# Eyes Open - Swimming with PlanTech

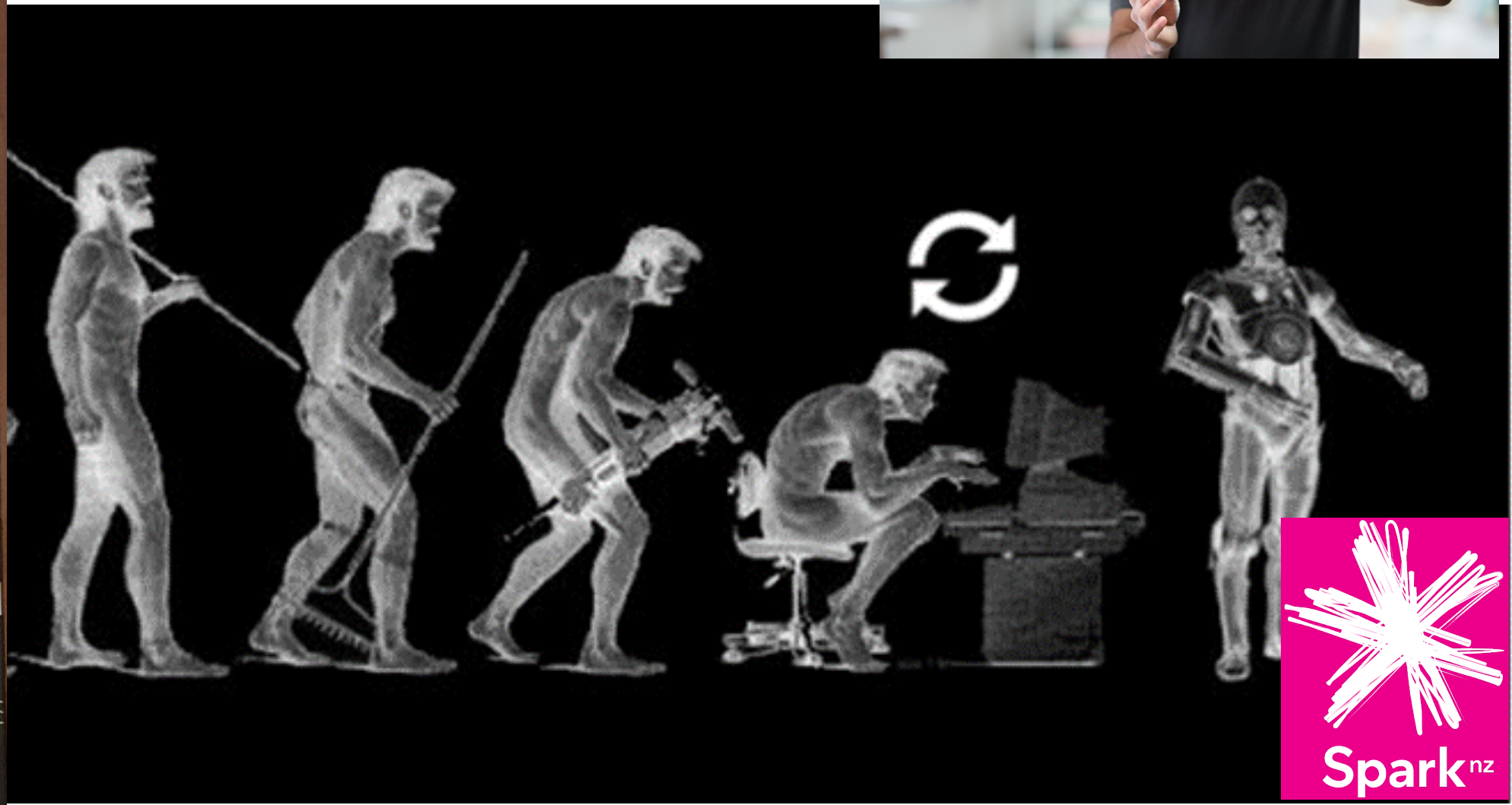
Spark nz

Graeme McCarrison

# Curiously

# Evolving

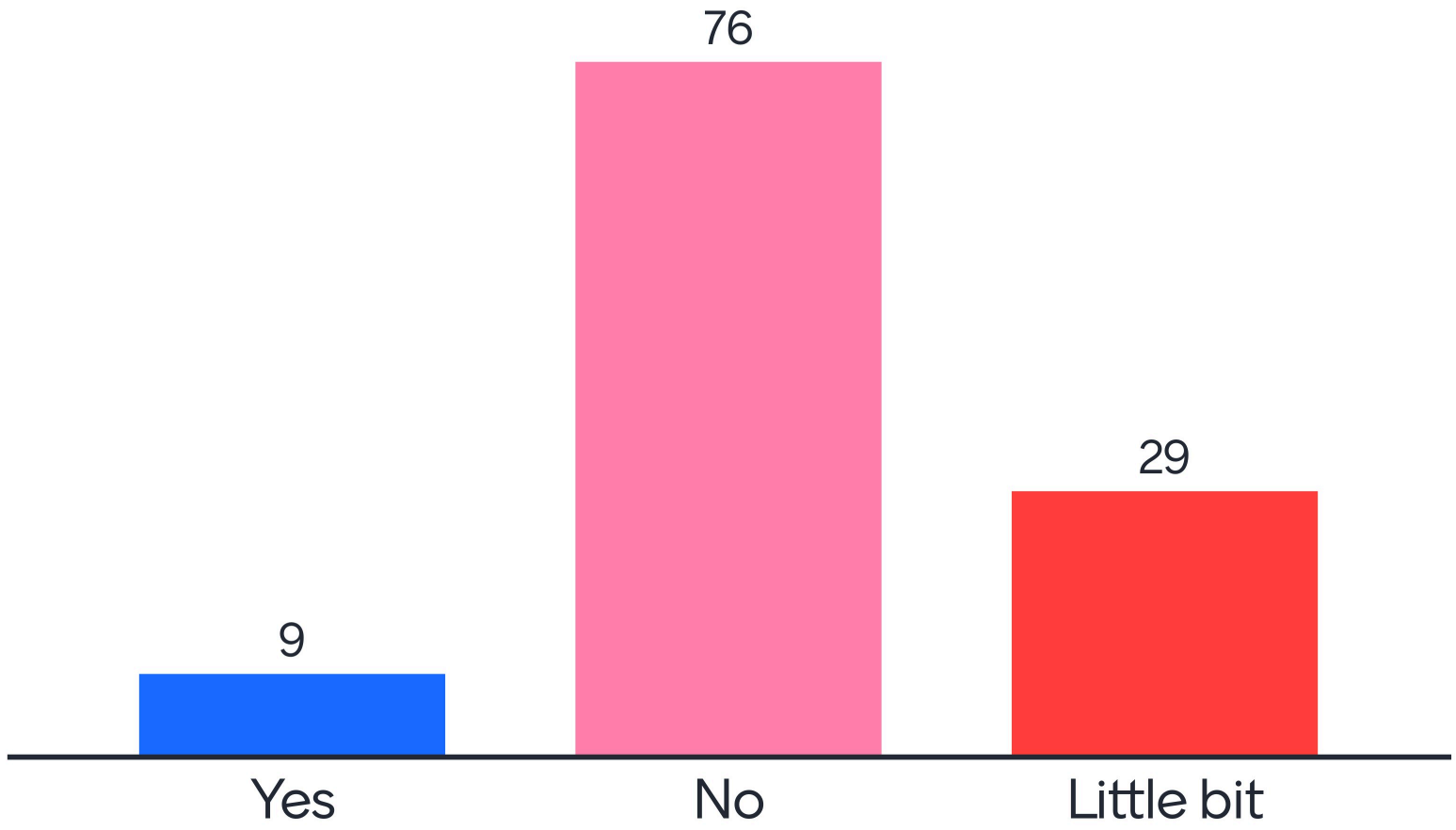
THE YEAR IS 1997.
JORDAN GETS HIS FIFTH RING
AND THE INTERNET IS A CHATROOM
AND NOT MUCH ELSE.
MEANWHILE, A COLLECTION OF SKATE
BOARDERS AND SHIT-TALKERS WERE
WELL, SKATING AND TALKING SHIT.
AND THAT'S HOW
HUFFER WAS BORN
FAST FORWARD AND IT'S 2020.
A NEW DECADE. TIME TO REFLECT.
TAKE A BREATH —
OR MAYBE JUST GO EVEN HARDER.
THE LAST 22 YEARS HAVEN'T ALWAYS
BEEN EASY. WE'VE BEEN THROUGH
OUR FAIR SHARE OF
HIGHS AND LOWS.
RIDING HIGH AT THE TOP, AND LAYING
LOW STREET LEVEL. BUT WE'VE ALWAYS
GOT BACK UP AND CONTINUED TO
PUSH SHIT UP HILL.



Spark nz


Planning Institut
Te Kokiringa Taumata
Canterbury-Westland B
My passion is planning done with:
Fearless collaboration,
Curiously for ideas,
Inclusive,
Respect diversity,
Data analytics,
Being bold,
Always learning,
Agile
the
“Tech tools enhance planning decisions”

# Do understand what PlanTech is?



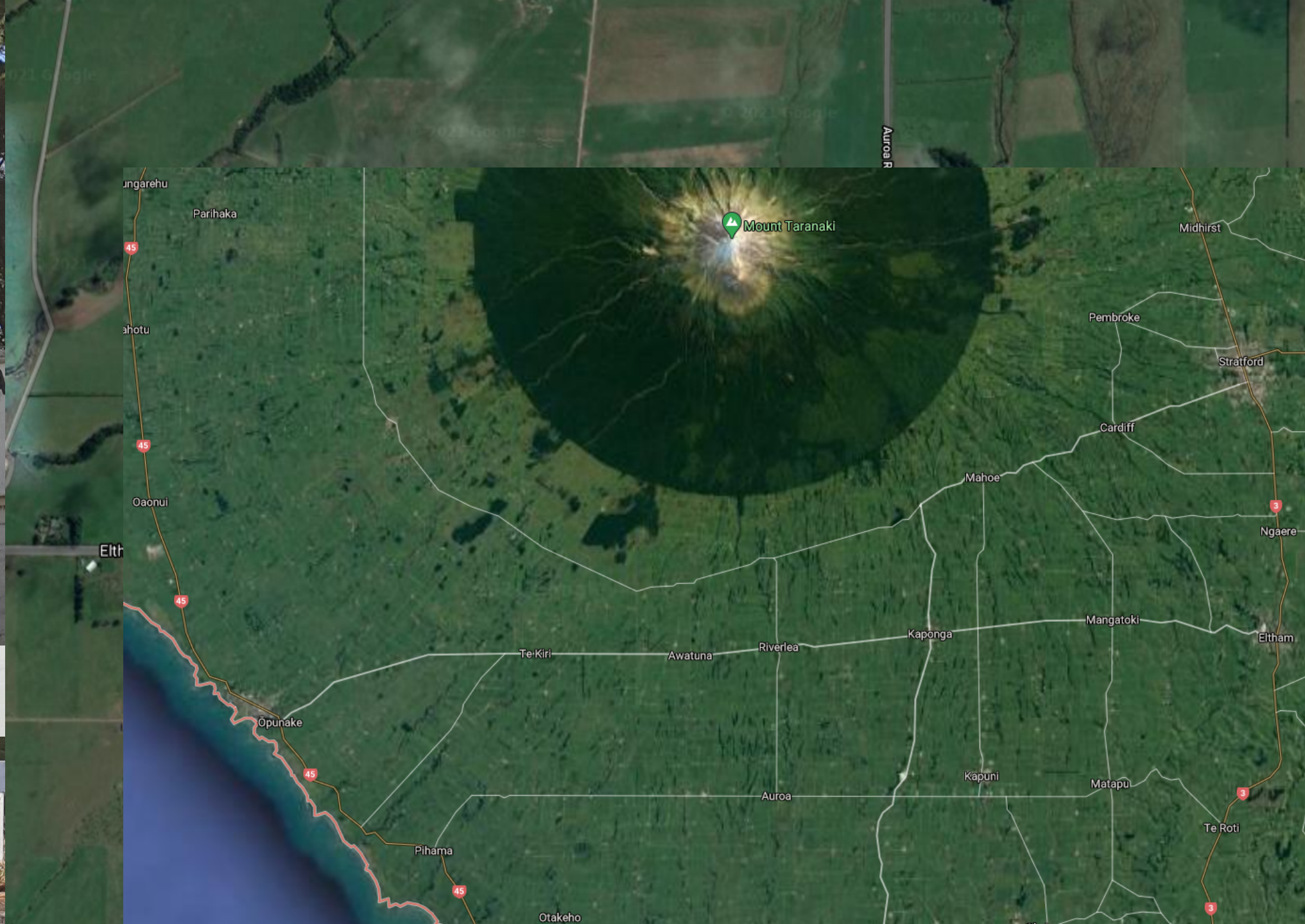
# What's stopping PlanTech being part of toolbox


Mentimeter 19 March 2021


How are you feeling over the last month?


AWATUNA
STORE
Esta 1900

# What …..?


Mount Taranaki
Parihaka
Midhirst
Pembroke
Stratford
Cardiff
Mahoe
Ngaere
Oaonui
Mangatoki
Eltham
Kaponga
Te Kiri
Awatuna
Riverlea
Ōpunake
Kapuni
Matapu
Auroa
Te Roti
Pihama
Otakeho
45
3

# PlanTech

# Developing practice for emerging technologies and digital innovation for how we plan.

# PlanTech focuses on technology to create better outcomes for our communities and the environment

# Our journey it’s just beginning

Digital environment
Digital literacy
Some digital tools

# Minecraft

World of Te Ao Māori

# Digital environment

# Digital Government

https://www.digital.govt.nz/

# Open Government Partnership“

## Active citizenship means people getting involved in their local communities and democracy at all levels, from towns to cities to nationwide activity. Active citizenship can be as small as a campaign to clean up your street or as big as educating young people about democratic values, skills and participation. Active citizenship is one of the most important steps towards healthy societies.”

Source: https://www.opengovpartnership.nz/active-citizenship-and-partnership definition originally from Andrej Nosko & Katalin Széger Active Citizenship Can Change Your Country for the Better (2013)

# Open Government - National Action Plan

An effective National Action Plan is one where, working together, New Zealanders develop commitments that further the OGP goals of strengthening democracy, building trust, and improving wellbeing

Transparency, participation and accountability are at the heart of open government:

- Transparency means citizens understand the workings of their government and its relevance to them
- Participation means citizens can influence the workings of government by engaging with public policy processes and public service providers
- Accountability means citizens can hold the government to account

New Zealand's 4th Open Government Partnership National Action Plan (NAP4) submission close 4th April 2021

- Source https://ogp.org.nz/open-government-partnership/open-government/

# NZ Intergenerational Wellbeing

## Distribution

**Our work is focussed on promoting higher living standards and greater intergenerational wellbeing for New Zealanders.**
**These require the country's Four Capitals – human, social, natural and financial/physical – to each be strong in their own right and to work well together.**

People

Place

Time, generations

### The Four Capitals (natural, human, social, and financial and physical) are the assets that generate wellbeing now and into the future

Looking after intergenerational wellbeing means maintaining, nourishing, and growing the capitals

**Natural Capital**

All aspects of the natural environment that support life and human activity. Includes land, soil, water, plants and animals, minerals and energy resources.

**Social Capital**

The norms, rules and institutions that influence the way in which people live and work together and experience a sense of belonging. Includes trust, reciprocity, the rule of law, cultural and community identity, traditions and customs, common values and interests.

**Human Capital**

The capabilities and capacities of people to engage in work, study, recreation, and social activities. Includes skills, knowledge, physical and mental health.

**Financial and Physical Capital**

Financial and human-made (produced) physical assets, usually closely associated with supporting material living conditions. Includes factories, equipment, houses, roads, buildings, hospitals, financial securities.

### The 12 Domains of current wellbeing

reflect our current understanding of the things that contribute to how New Zealanders experience wellbeing

- Civic engagement and governance
- Cultural identity
- Environment
- Health
- Housing
- Income and consumption
- Jobs and earnings
- Knowledge and skills
- Time use
- Safety and security
- Social connections
- Subjective wellbeing

**Resilience**

prompts us to consider how resilient the Four Capitals are in the face of change, shocks, and unexpected events

# “…‘huge’ gaps in data and knowledge undermine our stewardship of the environment and is calling for concerted action to improve the system.”

**Simon Upton, Environment Commissioner**

**07 November 2019**

# Fractured System

## Statutes

- RMA 1991
- Environment reporting Act 2015
- Biosecurity Act 1993
- Local Government Act 2002
- Local Government (Auckland Council) Act 2009
- Heritage Zealand Pouhere Taonga Act 2014
- Environment Protection Authority Act 2011
- Kāinga Ora–Homes and Communities Act 2019
- New Zealand Infrastructure Commission/Te Waihanga Act 2019
- EEZ Act 2002
- Waste Minimisation Act 2008
- Marine Reserves Act 1971
- Reserves Act 1977
- Conservation Act 1987
- Queens Elizabeth II National Trust Act 1977

## Statutes cont.

- Electricity Act 1992
- Gas Act 1992
- Land Transport Management Act 2003
- Building Act 1991
- Infrastructure (Amendments Relating to Utilities Access) Act 2010
- Energy Efficiency & Conversation Act 2000
- Housing Accords and Special Housing Areas Act 2013
- Climate Change Response (Zero Carbon) amend Act 2019
- Ozone Layer Protection Act 1996
- Marine Mammals Protection Act 1978
- Wildlife Act 1953
- Native Plants Protection Act 1934
- Continental shelf Act 1964
- Crown Pastoral Land Act 1998
- Civil Defence Emergency Management Act 2002 and National Civil Defence Emergency Management Plan 2015
- International agreements eg Paris Agreement

## Tools

- Treaty settlements
- Regulations
- NPS
- NES
- Planning Standards
- RPS
- Coastal Plans
- Regional/Unitary/District Plans
- Bylaws
- Budget – Wellbeing context
- Data and monitoring eg Environment Aotearoa 2019
- Enforcement tools eg fines
- Spatial Plans,
- Local Plans eg Long term and Annual, or Infrastructure
- Consents
- Water take permits
- Coastal permits
- Licenses eg exploration
- Concessions on conservation land
- New Zealand Heritage List
- National Civil Defence Emergency Management Plan
- National Disaster Resilience Strategy
- Archaeological authority
- Heritage covenants
- National Guidelines eg Australian and New Zealand Guidelines for Fresh and Marine Water Quality
- Local guidelines eg Urban design or subdivision
- Awards
- Research grants

## Govt

- MfE
- MBIE
- MHUD
- MPI
- MoT
- EPA
- Kāinga Ora
- Treasury
- DoC
- Stats NZ
- Heritage NZ
- DIA
- QEII Trust
- Regional Councils
- Local Councils
- National Emergency Management Agency (NEMA)
- Justice incl Environment Courts
- Treaty of Waitangi Tribunal
- NZ Police
- Environment Commissioner
- Independent Climate Change Commission
- Crown Infrastructure Partners
- Infrastructure Commission
- New Zealand Utilities Advisory Group Inc (NZUAG)
- NZTA
- Transpower
- Kiwirail
- LINZ
- Water Services Regulator
- New Zealand Lifelines Council (NZLC)

## Stakeholders

- New Zealanders
- Mana whenua iwi/hapu
- NZPI
- Law Society, NZILA
- RMLA
- NIWA
- GNS Science
- ENA
- TCF
- EDS
- Forest & Bird
- Rural Sector
- Fish & Game
- Sustainable Business NZ
- Infrastructure NZ
- Water sector
- Forestry Sector
- Ports
- Airports
- First Gas/gas sector
- Oil industry
- Fishing industry
- Water NZ
- Heritage
- Archaeologists
- Etc

# Massive Environment Govt program

- RM system reforms – whole new system
- RMA national direction under development, including for: freshwater management, urban development, highly productive land, indigenous biodiversity, historic heritage & aquaculture
- RMA and Crown relationship obligations in existing Treaty of Waitangi Settlement Acts
- Climate Change Response (Zero Carbon) Amendment Act, and directions to transition to a low emissions and climate-resilient New Zealand – Climate commission established
- National Climate Change Risk Assessment, and implications for a future National Adaptation Plan
- Alignment of regulatory frameworks for natural hazards and climate change under the Community Resilience Group (cross-government programme)
- Urban Growth Agenda – driven out of MHUD
- Kāinga Ora – Homes and Communities Act 2019 & Urban Development Act 2020
- Review of Three Waters regulation: drinking water, wastewater and stormwater management
- Building System Legislative Reform Programme
- Strengthening Heritage Protection work programme
- Open ocean aquaculture project
- Productivity Commission Inquiry into Local Government Funding and Financing
- Infrastructure Strategy, Funding & Infrastructure Commission
- Water Services Bill – Plus new Water Regulator

*The Minister for the Environment should provide national direction on how to incorporate Māori perspectives and mātauranga Māori in the environmental monitoring system.*

*The national environmental monitoring system should support the operation of both the Natural and Built Environments Act and the Environmental Reporting Act.*

*We recommend central government devotes attention to building science and data capability in both central and local government.*

# Panel RM report – technology?

*The Ministry for the Environment should work with other central government agencies to develop stronger monitoring frameworks and strategies for filling data and information gaps.*

*Council plan-making is often criticised for being slow, prone to litigation and unresponsive to changes in technology, community values and economic drivers.*

# Scotland National Strategy

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **SG Purpose** | To focus government and public services on creating a more successful country, with opportunities for all to flourish, through increasing sustainable economic growth. | | | | | | | | | |
| **SG National Outcomes** | The planning system and service contribute to all 16 National Outcomes | | | | | | | | | |
| **SG National Plans, Policies & Strategies** | **Government Economic Strategy** | | | | | | | | | |
| | Infrastructure Investment Plan | | | | | | | | | |
| | Scotland's Digital Future | Electricity & Heat Generation Policy Statements | 2020 Challenge for Scotland's Biodiversity | Scottish Historic Environment Strategy and Policy | Housing Strategy | National Planning Framework & Scottish Planning Policy | Land Use Strategy | Low Carbon Scotland: Report of Proposals and Policies | National Marine Plan | Regeneration Strategy | National Transport Strategy |
| **Planning Vision** | We live in a Scotland with a growing, low carbon economy with progressively narrowing disparities in well-being and opportunity. It is growth that can be achieved whilst reducing emissions and which respects the quality of environment, place and life which makes our country so special. It is growth which increases solidarity – reducing inequalities between our regions. We live in sustainable, well-designed places and homes which meet our needs. We enjoy excellent transport and digital connections, internally and with the rest of the world. | | | | | | | | | |
| **Planning Outcomes** | Planning makes Scotland **a successful, sustainable place** – supporting sustainable economic growth and regeneration, and the creation of well-designed places. | | | Planning makes Scotland **a low carbon place** – reducing our carbon emissions and adapting to climate change. | | | Planning makes Scotland **a natural, resilient place** – helping to protect and enhance our natural and cultural assets, and facilitating their sustainable use. | | Planning makes Scotland **a connected place** – supporting better transport and digital connectivity. | |
| **National Planning** | **Scottish Planning Policy (SPP)** | | | | | | **National Planning Framework (NPF)** | | | |
| | Principal Policies | | | | | | | | | |
| | Sustainability | | | Placemaking | | | | | | |
| | Subject Policies | | | | | | | | | |
| | Town Centres | Heat and Electricity | | Natural Environment | Travel | | | *Cities and Towns* | | |
| | Rural Development | | | Green Infrastructure | | | | *Rural Areas* | | |
| | Homes | | | | | | | *Coast and Islands* | | |
| | Business & Employment | Zero Waste | | Aquacultural | Digital Connectivity | | | *National Developments* | | |
| | | | | Minerals | | | | | | |
| | Historic Environment | | | Flooding & Drainage | | | | | | |
| | **COMMUNITY PLANNING** | | | | | | | | | |
| **Strategic** | Strategic Development Plans | | | | | | | | | |
| **Local** | Local Development Plans | | | | | | | | | |
| **Site** | Master Plans | | | | | | | | | |

# National Digital Infrastructure Model - National Digital Twin

**Figure 1: The information value chain**

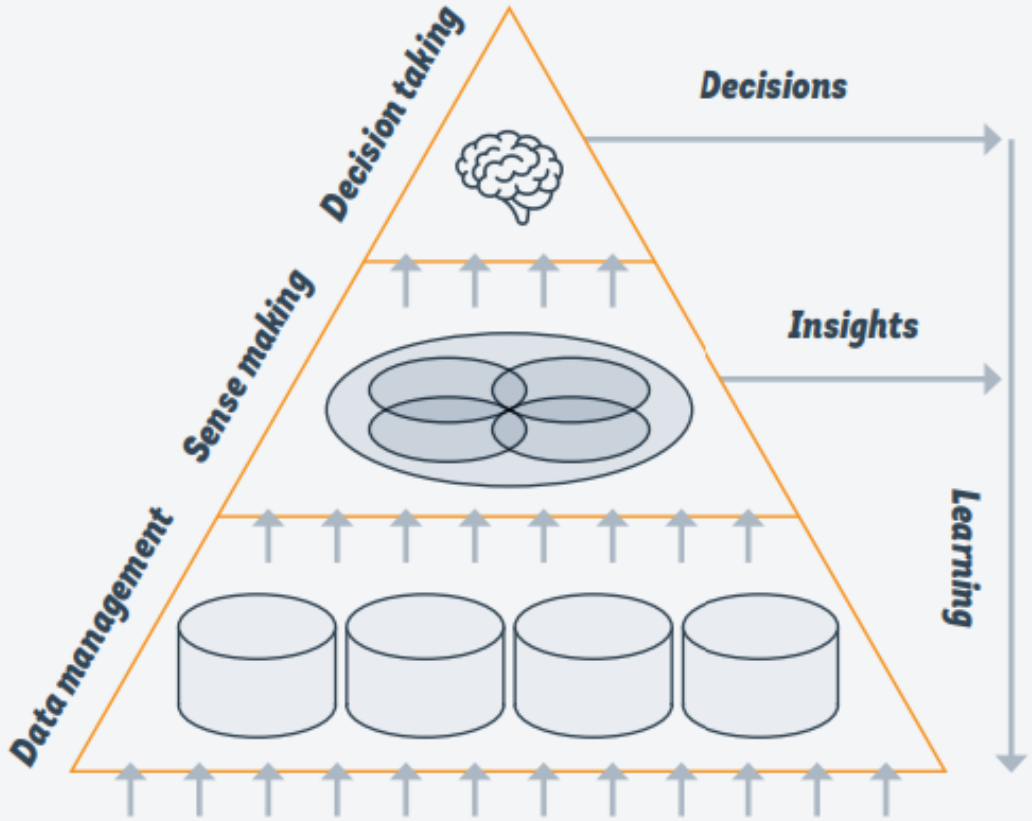
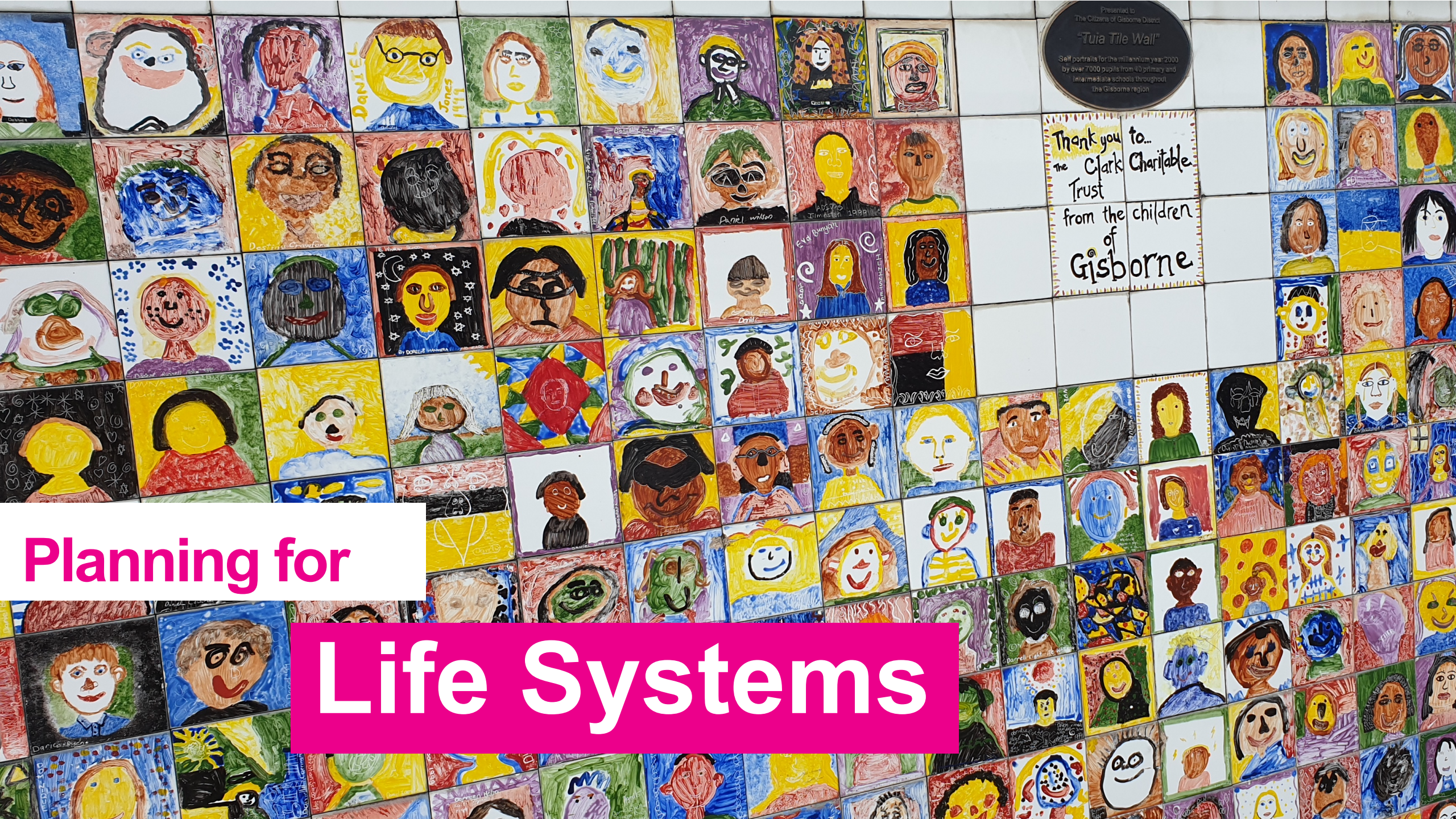



**Figure 3: Why we need a National Digital Infrastructure Model**

- Inform investment strategies for new and existing infrastructure.
- Benchmark performance of infrastructure providers.
- Measure and compare infrastructure performance.
- Predict the effects of climate change and urban development.
- Assess risks associated with infrastructure deterioration and failure.
- Aid the transition to a low-carbon economy.
- Assess vulnerability to hazards and improve resilience.
- Provide a single point of truth for emergency management.
- Inform land-use planning.

Source https://infrastructure.org.nz/resources/Documents/Reports/Infrastructure%20NZ%20Unlocking%20the%20Value%20of%20Data%20Report.pdf




# Planning for

# Life Systems

“A vigorous culture capable of making corrective, stabilizing changes depends heavily on its educated people, and especially upon their critical capacities and depth of understanding.”

Jane Jacobs

# People & space Connected all around the world

# Digital innovation:

# Working together and really listening to people – everyone to the tech-savvy – to redesign services to better meet the needs of all New Zealanders

# Digital you being a Planner - Big question

**Digital Skills –**

- Good planners need to the ability to piece together, communicate and create pathways to decisions.
- Digitally that means skills to acquire and analyse data in digital platforms, particularly spatially- and to engage confidently, authentically and knowledgeably in conversations about the conclusions coming from that data.
- To communicate these conclusions planners need the skills to create basic visualisations, both for their work and to be able to critique and manage the outputs of multidisciplinary teams as part of planning processes.
- most importantly planners need to be able to explain the data and democratic ethics being applied digitally and be conversant with digital democratic and decisions support systems.

**Digital professionals –**

- We must recognise that we are a digital profession – even if it means that we are not doing the coding and software development ourselves.
- Partnership, collaboration or working alongside other digital professionals, particularly service designers, software developers, geospatial & BIM professionals and digital engagement professionals to name a few.
- We already work as multi-disciplinary teams from across an organisation/s using digital capabilities to create better plans and processes.
- Rules as code and digital twin spaces.

# Digital you being a Planner - Big question

- Planning Institute of Australia - digital principle about “planning needs to reimagine community engagement”.
- “Reimagine” all the working relationships.
- Don’t wait as planners in a system and proactivity explore where planning is now being done and offer our skills and get ourselves involved.
- Look at how other sectors or processes work e.g. legal, architect, urban landscapes, accounting, planning lacks some the critical digital technology components that these sectors thing of as commonplace. Data is a big one, and there are multiple levels in which that interconnects with planning.
- We probably most critically need people who can connect these two very different worlds so that we have a common language to communicate in. This is where we could make much better use of our younger ones coming in to the profession.
- A non planning example NZ Covid strategy wouldn’t have been created without the data experts (collecting, modelling, forecasting/scenario testing), (tracing) app providers, digital communication experts, peer testing and the principle that every citizen is involved in the effort.
- These are all areas of expertise we could augment into the planning system to great effect. Plus business process automation given what we do.


PlanTechNZ

# PlanTechNZ

1. Establish the group and relaunch at Conference
2. Explore, within the PlanTechNZ membership, the opportunities and challenges of emerging technologies and planning in NZ
3. Introduce the wider NZPI membership to emerging technologies and what opportunities and challenges it brings to our practice
4. Advise the NZPI Board about any emerging technology issues the profession should address e.g. when making policy submissions, NZPI strategy work
5. Establish relationships with stakeholders outside planning – e.g. other professional bodies, tech providers, digital government, local government
6. Connect with PlanTech groups worldwide to contribute to the international conversation on PlanTech

Monthly workshops

Free to join

Every planner is welcome

# Mindset

## Reboot

**Restricted mindset** self limiting, victimised, process driven, blamed i.e. RMA, avoids challenge, gives up easily, sees effort as fruitless, ignores feedback and is threatened by others

**Open mindset, curious,** seeks opportunities, embraces challenges, persists against obstacles, seeks and learns from feedback, inclusive, adaptive, evolving, energised, sees effort as necessary and is inspired by the success of others

# Digital/Innovation Strategy

- Have a strategy
- Digital vision
- Where are we going next
- Digital stocktake
- What problems are you trying to solve for our customers
- Collaboration is the norm
- Funding
- Pick the innovations of most benefit – kill those ideas that don’t work fast

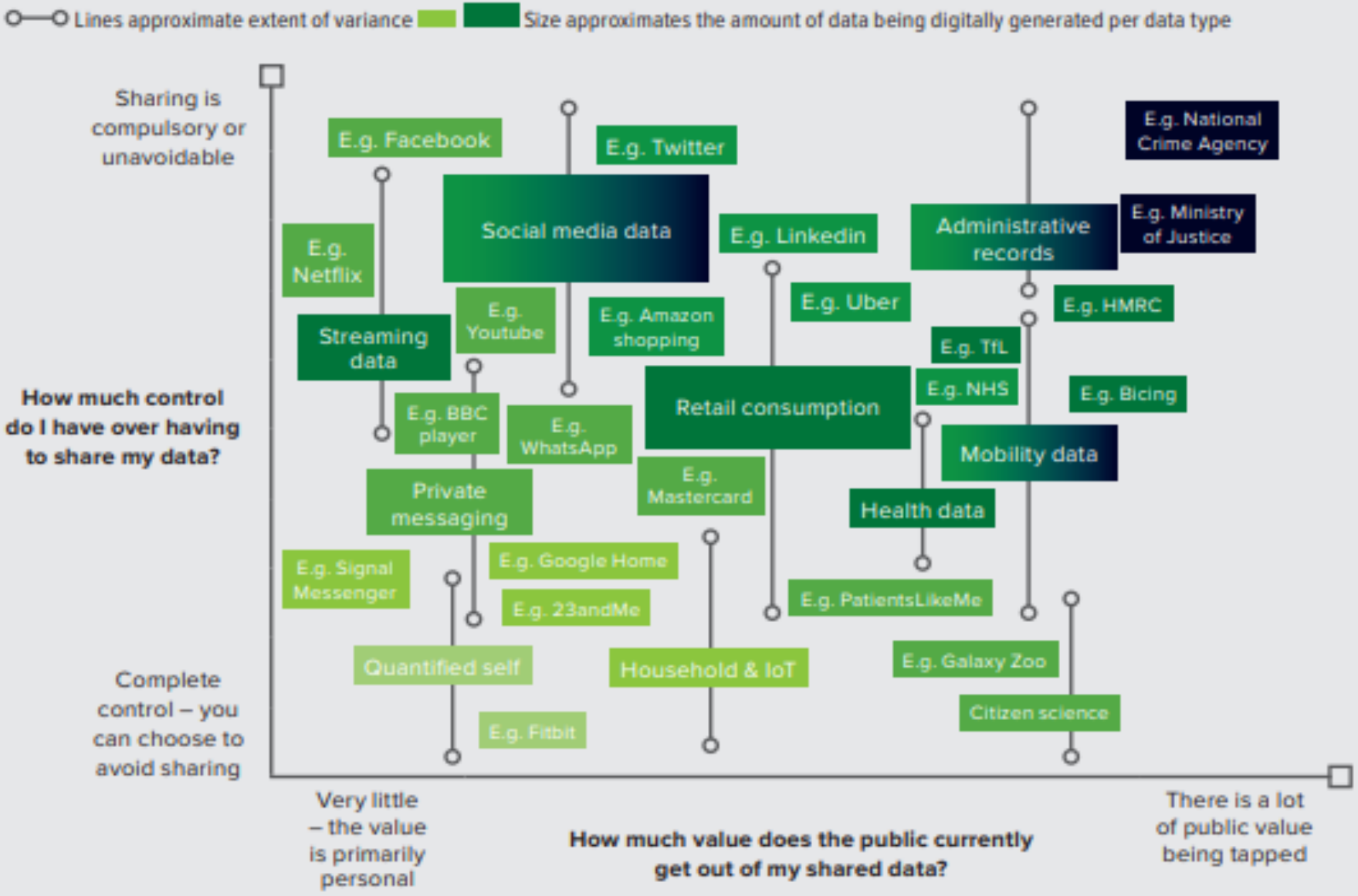
# What's the problem/question?

# Tech - only part of the Story

# Governance

- Governance
- Digital literacy
- Privacy
- Bias
- Security
- Education
- Adaption
- Legislation
- Funding
- Digital Ownership

**FIGURE 26:** The current landscape of data governance




SOURCE: Adapted from Nesta. Licensed under CC-BY-NC-SA 4.0 International.

# “..use of technology such CCTV, which is not pervasive throughout our community. These are difficult ethical question sittling in of technology..”

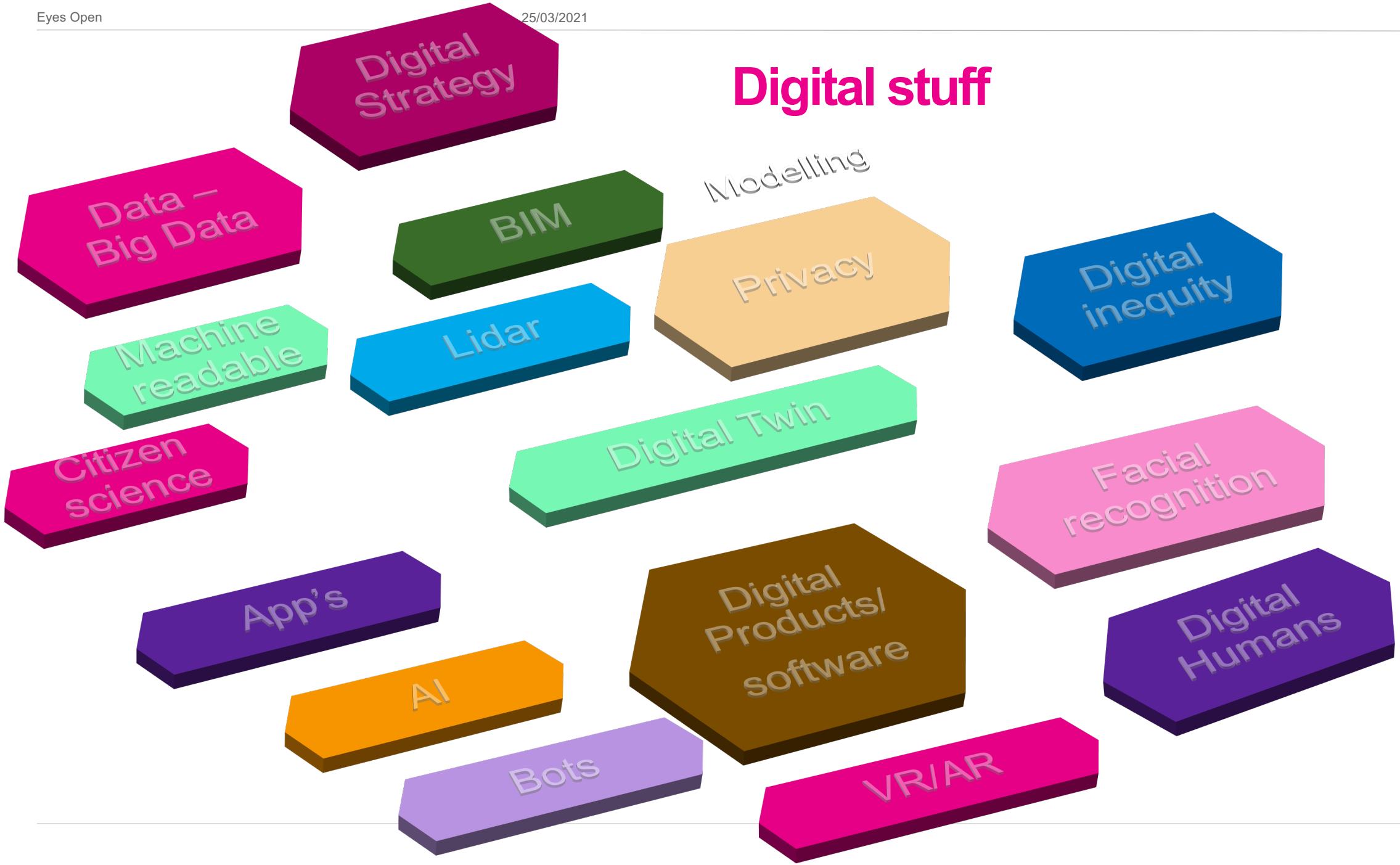
Source; Andrew Coster , Herald 11 March 2021

# Privacy

## NZ Privacy Act 2020

- Protection of personal information
- Everyone's data is valuable
- Privacy settings
- Risks company actively change privacy settings to maximise the amount of information you publish
- Privacy policies & processes are critical
- Aggregated data is being used to solve a problem, not to breach anyone’s privacy
- Disconnect.Me and Jumbo act as something like a digital concierge for their users, tweaking privacy settings, deleting sensitive data and throwing a spanner into the inner workings of surveillance capitalism

# Digital stuff




# Professionals & Tech

# Building Information Modelling (BIM)

- Architecture, engineering and construction, the BIM system is revolutionising how infrastructure & buildings are designed, constructed and operated and maintained.
- Government funded building projects must now utilise BIM and it is similar in other countries such as the US and UK. As other professions come together around the project's BIM hub, we need to ensure that planners are not left out of the conversation.
- Planners have a critical role in the development of buildings, activities and urban spaces and if we are to continue to have this role we need to understand more about the BIM process.
- Visualised via other emerging technologies such as digital twins, virtual reality/mixed reality, artificial intelligence, big data and machine learning.

# Machine readable

Machine-readable data as data in a format that can be easily processed by a computer without human intervention while ensuring no logical semantic meaning is lost.

# Collaboration – just the norm

# Rules and Legislation as Code

- Rethinking the way we develop and express the rules of regulatory systems, ensuring they work for us in a digital world
- Software code can then easily be used in our devices and systems to assist people and businesses to understand, benefit from, and comply with legislation
- Force us to look at the background evidence to justify the role; what the purpose or intended outcome; monitoring or proof of compliance
- Automation
- Multi-disciplinary team using human-centred design techniques – focused on the end user/customer. Bringing together all of the people invested in developing and implementing a regulatory system – the policy analysts, planners, BIM managers, lawyers, legislative drafters, the service designers, the software engineers and end users plus many more
- Check out what's happening in Wellington City is doing or Tauranga City or The Service Innovation Lab https://serviceinnovationlab.github.io/projects/legislation-as-code/

# Better Rules for Better Outcomes

A Joint Service Innovation and Better for Business Initiative

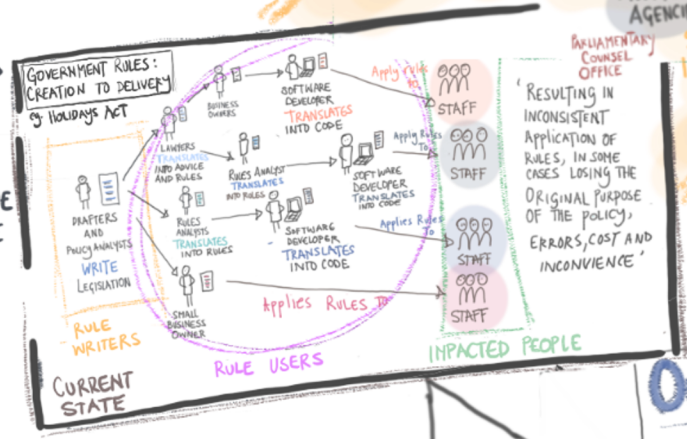
## To Explore

A new approach to how we create and implement **Rules** that both people and machines can easily understand.

## The Problem

Government Rules have traditionally been developed for a paper based environment and then translated by people into both digital and non-digital environments

- Rules are interpreted and applied inconsistently by the multiple parties using them
- Rules are hard to understand and are often misunderstood by the people implementing them, and the people they impact.




We did a 3 week Collaboration

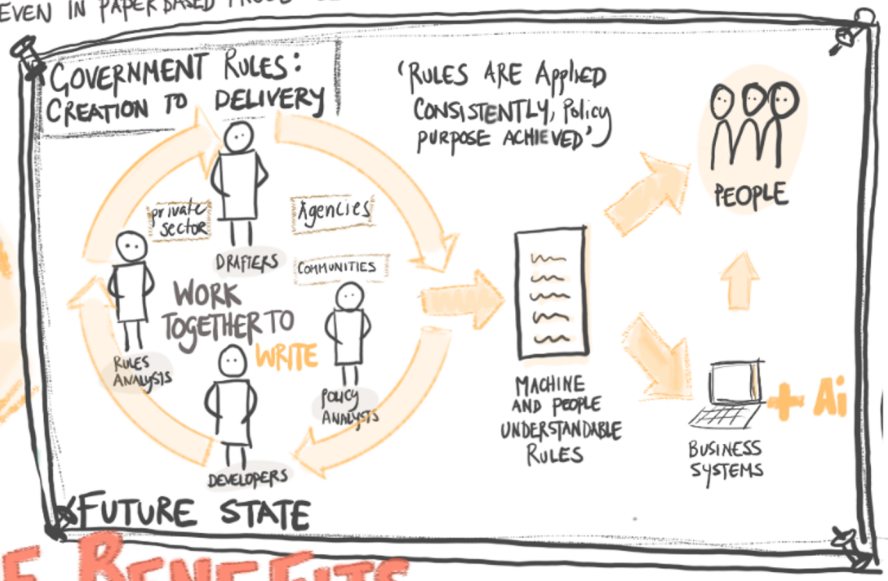

## The Opportunities

We build Rules using a **New Approach** with people experience (both for people and the businesses that implement them) at the centre.

Rules that are;

- Easy to understand
- Easy to use

Enabling digital services where possible but will result in better outcomes even in paper based processes




## The Benefits....

The **New Approach** will allow multi agency and multi-skilled teams to work together to create Government Rules faster, easier and better resulting in benefits for...

### Impacted People

- Rules are easier to understand
- Easier to design services around people
- Easier to design services using new technologies like self-service / Artificial intelligence

### Rule Users

- Reduced risk from Rules being misinterpreted
- Rules are consistently applied and managed across agencies
- NGO's, communities, social enterprises and private sector can participate in the forming of better Rules
- Quicker ability to comply with legislative changes

### Rule Writers

- Rule outcomes are easy to model and test
- Changes can be made quicker and easier
- Rules are faster to create and implement into services
- Improved accountability through better decisions and measurement outcomes
- Future proofing the way policy is created and delivered

People have easy access to public services which

## Our 2 Year Goals

- A global community (in & outside Govt) that supports and promotes a better Rules Approach
- A better Rules approach is used as standard when developing policy in New Zealand Government
- Our community has defined a framework and standards for NZ that enables consistent, co-ordinated and reusable Rules
- Parliamentary Council Office is able to manage machine understandable legislation
- We have case studies that help us share

## Deliver


## The Next 3-6 Months

# Evidence

Research and Evaluation Unit, RIMU

supports and informs the council's core function, which includes planning for growth and meeting legislative requirements under the Resource Management Act 1991 and the Local Government Acts in relation to social, economic, land use and environmental issues

Foster innovative and collaborative approaches to the complex issues Auckland faces now and in the future

- collecting and managing qualitative and quantitative data
- analysing data using statistical analysis and modelling
- learning from others, including bench-marking and international comparisons
- looking forward by using scenario development and forecasting
- monitoring national and international trends, events and government policy developments.

Source https://knowledgeauckland.org.nz/about/

# LiDAR 3D mapping

- LINZ https://www.linz.govt.nz/
- LiDAR is Light Detection and Ranging, is a remote sensing method that uses light in the form of a pulsed laser to measure ranges
- Collaboration of an Australian/New Zealand 3D Cadastral Survey Data Model and Exchange (3D CSDM) programme
- Satellite-based augmentation system (SBAS) to improve the accuracy of GPS - useful for intelligent transport systems like driverless cars, unmanned aerial deliveries, as well as precision agriculture and smart phone-based services
- First 3D geographic mapping - 3 March 2020 Marlborough, Tasman and Hawkes Bay co-fund contracts with aerial data suppliers.
- Expanding to Bay of Plenty, West Coast, Waikato, Canterbury and Southland regions
- Hawkes Bay Regional Council, said the LIDAR data would enable the creation of 3D models of the landscape that would support the region's economic development
- Used for land management decisions, roading design, precise understanding of sea-level rise impacts, stormwater design, and geohazard mapping including ground surface change, faults, liquefaction and slips
- Stuart Crosby (LGNZ) "funding would smash the affordability problem" that prevented smaller councils from undertaking such mapping and make it cheaper for both the private and public sectors to access the high-quality elevation data needed for good decision making"
- The LINZ National Elevation Programme provides LiDAR based elevation open data for much of New Zealand. This data provides significant value to both the public and private sectors for applications including land management, natural hazards, climate change, 3D visualisation, surveying, engineering, construction, communications, archaeology,
- SouthPAN will augment standard positioning capability provided by GPS and Galileo across all of Australia and New Zealand, improving the accuracy of positioning from 5-10 metres to 10 centimetres without the need for mobile or internet coverage

## Air Quality Sensors

Sensors Online:

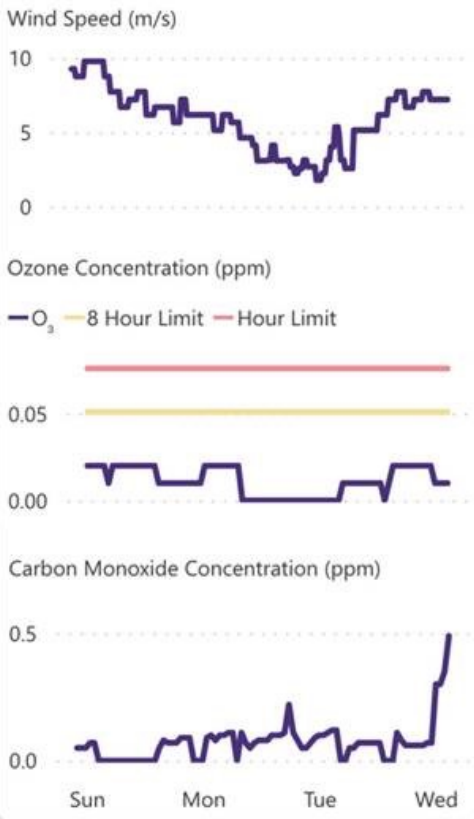
100%

Are pollutants at safe levels in Central Auckland?

Carbon Monoxide: ✓ Ozone: ✓

Sulfur Dioxide: ✓ Nitrogen Dioxide: ✓

How have gas concentrations behaved over the last 3 days?



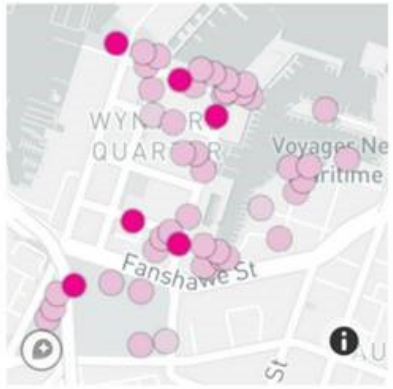

## Smart Bins

Sensors Online:

100%

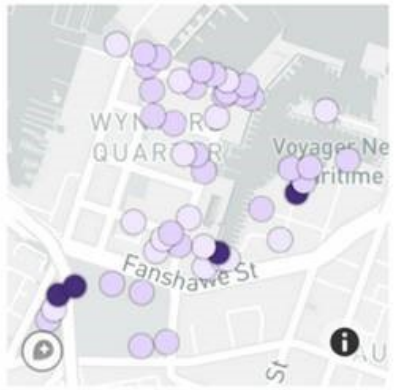
Which bins need to be emptied?

Current Fill (%): 0-10 10-90 90-100




Which bins fill the fastest?

Daily Increase (%): 0-15 15-30 30-100

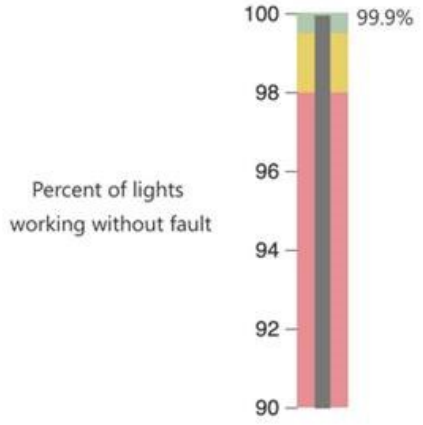



## Smart Street Lights

Sensors Online:

100%

Are all lights working as intended?




Light **Madden St N6** is using above average power.

Working as intended: Has an issue:

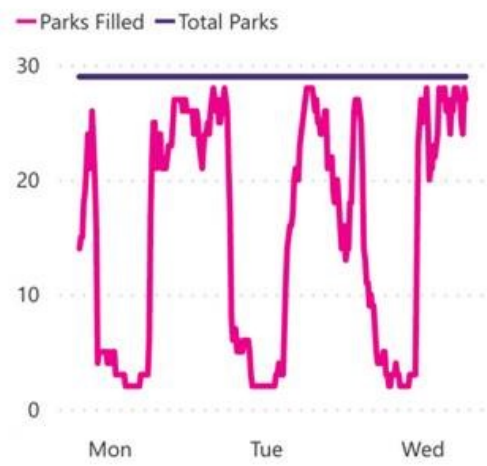

## Parking Sensors

Sensors Online:

100%

Are the car park spaces at Victoria Park Cricket Club Carpark used efficiently?

Number of car parks filled over the past 3 days




Breakdown of average car park usage over a week

| Time | Sun | Mon | Tue | Wed | Thu | Fri | Sat |
|---|---|---|---|---|---|---|---|
| Early Morning | 4 | 3 | 2 | 3 | 2 | 1 | 2 |
| Morning | 11 | 22 | 19 | 24 | 18 | 21 | 20 |
| Noon | 24 | 26 | 26 | 27 | 24 | 24 | 25 |
| Afternoon | 12 | 24 | 19 | 26 | 22 | 17 | 27 |
| Evening | 18 | 23 | 20 | | 19 | 15 | 21 |
| Night | 5 | 6 | 7 | 2 | 5 | 6 | 8 |

View past week | View all time

## Smart Benches

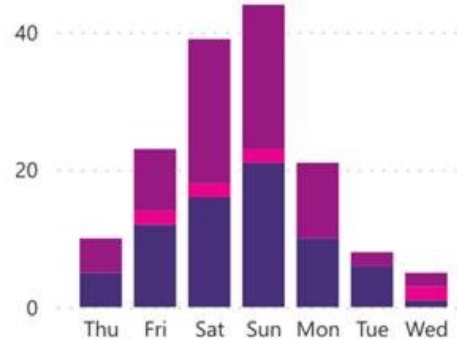
Sensors Online:

100%

Has smart bench usage over the past week been affected by weather?

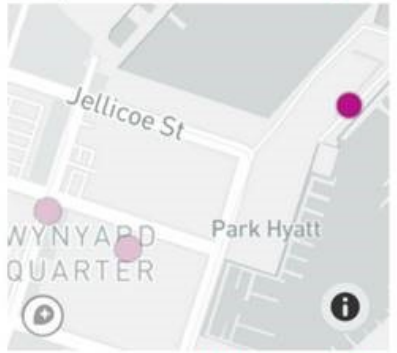
Wireless Charges USB Charges WiFi Users

Weather:




How often is each bench used?

High Use: Low Use:




Qrious Spark AT

# Citizen Science – enabling people to participate

Citizen science is now recognised as an important method of data collection, a means for enhancing the public understanding of science, and of strengthening links between professional scientists and community members

Check out some of these:

Niwa developed a number projects – you can support via an app et rainfall

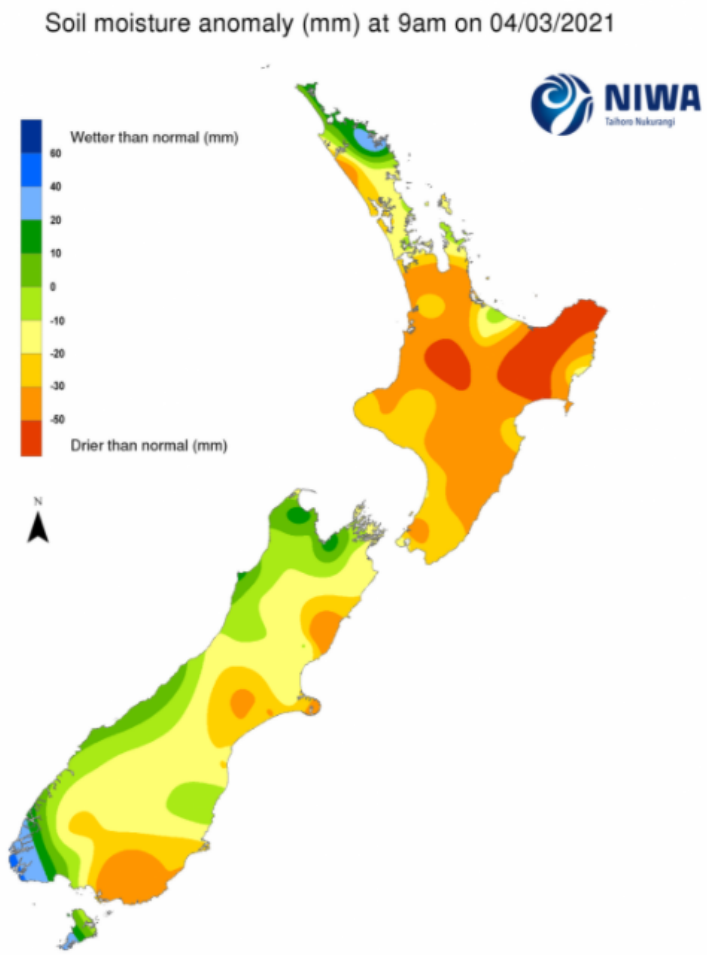
https://niwa.co.nz/climate/information-and-resources/citizen-science-new-zealand-rainfall-monitoring-network

Science Learn NZ

https://www.sciencelearn.org.nz/citizen_science

Curious Minds is a New Zealand Government initiative

https://www.curiousminds.nz/funding/participatory-science-platform/




Soil moisture anomaly (mm) at 9am on 11/03/2021

# Diversity

Microsoft – Include program

Smart Christchurch https://smartchristchurch.org.nz/

Wellington & Horowhenua (draft) Regional Growth Framework 2021

**Diagram 7:** Mana whenua aspirations regarding this Framework




## _our purpose

To trial technology and approaches that accelerate Christchurch becoming a city of opportunity for all – a city where anything is possible.

## _our vision

To promote Christchurch as an exemplar open and connected city, showcasing solutions that make life better and are replicated by others.

## _our mission

Making it better for people in Christchurch by delivering rapid proof-of-concept projects that promote the power of:

- Open data, open platform, open city.
- Aggregating and visualising real-time data.
- Leveraging the collective genius around us.
- Removing barriers to access.
- Inspiring fresh thinking.

## _our values

- Be brave – take risks.
- Fast is better than slow.
- We make it better for people.
- We're proud to put our name on it.
- We keep it real and operate with integrity.
- We take responsibility and know when to pivot.

## _our principles

- Benefits without borders; we share our solutions with whomever can benefit from them.
- Perfect is the enemy of good; innovation moves too quickly to focus on perfect – we get the job done.
- Collaboration is better than competition; we respect our colleagues and help them achieve their goals.
- Think globally act locally; wherever possible we choose local partners to solve Christchurch problems.
- The city keeps the farm; we appreciate the value of digital assets and maintain ownership in the city.
- Efficiency over bureaucracy; right-size processes support rapid delivery and accelerate innovation.
- Fail well; if we never fail we're not trying hard enough, so we own our failures and salvage what we can.
- What gets recognised gets repeated; celebrating success encourages high performance and motivation.
- Fun is our fuel; in every job there is an element of fun – a sense of play helps us do serious stuff better.

# Digital inequity – digital divide

"Māori and Pasifika people, the elderly, those living in social housing, unemployed people, disabled individuals and those living in rural areas are more likely to be digitally excluded and more likely to face other barriers to wellbeing than the general population."

Labour MP and Minister Kris Faafoi

## NZ Digital Inclusion Blueprint 2020-2021

Vision

"Everyone in New Zealand has what they need to participate in, contribute to, and benefit from a digital world."

# Tech is cool
# Opportunities vast
# Frontier wide open

# Digital Twin

Digital Twin – basic definition – more than a digital replica of the physical

Activates data, to power better decision making.  Help you do more with less. More engaging and transparent way

- Geometric and graphical data
- Geospatial reference data
- Asset attributes (natural, physical, social, economic)
- Management data
- Real-time asset performance and utilisation data.

Digital Twin is not a Digital Twin until it provides the following minimum five (5) capabilities:

**Connected** - there is a 'live' connection between the digital replica and the physical world

**Integrated** - it checks and links multiple data sources

**Visualise** - it provides visualisation of real-time multisource data

**Analysis** - federated data sets can be processed, modelled, analysed and simulated

**Secure** -  information is managed in a way that reduces its risk of being compromised

https://www.digitaltwinhub.org/post/digital-twin-community-of-practice-for-nz-cities

Smart Cities Council Australia New Zealand https://www.digitaltwinhub.org/resources

# https://www.digital.govt.nz/showcase/smart-wellington/

## What is Smart Wellington?

A Smart Wellington is more than having a technically-enabled local government — it's about having an involved and engaged community and business sector. In partnership with NEC New Zealand and other partners, Wellington City Council has implemented:

- a flexible Internet of Things backbone making the installation of sensors simple, inexpensive and from any provider or maker
- an inter-agency platform facilitating co-operation across the social and community agencies in the city
- machine learning and advanced analytic processing to create further insight into city issues
- putting virtual reality engagement platforms in place to make that data accessible, useful and understandable
- developing our Civic Hacking communities to create new citizen made apps, websites and services using city data.

A core design driver is to make these systems modular, scalable and as open as possible to meet the changing needs of the city.

Six transformational moves support the vision of the plan.

1. **Waikato River**: celebrating the Waikato River as the defining ecological feature connecting the metro area to the heart of a blue-green network supporting environmental and recreational use and creating a sense of place.

2. **A radical transport shift**: a multimodal transport network, connecting the metro area and facilitating a radical shift to using public transport through the establishment of a rapid and frequent public transport network shaped around where and how our communities will grow.

3. **A vibrant metro core and lively metropolitan centres**: growing Hamilton central city as our civic, administrative, cultural and commercial metro core, alongside lively metropolitan centres, well connected by public transport and safe walking and cycling networks, where people can afford to live, work and play.

4. **A strong and productive economic corridor**: establishing an economic corridor that links the highly productive employment areas between Ruakura, Hamilton central city and north to Horotiu.

5. **Iwi aspirations:** enhancing the environmental health and wellbeing of the Waikato River in accordance with the Te Ture Whaimana o Te Awa o Waikato – Vision and Strategy for the Waikato River, while supporting iwi in embracing social and economic opportunities within the metro area with a specific emphasis on Hopuhopu and Ruakura.

6. **Thriving communities and neighbourhoods:** enabling quality denser housing options that allow our natural and built environments to coexist in harmony increasing housing affordability and choice to meet the needs of growing and changing communities.

# Spatial Plans – Hamilton-Waikato

https://futureproof.org.nz/assets/FutureProof/H2A/Metro-Spatial-Plan/Hamilton-Waikato-Metropolitan-Spatial-Plan-Final-Low-Res.pdf

**MSP**

**Future Proof Partners**

*Note:*
*The following Future Proof partners have participated in the development of the MSP:*

New Zealand Government
Te Kāwanatanga o Aotearoa

Waikato Tainui

Waikato Regional Council
Te Kaunihera ā Rohe o Waikato

Waikato District Council
Te Kaunihera aa Takiwaa o Waikato

Waipa District Council

Hamilton City Council
Te kaunihera o Kirikiriroa

**The role and purpose of the MSP**

The MSP is a non-statutory spatial plan which sets out the spatial growth pattern of where and how growth will occur.

The MSP sets out the overarching strategic guidance which will inform many central and local government initiatives including strategic land use plans, infrastructure business cases, and central government funding and financing.

Future Proof Partnership
(enduring governance structure)

**Drivers and Direction**
**Statutory and strategic drivers**

- Urban Growth Agenda
- Vision and Strategy/Te Ture Whaimana o Te Awa Waikato
- NPS Urban Development
- NPS Highly Productive Land
- NPS Freshwater
- GPS on Land Transport
- Climate Change programme
- Regional and local strategies
- Case for Change
- Aratiki (Waka Kotahi 10 year plan)

**Set Strategic Direction**
**Non-statutory direction**

Metro Spatial Plan
(non statutory)

**Implement Strategic Direction**
**Through statutory documents and business case development**

MSP incorporated into Future Proof Phase 2 Strategy Update
(statutory weight)

| Urban Growth | Water | Transport | Other Infrastructure |
|---|---|---|---|
| Regional Policy Statement, District Plans, Long Term Plans, Regional Plans | Long Term Plans, 30-year Infrastructure Strategy | Long Term Plans, Regional Land Transport Plan, Regional Public Transport Plan, 30-year Infrastructure Strategy | Long Term Plans |
| Structure Plans, Masterplans | Programme Business Case, Detailed Business Case, Structure Plans | Programme Business Case, Detailed Business Case, Structure Plans | Programme Business Case, Detailed Business Case, Structure Plans |

Central Government Funding and Financing Tool Kit

Other Funding Options

## Project objectives

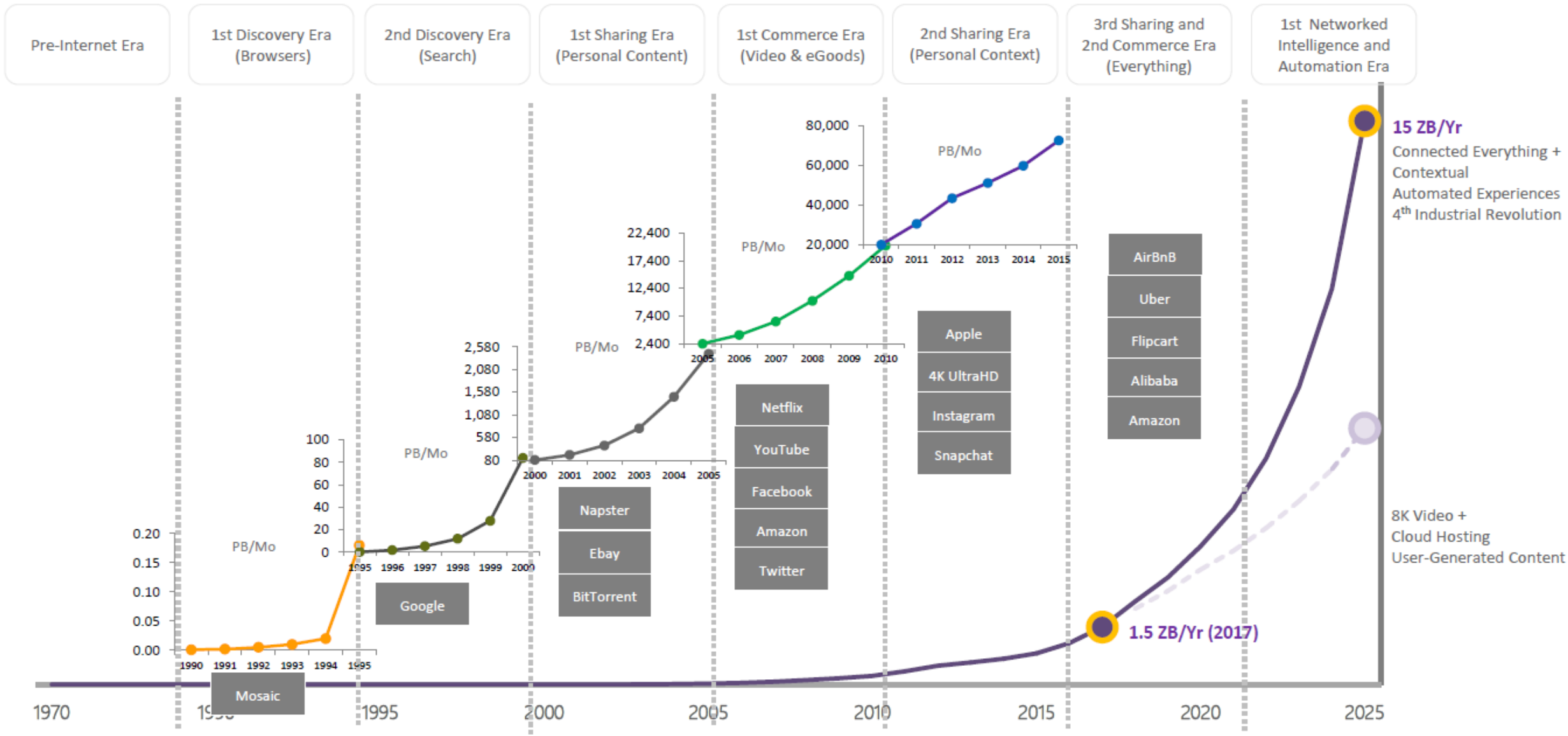
1. Increase housing supply, and improve housing affordability and choice
2. Enable growth that protects and enhances the quality of the natural environment and accounts for a transition to a low/no carbon future
3. Improve multi-modal access to and between housing, employment, education and services
4. Encourage sustainable, resilient and affordable settlement patterns/urban form that make efficient use of existing infrastructure and resources
5. Build climate change resilience and avoid increasing the impacts and risks from natural hazards
6. Create employment opportunities.

# Datasets

| Map Content | Data Layers | Description | Source data layer | Data source contact |
|---|---|---|---|---|
| Wahi Toitu | Flood Data | Operative district plan flooding data | WaipaDPFlood | Waipa District Council |
| Wahi Toitu | OperativeDP_2017.SDEADMIN.Flood_Modeling_Combined | Operative district plan flooding data | OperativeDP_2017.SDEADMIN.Flood_Modeling_Combined | Hamilton City Council |
| Wahi Toitu | HAZ_FLOOD_EXTENT_1_AEP_POLY | Operative district plan flooding data | HAZ_FLOOD_EXTENT_1_AEP_POLY | Waikato District Council |
| Wahi Toitu | Flood_Hazard_ICMP_EDCC_100yr | Operative district plan flooding data | Flood_Hazard_ICMP_EDCC_100yr | WRC |
| Wahi Toitu | DP Geotech Hazard Area | Gully hazards around HCC | OperativeDP_2017.SDEADMIN.GeotechHazard | Hamilton City Council |
| Wahi Toitu | Significant Natural Areas | Significant Natural Areas for Waipa | WaipaDCSNA | Waipa District Council |
| Wahi Toitu | WaikatoDCSNA | Significant Natural Areas for Waikato | WaikatoDCSNA | Waikato District Council |
| Wahi Toitu | OperativeDP_2017.SDEADMIN.SignificantNaturalAreas | Significant Natural Areas for HCC | OperativeDP_2017.SDEADMIN.SignificantNaturalAreas | Hamilton City Council |
| Wahi Toitu | Wetlands (HCC) | Wetlands and Ponds for HCC | WetlandsAndPonds | Hamilton City Council |
| Wahi Toitu | Peat Soil Depth | Peat soil > 3m | peat_dpth6.tif | WRC |
| Wahi Toitu | HertiageSites100mBuffer | 100m buffers of Waipa heritage sites | WaipaDC_DP_Policy_Heritage_Points.shp | Waipa District Council |
| Wahi Toitu | HertiageSites100mBuffer | 100m buffers of HCC heritage sites | OperativeDP_2017.SDEADMIN.HistoricHeritage | Hamilton City Council |
| Wahi Toitu | HertiageSites100mBuffer | 100m buffers of Waikato heritage sites | heritage-item-legal-effect.shp | Waikato District Council |
| Wahi Toitu | Reserves | Reserves for Waipa | WaipaDCReserves | Waipa District Council |
| Wahi Toitu | OperativeDP_2017.SDEADMIN.Zoning | Reserves for HCC | OperativeDP_2017.SDEADMIN.Zoning | Hamilton City Council |
| Wahi Toitu | WaikatoDCZoning | Reserves for Waikato | WaikkatoDCZoning | Waikato District Council |
| Wahi Toitu | Doc Public Conservation Areas | Doc Public Conservation Areas for Metro Plan area. | DocPublicConservationAreas | DOC |
| Wahi Toitu | QEII Trust Covernants | QEII Trust Covernant protected land | QEIITrustCovernants | QEII Trust |
| Wahi Toitu | Designations | Designations for Waipa | WaipaDCDesignations | Waipa District Council |
| Wahi Toitu | WaikatoDCDesignations | Designations for Waikato | WaikatoDCDesignationsClipped | Waikato District Council |
| Wahi Toitu | HamiltonDCDesignations | Designations for HCC | OperativeDP_2017.SDEADMIN.DesignatedSites | Hamilton City Council |
| Wahi Toitu | Outstanding Natural Features and Landscapes | Central Hill Country and Western Hill Country | OutstandingNaturalFeaturesandLandscapesBroadLandscapeTypesWRC | WRC |
| Wahi Toitu | Steep Slopes | > 25 degrees | HRWO_DOMINANT_SLOPE_CLASS_clip | WRC |
| Wahi Toitu | Elite Soils | LUC 1 soils | NzlriLandUseCapability | https://lris.scinfo.org.nz/ |
| Wahi Toitu | PEAT_LAKE_HEALTH_RIVER_LAKE_CATCHMENT_MetroSpatialPlan | All Peat lakes excluding Rotokauri | PEAT_LAKE_HEALTH_RIVER_LAKE_CATCHMENT_MetroSpatialPlan | WRC |
| Wahi Toitu | Wahi Tapu areas | Location of Wahi Tapu sites | | WRC |
| Wahi Toitu | Wahi Toitu Extent | Entire extent of the Wahi Toitu with the MSP | NoGoFinalV6 | HCC |
| Wahi Toiroa | High Quality Soils | LUC 2 & 3 soils | SoilClassV3 | https://lris.scinfo.org.nz/ |
| Wahi Toiroa | Peat Soil Depth | Peat soil < 2m | peat_dpth6.tif | WRC |
| Wahi Toiroa | PEAT_LAKE_HEALTH_RIVER_LAKE_CATCHMENT_MetroSpatialPlan | Only Rotokauri peat lakes | PEAT_LAKE_HEALTH_RIVER_LAKE_CATCHMENT_MetroSpatialPlan | WRC |
| Wahi Toiroa | Digital Terrain Model (Motoriki Datum) | Elevation of Metro Plan area | DTM5mRegoinalCouncil | WRC |
| Wahi Toiroa | Moderate Slopes | 15 - 25 degrees | HRWO_DOMINANT_SLOPE_CLASS_clip | WRC |
| Wahi Toiroa | Mineral resources | Sites of mineral resources | | WRC |
| Wahi Toiroa | Pest plants | Sites of pest plants | | WRC |
| Wahi Toiroa | Erodible soils | Areas of erodible soils | LR_Soil_Risk | WRC |
| Wahi Toiroa | Wahi Toiroa Extent | Entire extent of the Wahi Toiroa with the MSP | SlowGoFinalV5 | HCC |
| | TLA Boundaries | Waipa, Waikato and Hamilton City TLA boundaires | context.SDEADMIN.TLA_2014 | LINZ |
| | 2019 Aerial Photography | 2019 Aerial photography for Hamilton | SDEADMIN.AERIAL_2019 | HCC |
| | LINZ Aerial Photography | Aerial photography for Waipa and Waikato Districts | Imagery/newzealand | https://services.arcgisonline.co.nz |
| | Metro Spatial Plan Extent | Extent of the Metro Spatial Plan area | MetroPlanAreaofInterestO6052019 | Stats NZ |
| | Metro Spatial Plan Nodes | Locations of Metro Spatial Plan nodes | AllNodesV4 | HCC |
| Wahi Toiroa | Significant Archaeological Sites (HCC) | Significant Archaeological Sites from District Plan | Significant Archaeological Sites | HCC |
| | LINZSwamp | Swamps within the MSP area | LINZSwamp | LINZ |

# BELL LABS DATA

## GROWTH PREDICTION



# APP’s

# Activating Space

**Sculpture In Sound - Using a smart-phone app and headphones, users can walk around them, and activate layered, location-specific audio that change as you move around the sculpture**

**www.sonicity.nz**

# Digital Visibility

# Visualisation of data

3D aminations used increasing widely for giving visualisations and experience, give an experience for users

Real-time rendering engine can support custom-built assets, photogrammetry data, measuring tools, embedded video, access to live cameras on location and visual analysis of 3rd party data - these features can be cherry-picked for inclusion on a project-by-project basis, and bundled into a 3D visualization platform for desktop or mobile, offline or on the web.

https://arl.co.nz/ Amination Research Ltd

Architecture, RCL, NZTA

https://www.virtualview.co.nz/3d-animations

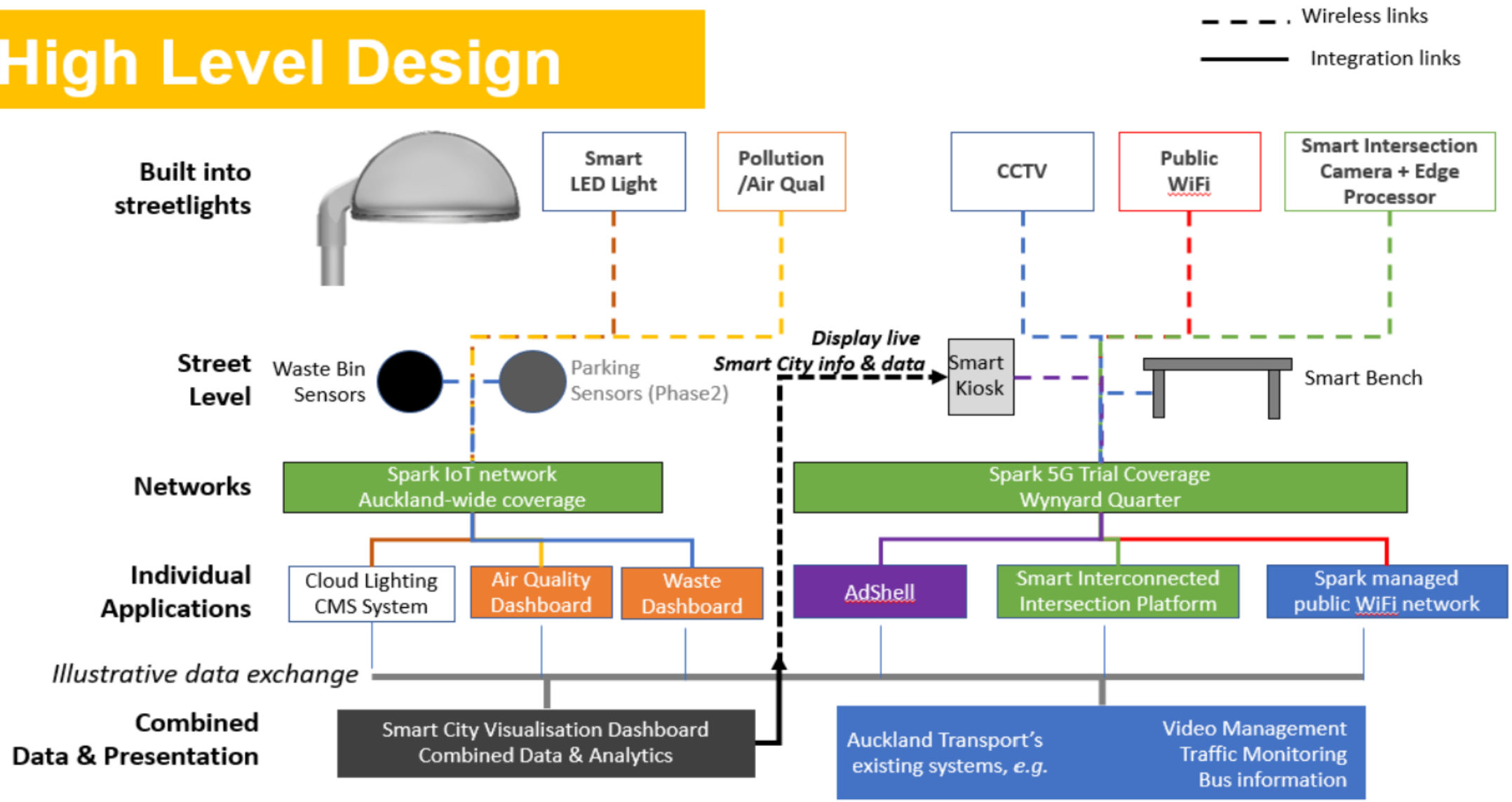
VR learning, entertainment, remote support

# Digital Humans

**Artificial intelligence** (AI) simulation of human **intelligence** in machines that are programmed to think like humans and mimic their actions.

# Smart Precinct

## High Level Design



# Wynyard Smart Precinct


# 5G WILL BE GAME CHANGING

## Bringing 5G to New Zealand by investing in immediate use cases that create the most value

### Wireless Broadband

Introducing unconstrained capacity and enhanced speed to support customer's growing demand for more data

### Massive IoT[1]

Innovative IoT[1] solutions providing customers with real-time data and benefits of digital monitoring

### 5G Partner of Choice

Co-creating smart solutions and network customisation to meet customer needs on speed, latency and number of devices

## 5G provides opportunity beyond 'connectivity' and will enable the delivery of smart solutions for enterprise and industry

### Latency and Reliability

Cloud Gaming

Autonomous Vehicles

Industrial automation

### Speed and Capacity

Immersive experience

4K/8K Video

Smart Stadium/ Universities

### Massive IoT

In-vehicle connectivity

Drones and connected robots

Connected Platform

Connected Wearables

mIoT sensors

Smart City/home

### Edge Computing

Real-time data/video analytics

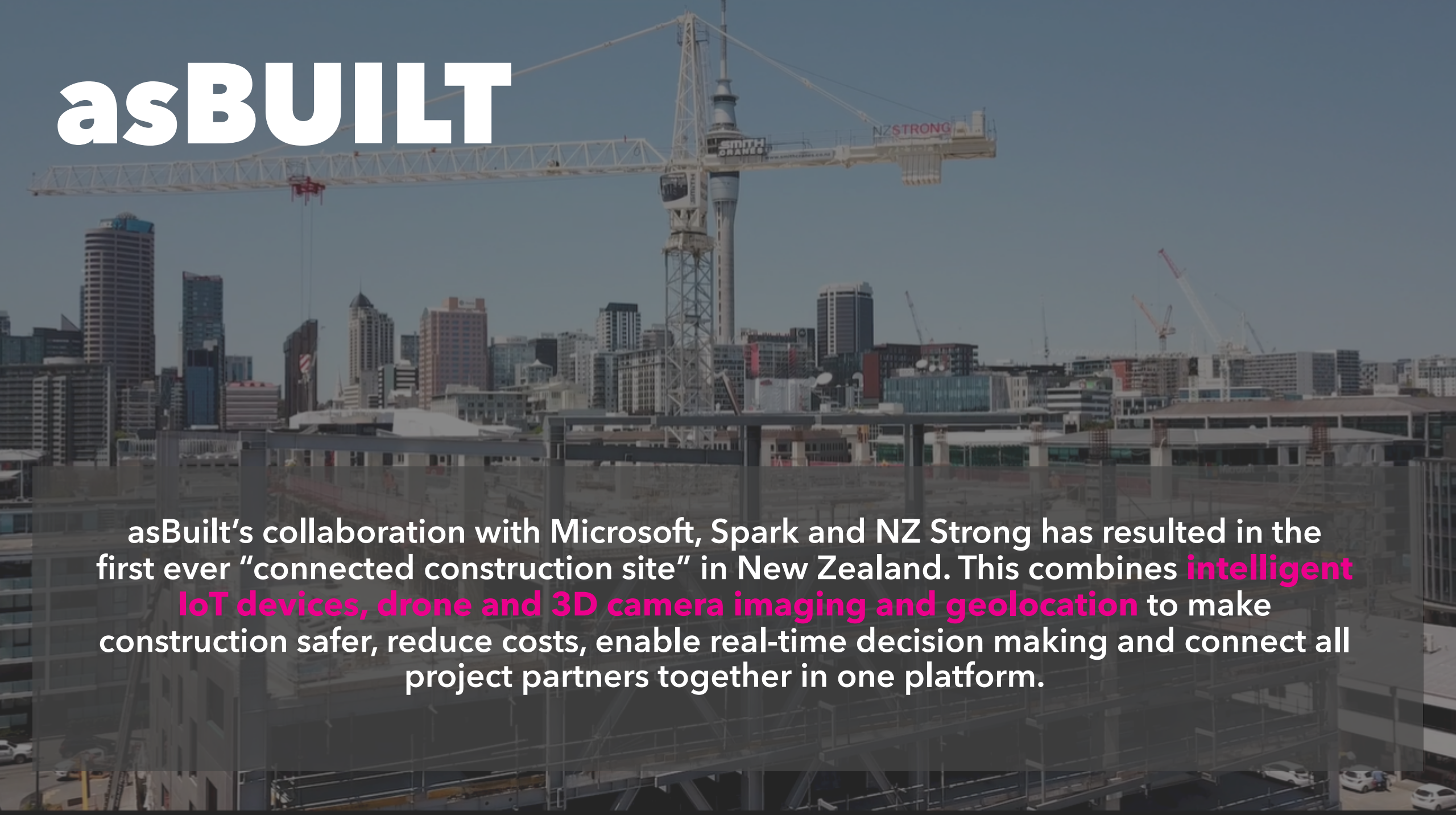
### Network Slicing

Vertical / Private Networks

- AR/VR
- Government
- Industrial Internet
- Automotive
- Utilities
- Health & Wellness


https://www.youtube.com/watch?v=plTZJ8yqzYM&feature=emb_title

# asBUILT




asBuilt's collaboration with Microsoft, Spark and NZ Strong has resulted in the first ever "connected construction site" in New Zealand. This combines **intelligent IoT devices, drone and 3D camera imaging and geolocation** to make construction safer, reduce costs, enable real-time decision making and connect all project partners together in one platform.

# Quayside - Toronto

The smart city project on the Toronto waterfront is the most highly evolved version of surveillance capitalism? Google using “algorithms to nudge human behaviour” in ways to “favour its business”?

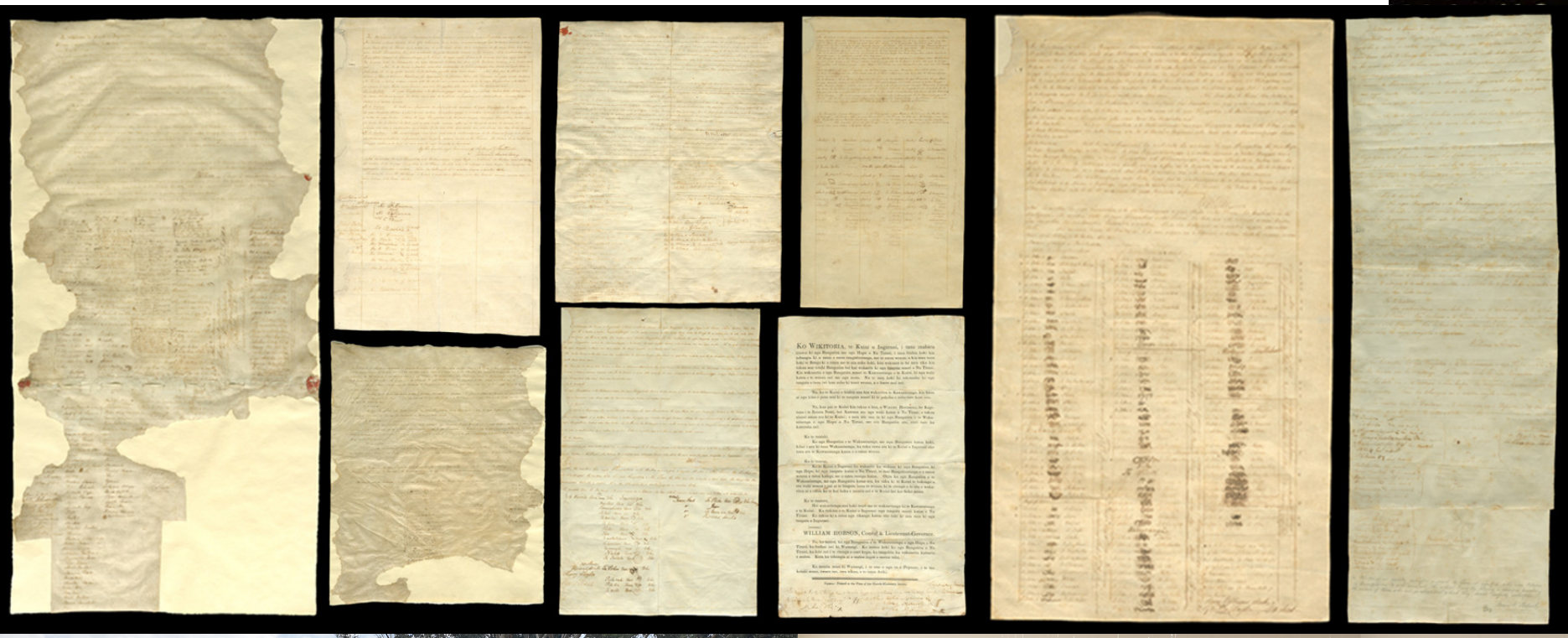
Sidewalk Labs - Not proceeding currently with project but heavy involved innovative companies

- urban mobility,
- next-generation infrastructure
- community-based healthcare
- robotic furniture to digital electricity
- factory-made mass timber construction that can improve housing affordability and sustainability
- digital master-planning tool that can improve quality of life outcomes and project economics,
- new approach to all-electric neighborhoods

March 10, 2021, Waterfront Toronto launched the Quayside Development Opportunity

*“When distance and convenience sets in; the small, the various and the personal wither away.” Jane Jacobs*

# Planning with PlanTech




# NZ Herald Rod Emmerson Cartoon 13 Aug 2020

# Questions – time for the swim

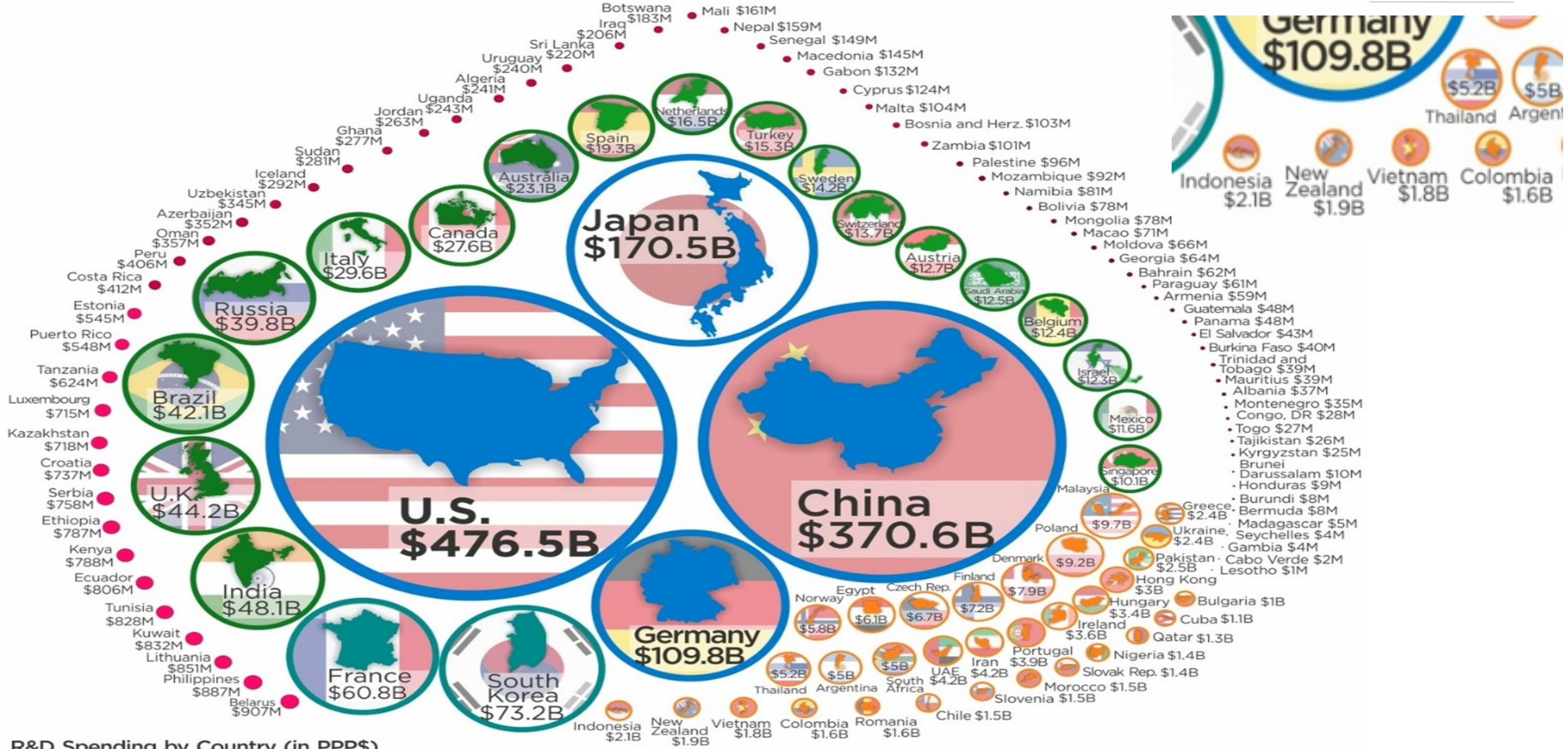
Maree Horner *Diving Board* 1974-98. Govett-Brewster Art Gallery Collection

## 275 Love Letters To Southside

Auckland is not the same place as South Auckland.
When I learnt that no place outside of South Auckland would want to pronounce my name properly
I scraped it off their tongues
So now all they do is spit on us instead
And still.
Haven't my ancestors' screams been muffled between textbook pages?
Didn't a white teacher at my south Auckland sch tell us we're just "typical South Auckland crap"?
Aren't I lucky I wasn't born when the dawns were raided?
Still.
My South Auckland
Red and blue runs through your streets in the forms of bandanas, flags and flashing lights
So much that everyone chooses to forget what the color of our sun looks like.
Chooses to see the negative rather than what shines more bright.
Shine flashlights in our brown boys eyes so much
That I can never forget what the color of our sons look like.
While our daughters become mothers to their siblings so young because their parents work shifts at night.
The media won't talk about that but will focus on any recorded street fight.
Everyone loves to quickly point fingers but no one can afford the time to ask why?
I've lived my life growing up in classes where I had more friends with no lunch than friends who were eating
I've heard my friends say "they growl us for not having laptops when we barely have lunch" more times than I've heard a school bell.
Joking about your pain is a right of passage in South Auckland schools
Because it's not like these education systems teach us how to deal with it.
And still,
Isn't the reality of our lives to you just politics?
And ever since Ponsonby left my mother for a white woman
I noticed that any door I walk through outside of Southside lacks a welcoming mat.
Driving through Ponsonby is looking at collections of faded photos I don't remember living through.
It is the movie I never got to watch.
A chance of a happier brown community is just another one of its deleted scenes.
Ponsonby is your cousin that forgot their roots so their branches grew away from us
But in Southside family is still family
So when Ponsonby shows up uninvited to the family function I will awkwardly kiss their cheek.
Wait for them to tell me I am a splitting image of my mother
But they never do.
And still.
I could stand here and offer all the reasons I love my home as a peace offering.
Try to pull the moana out of my lungs so I can breathe easier.
Drop my slang and fix my posture.
Make you feel all kinds of ways while I stand here.
But if you saw me on T.V?
If you drove past me on my streets?
Aren't I just a little brown girl from South Auckland?
Still.

*— Aigagalefili Fepulea'i-Tapua'i, Aorere College*

# How Much Countries Invest in Research & Development




**R&D Spending by Country (in PPP$)**

More than $100B | $50B - $100B | $10B - $50B | $1B - $10B | $500M - $1B | $100M - $500M | Less than $100M

**Article & Sources:**
https://howmuch.net/articles/research-development-spending-by-country
http://uis.unesco.org

howmuch.net