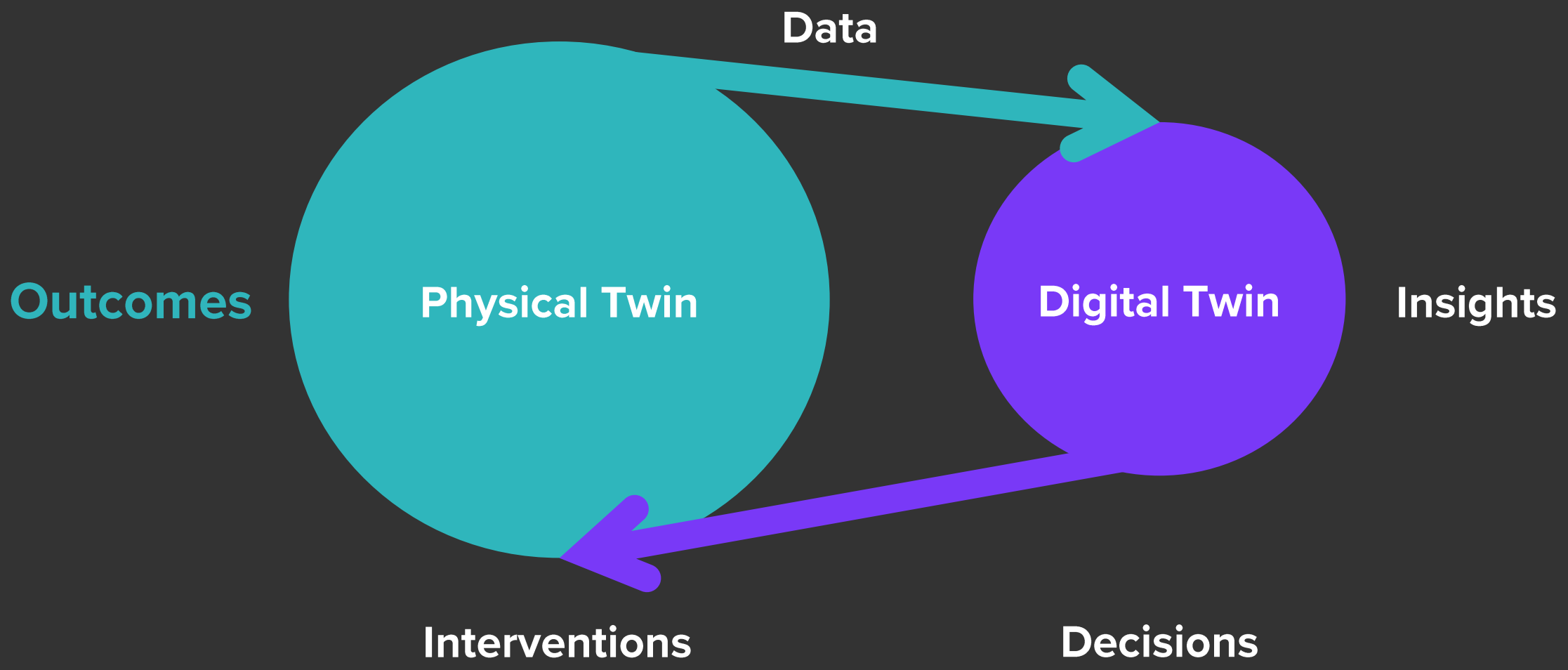
Smarter Infrastructure

Smart Infrastructure enhances the physical world with digital insights. It improves efficiency, helps you make **better decisions** and pinpoints errors before they happen. It's always on and always learning. The more data it receives, the more opportunity it reveals.

The key to smarter assets is a connected digital representation – digital twin

The twin starts
with the
existing system
and evolves

Digital Twin Topology



We need to focus on our culture, domain and digital knowledge

3 Pillars of Delivery

Digital Transformation Task Group

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ICG INFRASTRUCTURE CLIENT GROUP

"To facilitate and accelerate digital transformation in the UK's infrastructure industry, in order to increase performance and national productivity."

SCOTTISHPOWER

love every drop anglianwater

NDA

highways england

EDF ENERGY

Sellafield Ltd

Transport for London

UK Power Networks

hs2

nationalgrid

Environment Agency

Tideway

NetworkRail

Heathrow

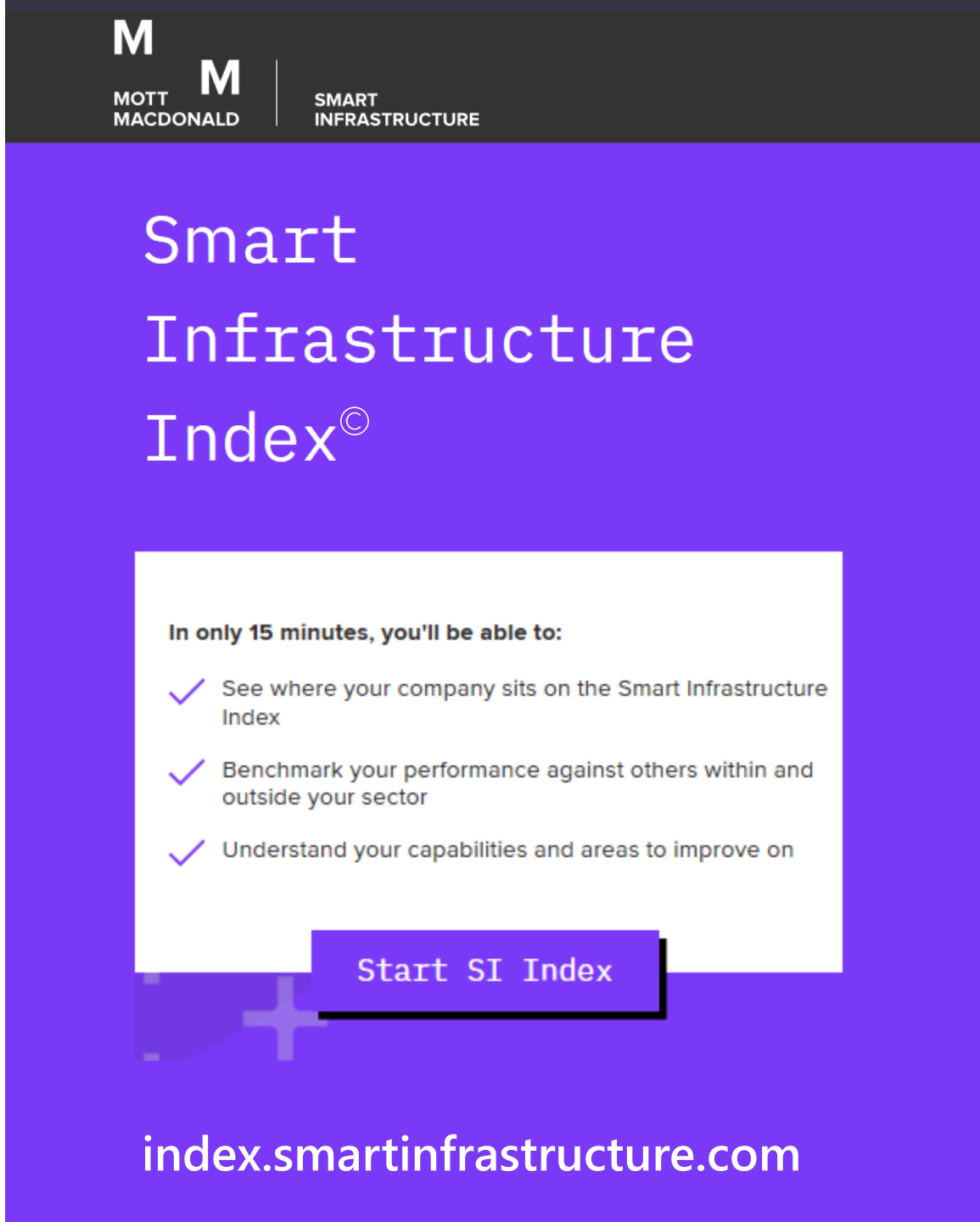
Smart Infrastructure Index©

Online self-**assessment** tool to understand digital maturity

Developed specifically for infrastructure

Covers broad range of topics:

- Customers
- Commercial
- Digital transformation
- Asset management
- Asset delivery
- Asset performance
- Continuous improvement



70%

believe they don’t understand their digital skills gap

95%

said poorly organised information prevents them from realising its full value

74%

think there are significant omissions, duplicates or inconsistencies in their asset register

60%

feel decisions are made on the basis of experience and instinct rather than being informed by evidence

Common challenges, shared response

The Smart Infrastructure Index© Report 2019

https://project13.mottmac.com/2019/

Read full report

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Some actionable steps...

1.

Benchmark Maturity

Complete the Smart Infrastructure Index© to benchmark your performance against the ICG and others globally.

2.

Shape your strategy

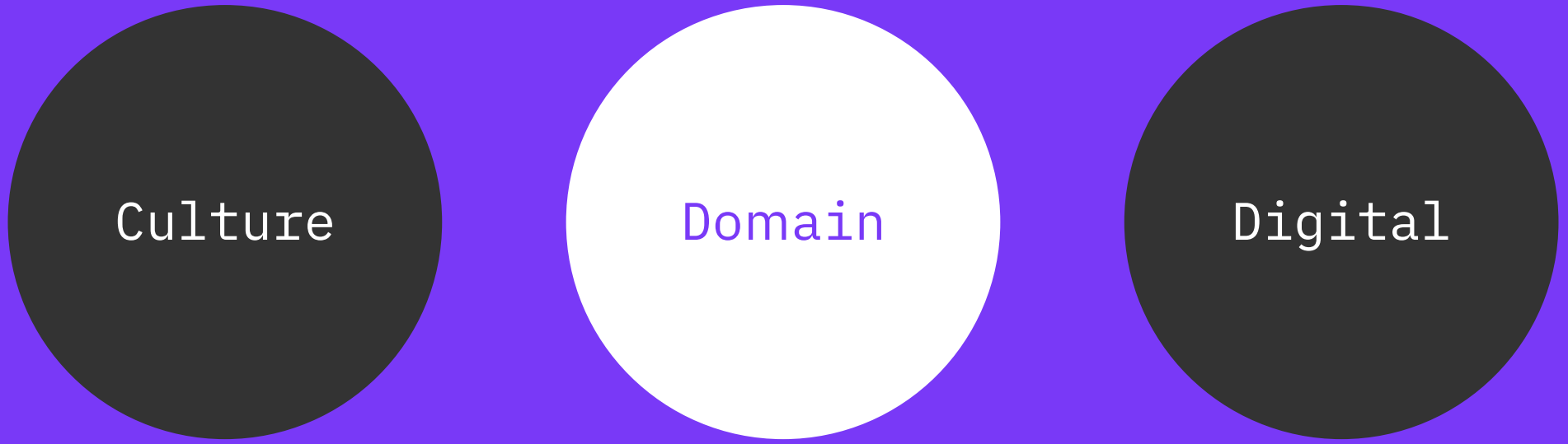
Drive coordinated action with an overarching digital transformation strategy to focus investment and maximise value.

3.

Help create best practice

Share and collaborate globally as an industry to ensure we avoid the classic pitfalls of every major IT project! (Which this isn't).

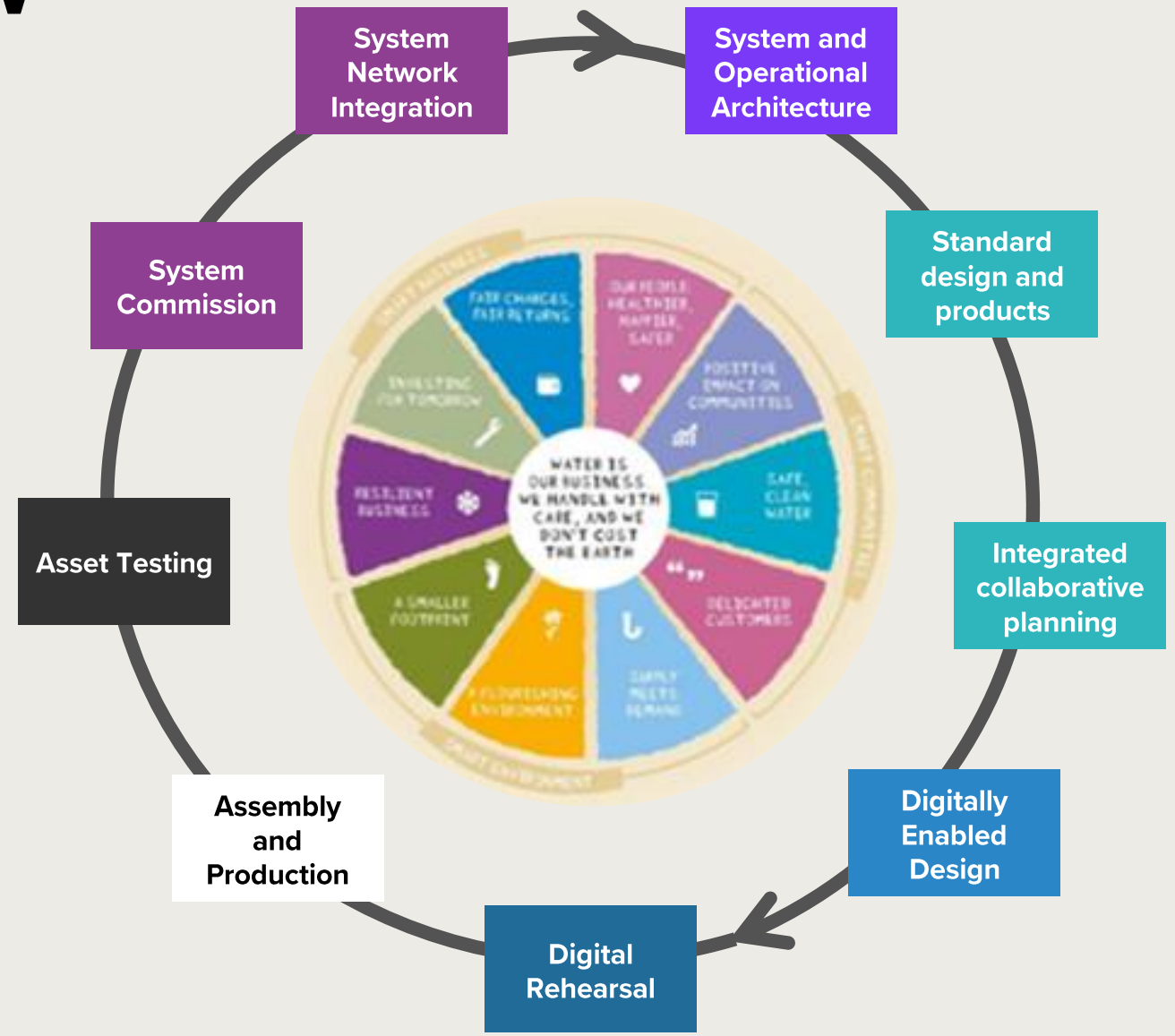
3 Pillars of Delivery



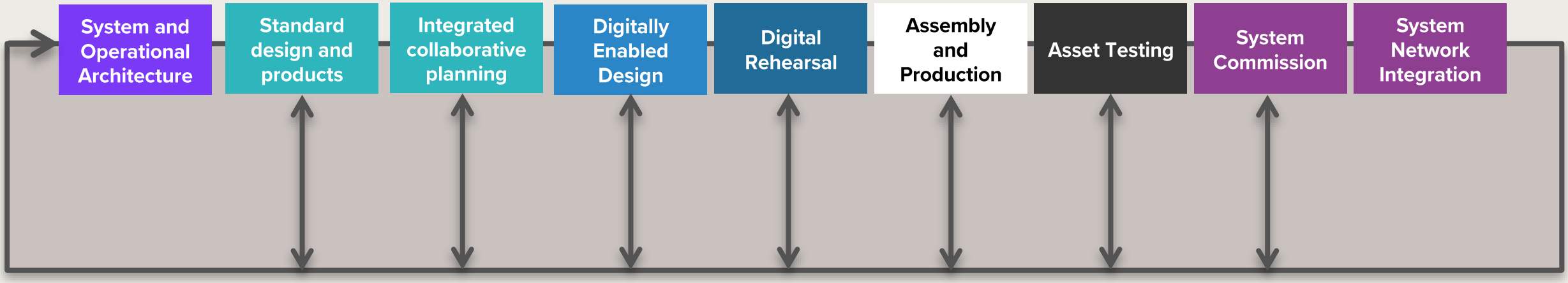
Looking for a
new way of thinking

Static reporting	⇢	Live analytics
Isolated data	⇢	Interconnected data
Separate build & maintenance cost	⇢	Outcome per whole life $

Project Flow



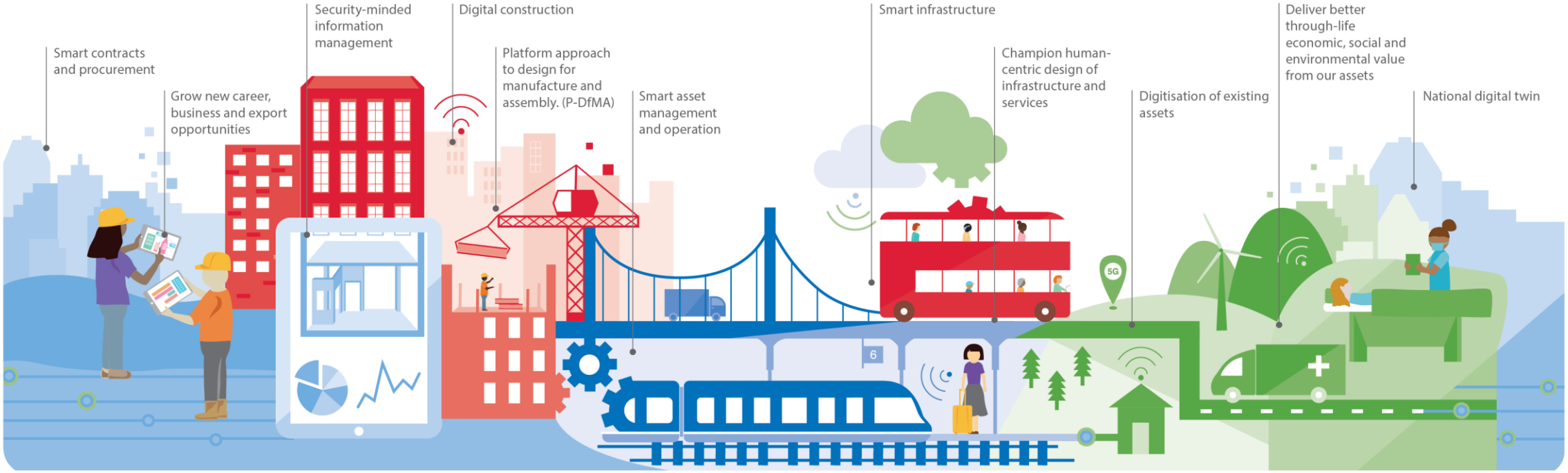
Continuous evolution



Federation drives collaboration and evolution

3 Pillars of Delivery

This is Digital Built Britain



Design

Use best practice, secure by default, information management and digital techniques to get data right from the start and design better-performing homes, buildings and infrastructure.

Build

Exploit new and emerging digital construction, information management, and manufacturing technologies and techniques to improve safety, quality and productivity during construction.

Operate

Use effective information management to transform the performance of the built environment and the services it delivers.

Integrate

Understand how the built environment can improve citizens' quality of life and use that information to drive the design and build of our economic and social infrastructure and the operation and integration of the services they deliver.

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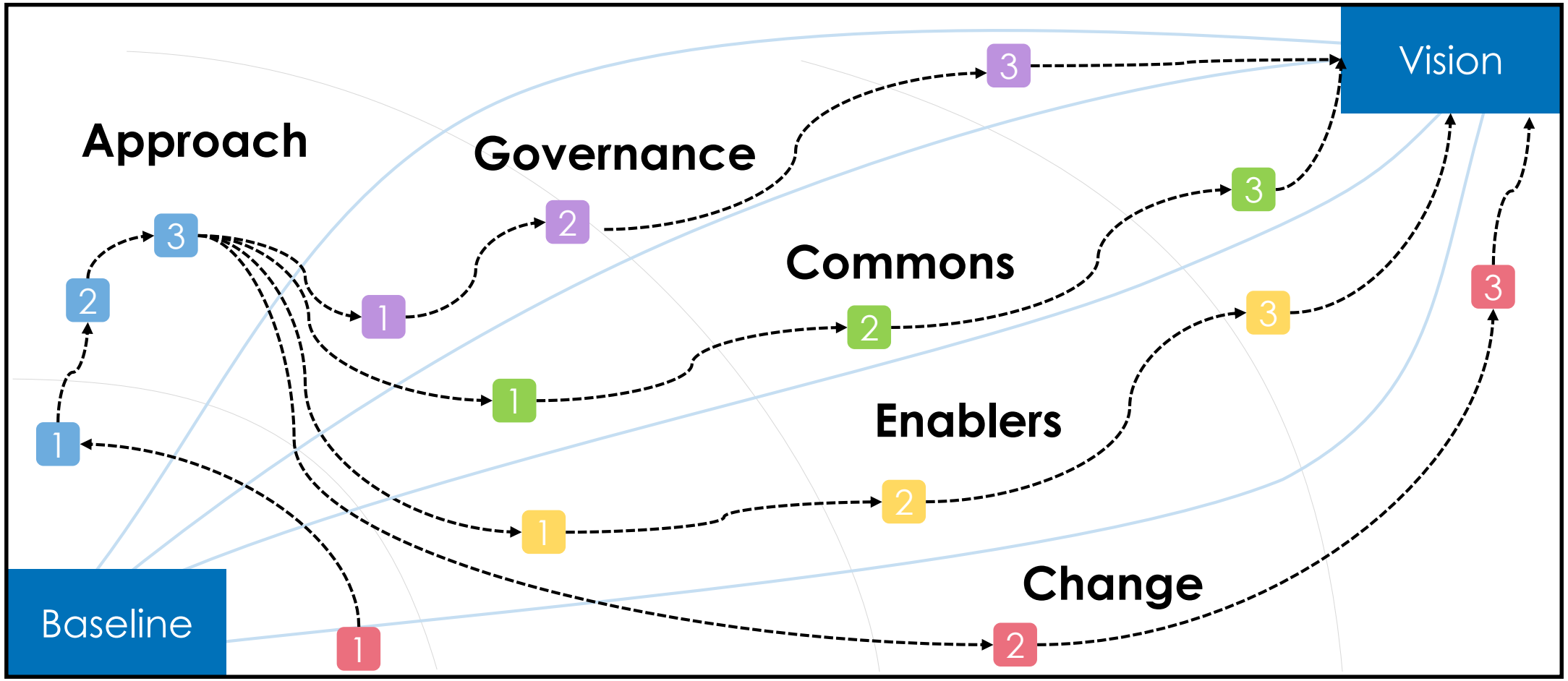
cdbb
Centre for Digital Built Britain

The Roadmap



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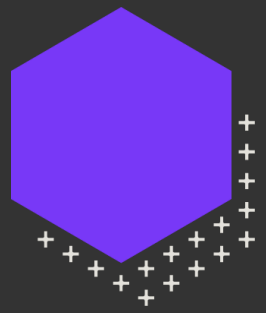
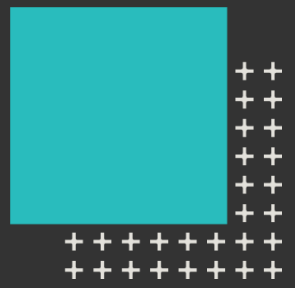
Having principles is foundational

The Gemini Principles



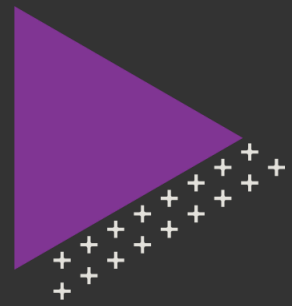
Purpose

Must deliver determinable insight to create value for the public good and enhance social, environmental, and economic outcomes



Trust

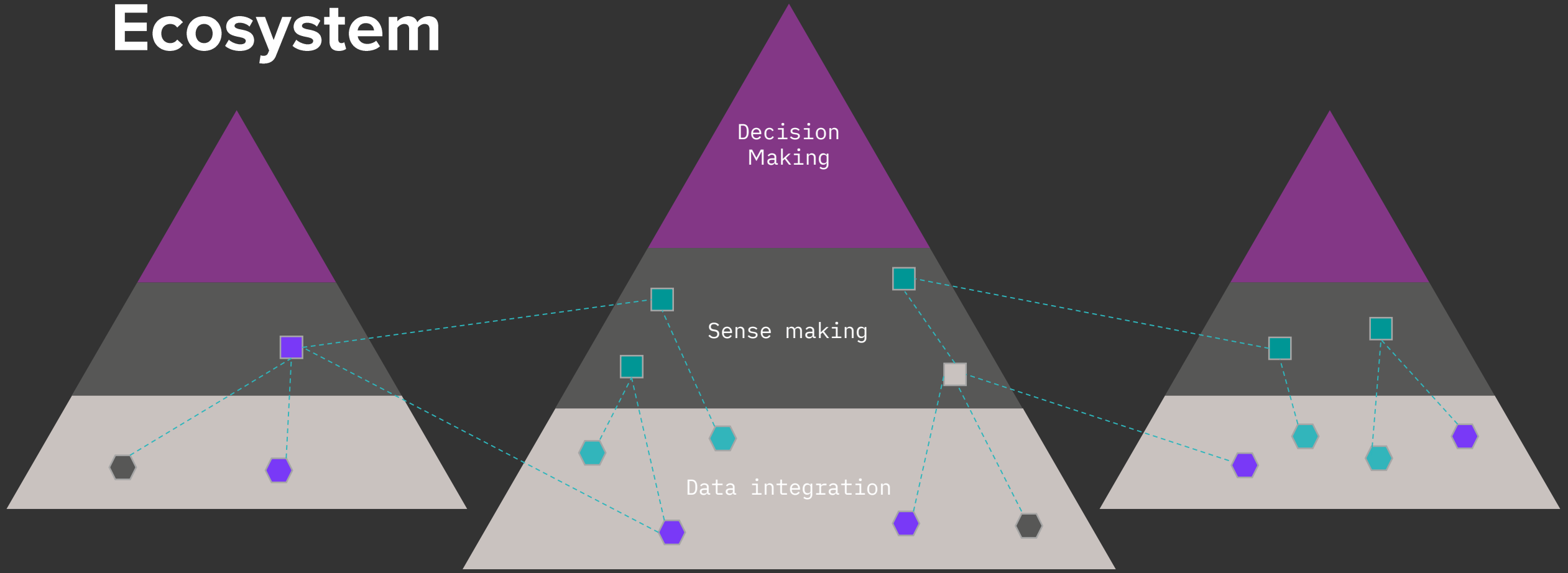
Must deliver quality data in an open and secure way



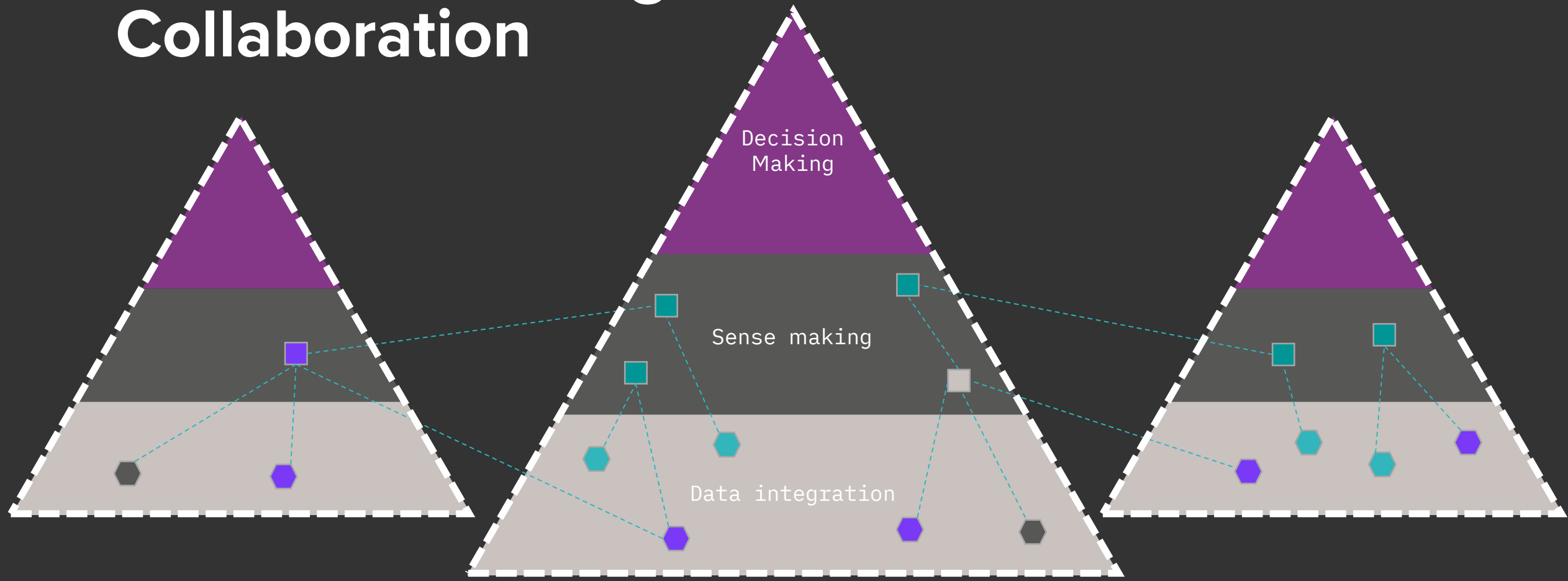
Function

Must evolve with technology and through the asset lifecycle. Federation and collaboration is the key to evolution.

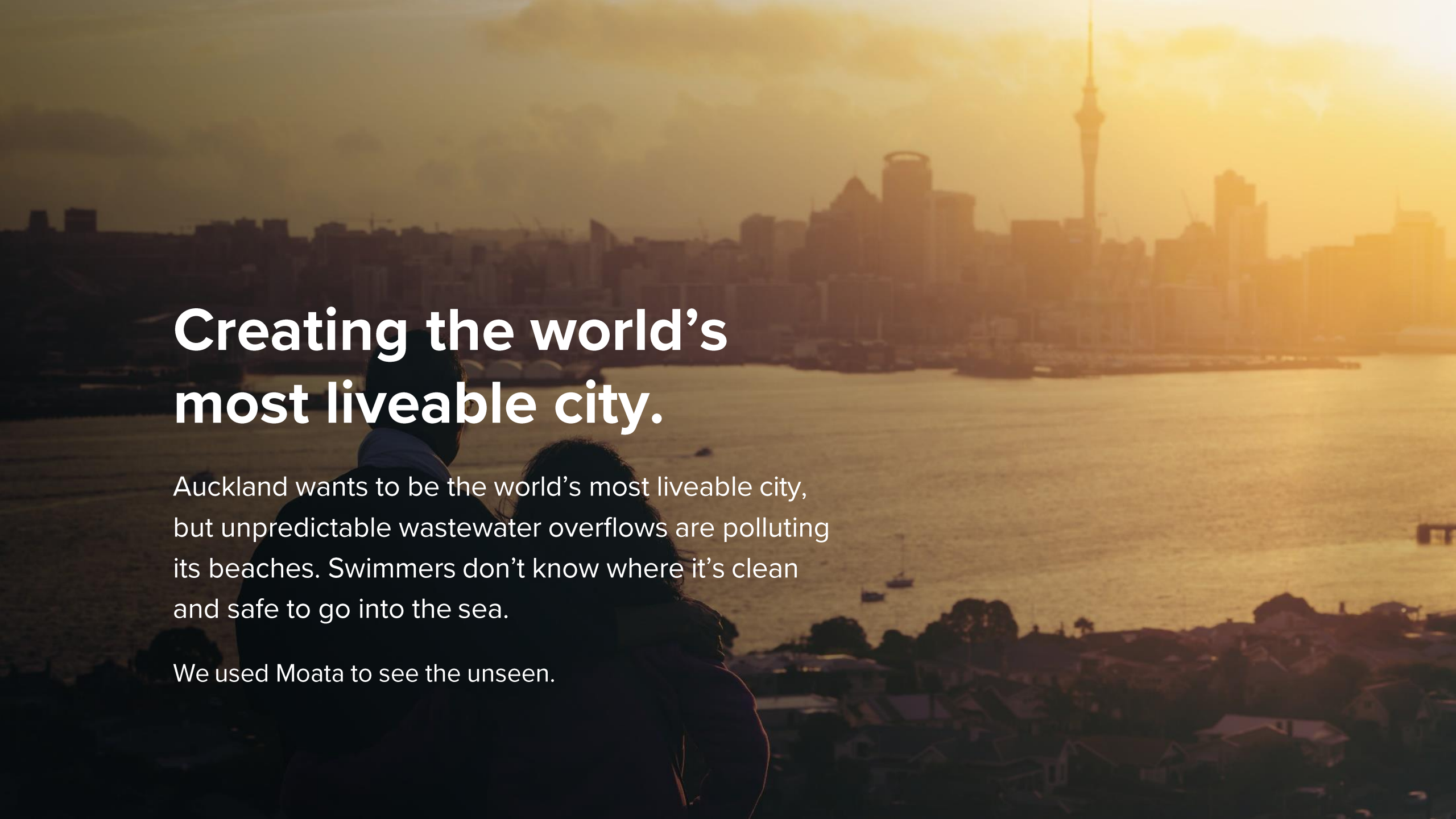
Federated Ecosystem



Trust – Protecting Collaboration



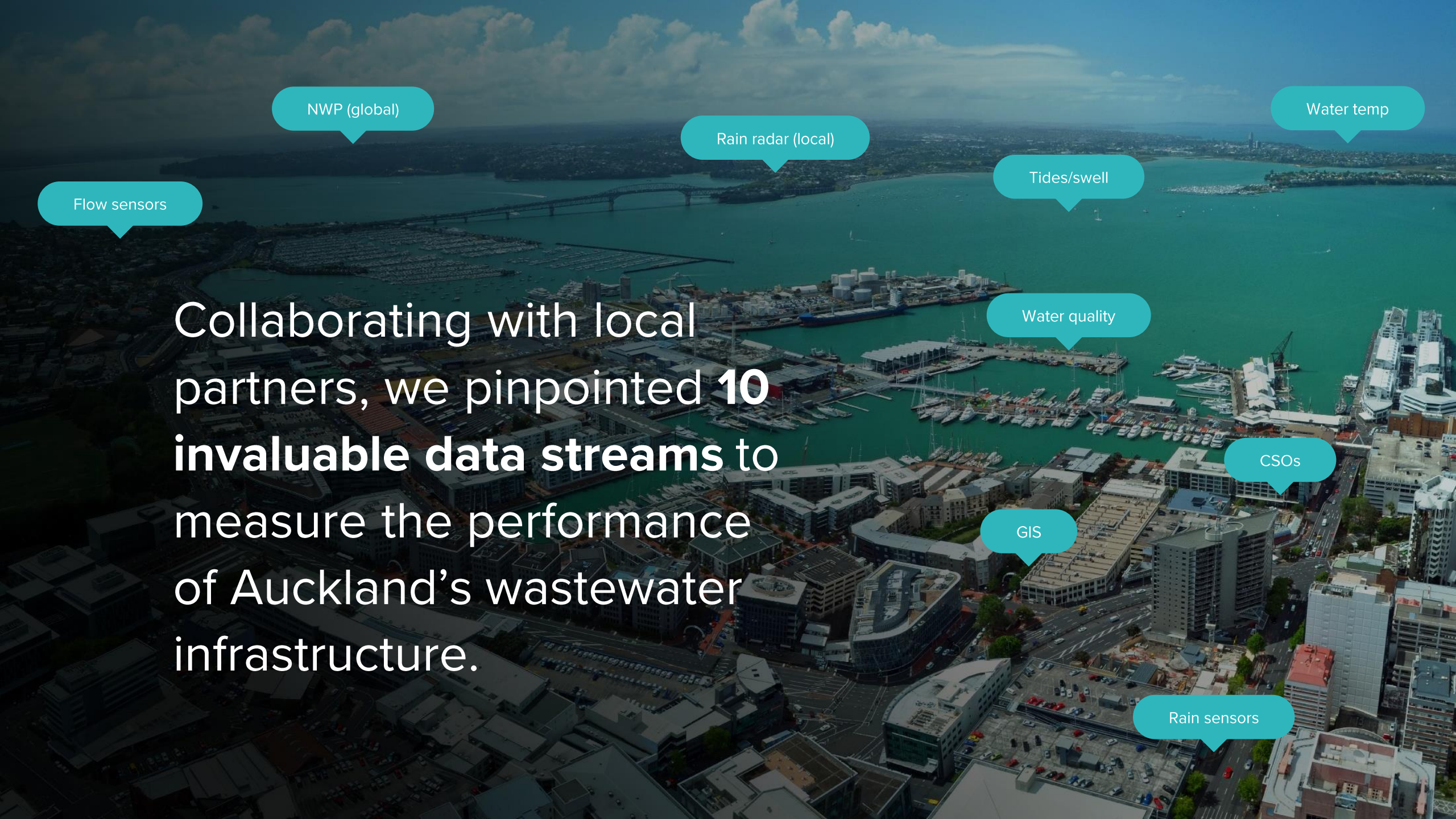
We’re already building digital twins which deliver high value outcomes right here in New Zealand



Creating the world's most liveable city.

Auckland wants to be the world's most liveable city, but unpredictable wastewater overflows are polluting its beaches. Swimmers don't know where it's clean and safe to go into the sea.

We used Moata to see the unseen.



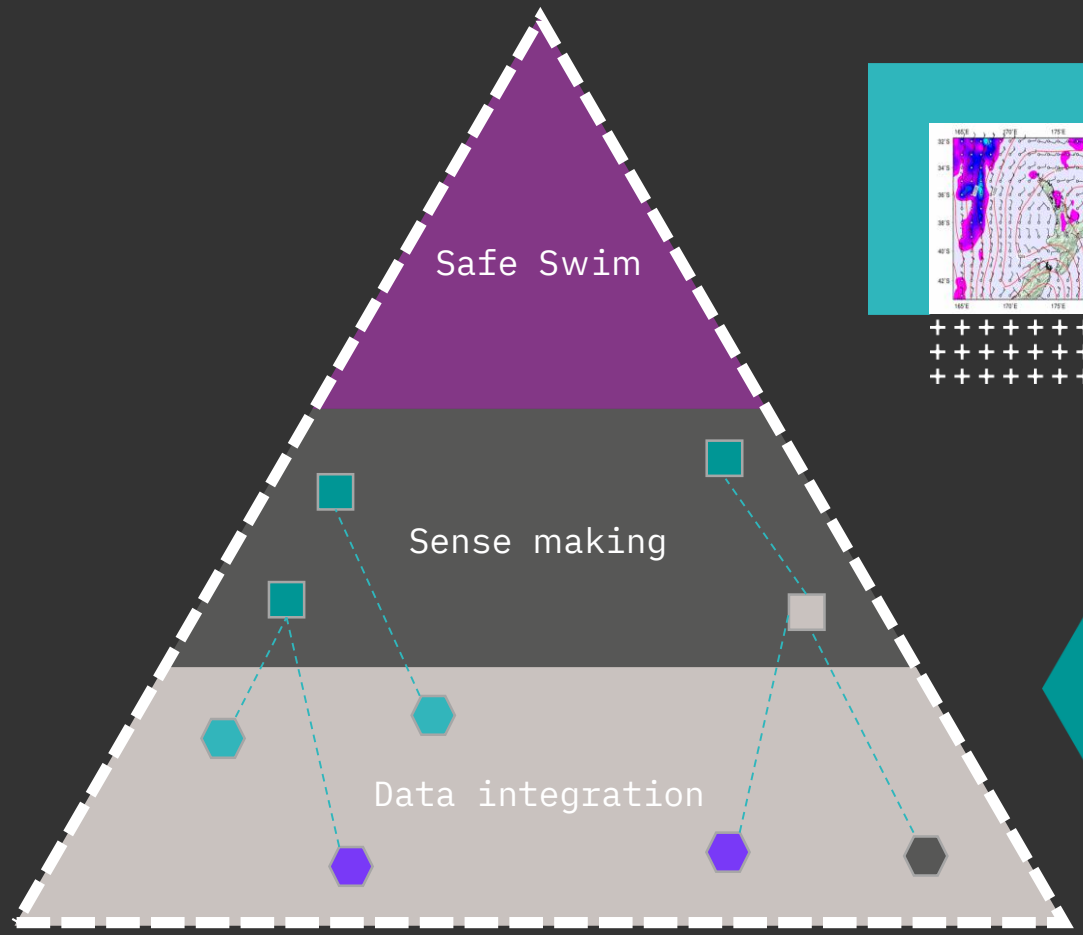
Collaborating with local partners, we pinpointed **10 invaluable data streams** to measure the performance of Auckland's wastewater infrastructure.

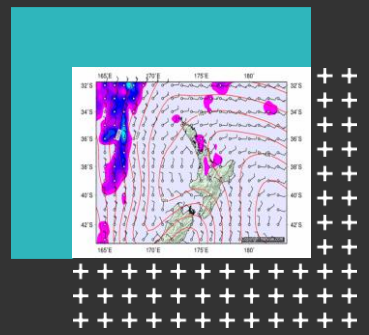
These created one billion
data points which are
analysed every single day.

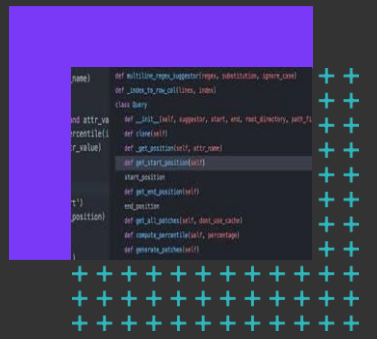
Allowing us to predict the water quality at 84 different beaches.

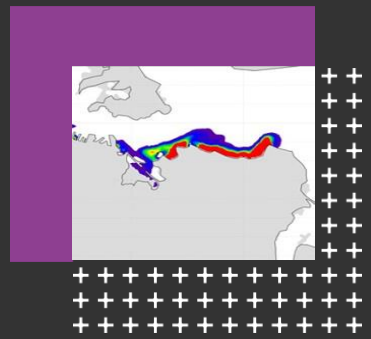
We present this information back to the public in real-time. Now we help 350,000 people know when it’s safe to swim, and Auckland gets a step closer to becoming the world’s most liveable city.

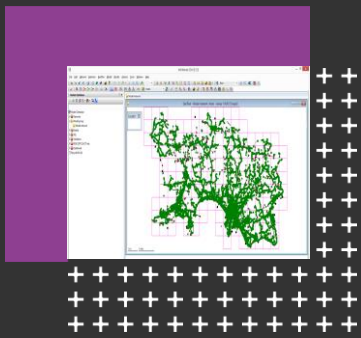
Digital from rain cloud to receiving water

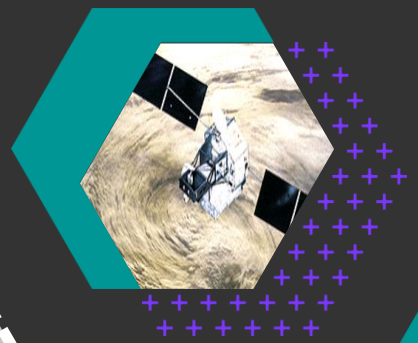


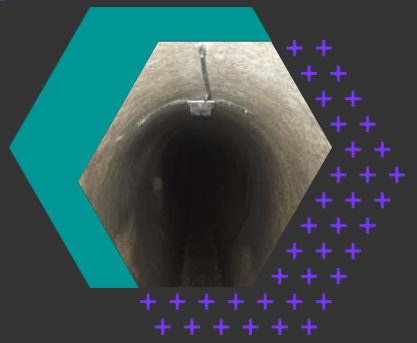












Auckland Council

Search

Share Menu

Welcome to Safeswim

Nau mai ki Safeswim

Check Safeswim for live information on water quality and swimming conditions at your favourite swimming spots

Find a beach – Kitea he taone

Search

Stay safe at the beach

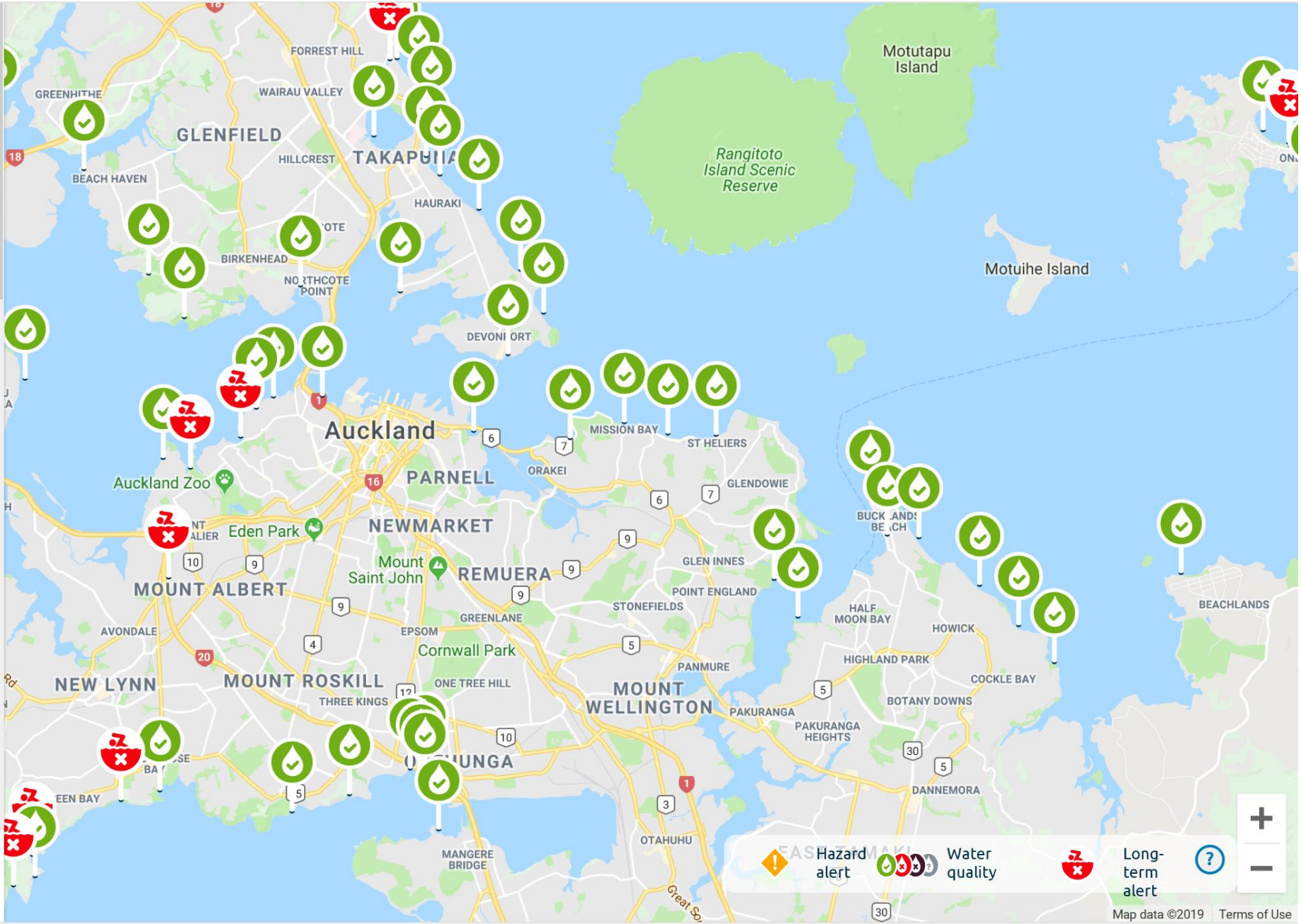
Noho haumaru

- Choose a lifeguarded beach and swim between the flags
- Ask a lifeguard for advice
- Don't overestimate your ability
- Keep young children within arm's reach at all times

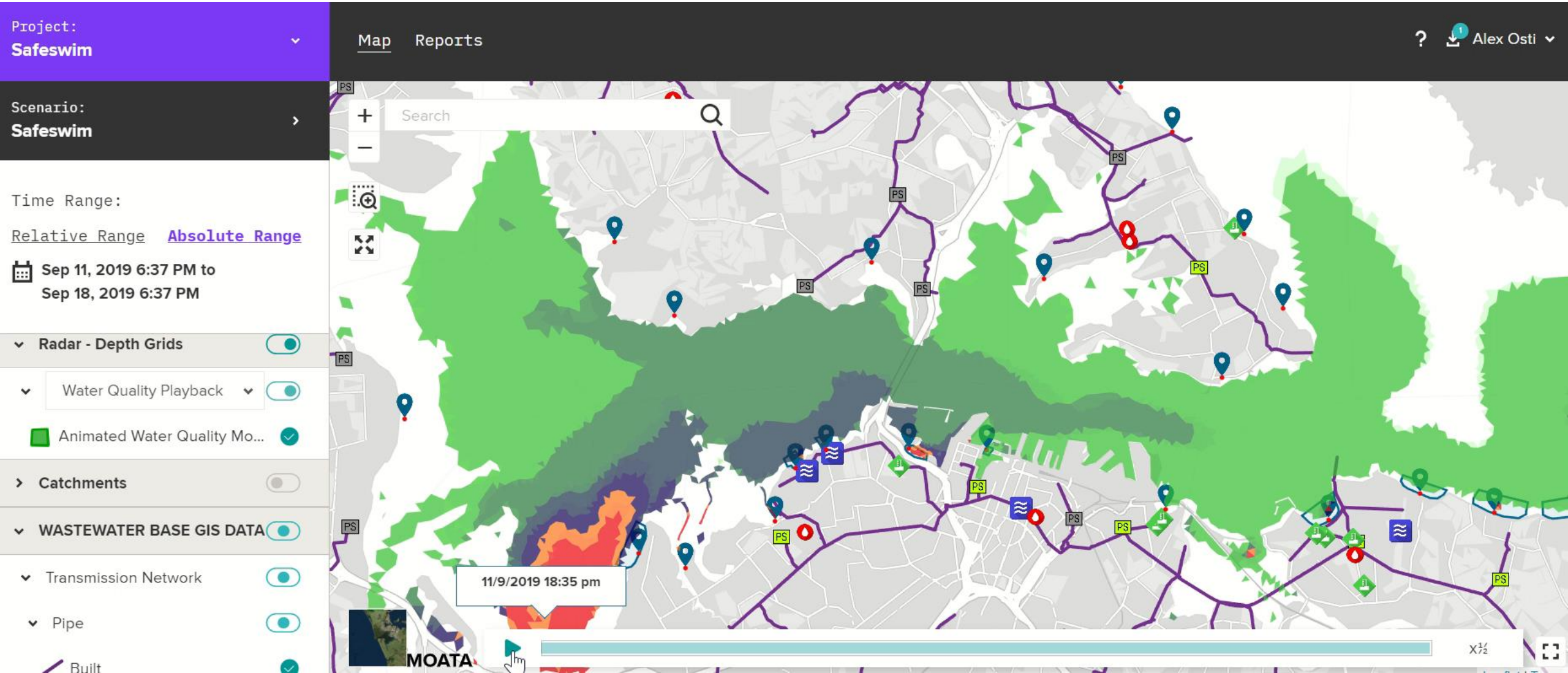
In an emergency

For injuries or medical issues ask for Ambulance, for rescue emergencies ask for Police

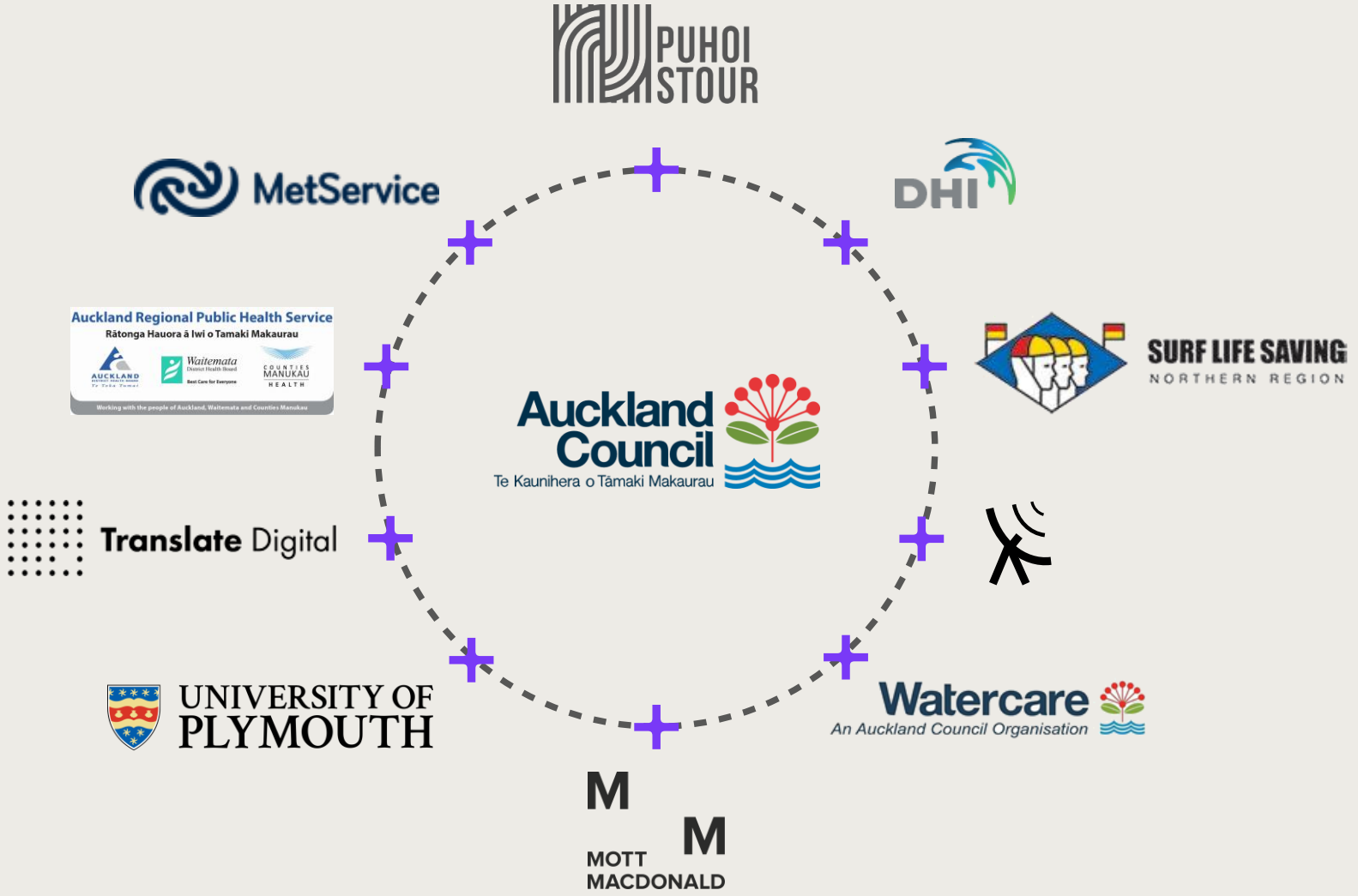
Dial 111



Safeswim powered by Moata



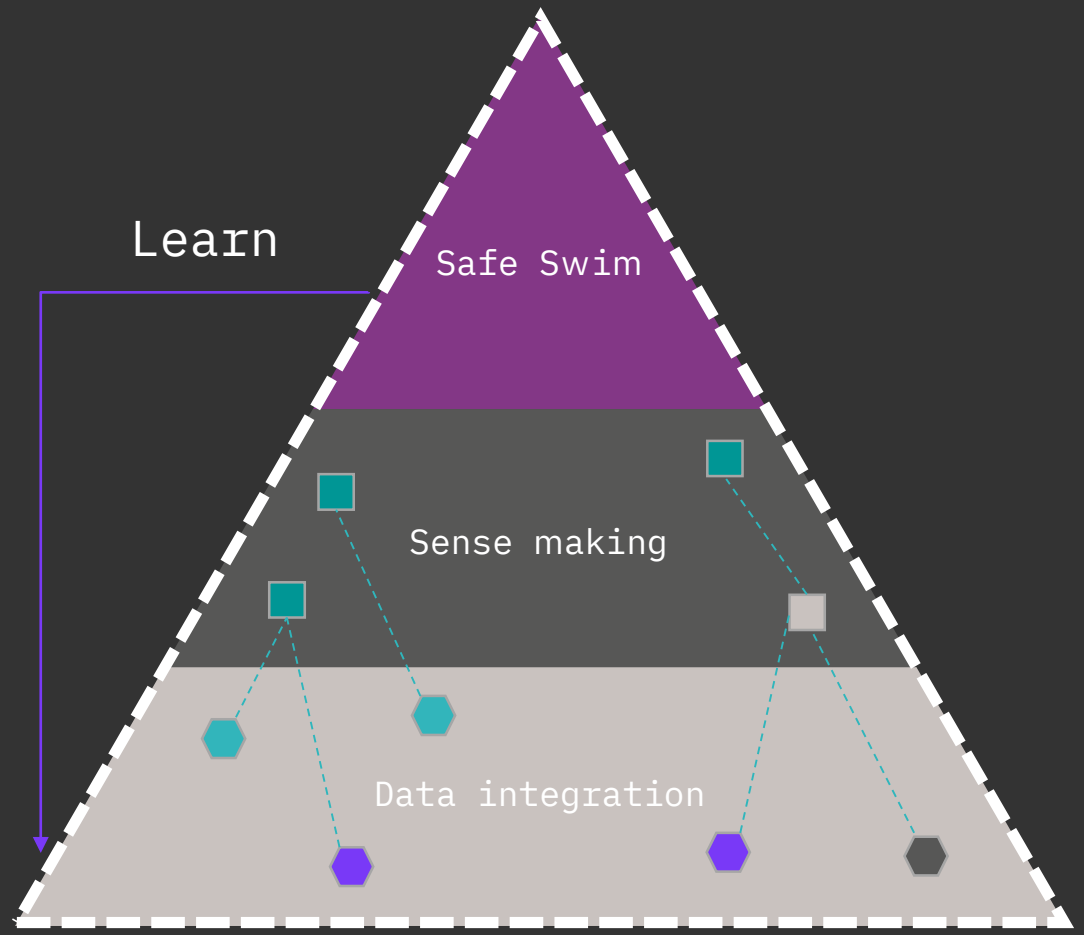
It’s partner ecosystem



Learning is Evolving

Learn cycle

Citizen science – lab test results



Enhanced social, economic and environmental outcomes

Thank you

MOTT MACDONALD

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