

Next Generation Information for Better Outcomes

Profs Simon Kingham and Angus Macfarlane

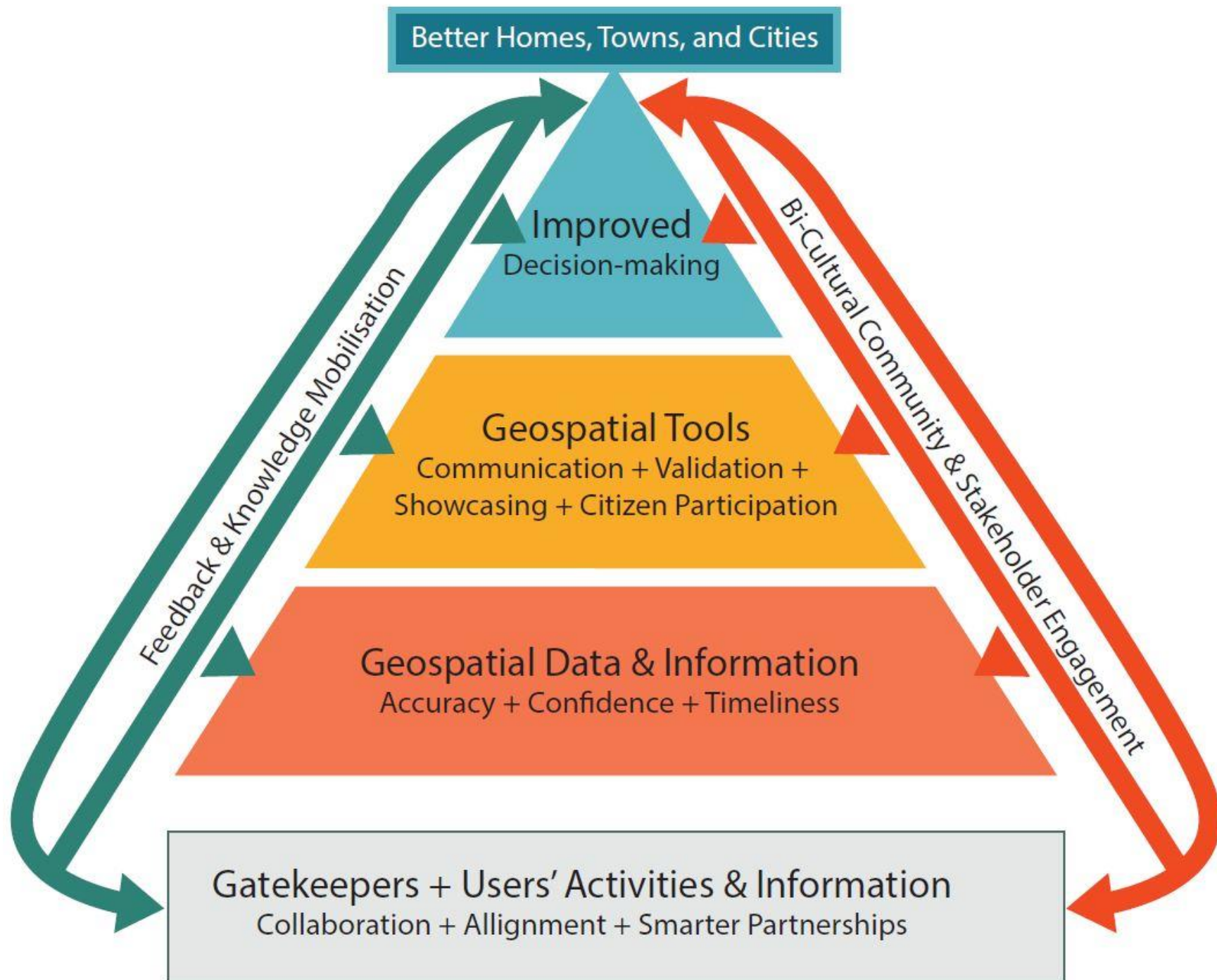
University of Canterbury - Te Whare Wananga O Waitaha, Christchurch



Aim

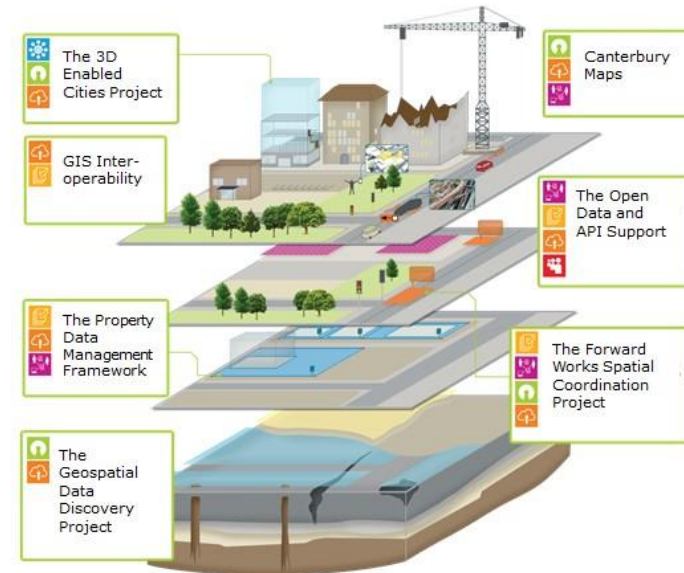
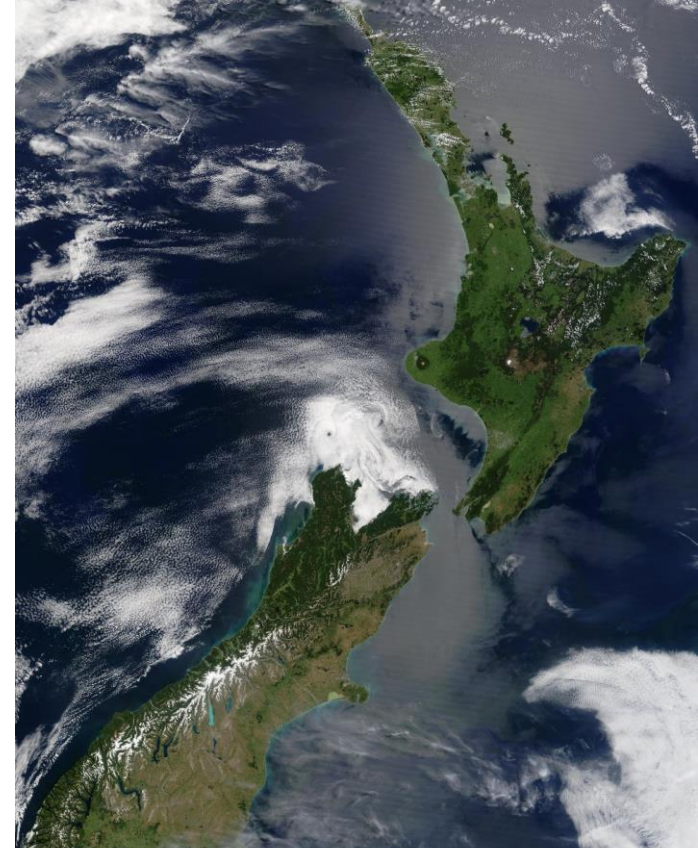
- To drive the development of better homes, towns and cities through improved use of information, with a specific focus on geospatial data





Projects

1. Data availability, quality, needs and understanding
2. Development of a geospatial toolkit to aid better urban decisions
3. Ecology of community: Māori understandings and values in relation to spatial data
4. Crowd-sourced and urban sensor data insights for better cities, towns and homes
5. Digital Information Infrastructure for New Zealand

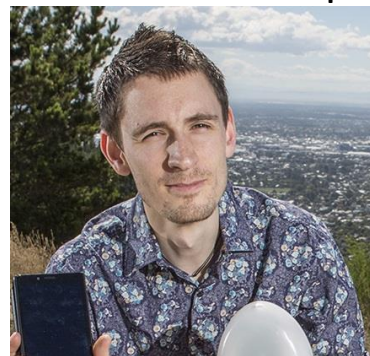


Team

Prof Simon Kingham (UC)



Dr Malcolm Campbell (UC)



Dr Lyn Carter (UO)



Dr Vivienne Ivory (Opus)



Prof Angus Macfarlane (UC)



Dr Ben Adams (UC)



Dr Dave Goodwin (UO)



Dr Rita Dionisio (UC)



Chris Bowie (Opus)



Dr Mirjam Schindler (UC)



Ines Falcao (UC)



James Berghan (UO)



David Garcia (UC)



Data availability, quality, needs and understanding

- **Assess the landscape of spatial data** in New Zealand's urban planning community
 - Purpose-specific data availability
 - Purpose-specific data quality
 - Barriers & needs
- **Identify key spatial datasets** to improve decision-making for diverse stakeholders in the urban planning community
- **Recommendations** towards data infrastructure framework

Geospatial data availability, quality, needs and understanding

Highlights

Key barriers

- Stakeholder fragmentation along the data life-cycle
- Low awareness around value of accessible & fit-for-purpose spatial data
- Trust in data quality
- Focus primarily on technological solutions
- Inconsistency in definitions, practices etc.
- Data sensitivity

Key needs

- Culture of data sharing
- Practical guidance for data sharing and standards implementation
- Batch access to spatial data
- Multiple stakeholder coordination
- Discoverable data and metadata
- Alignment of information

Recommendations

- System-wide perspective
- Supporting and binding governance
- Focus shift from technology to cultural and governance local practices
- Multiple and multilevel stakeholder engagement & coordination



JOINT RESEARCH CENTRE

International Journal of Spatial Data Infrastructures Research

European Commission > Joint Research Centre > IJSDIR > IJSDIR > Vol 13 (2018) > Schindler

HOME ABOUT ISSUES REGISTER SEARCH FOR AUTHORS FOR REVIEWERS

A multi-level perspective of a spatial data ecosystem: needs and challenges among urban planning stakeholders in New Zealand

Mirjam Schindler, Rita Dionisio, Simon Kingham

Immersed Engagement:

A new approach to collaborative planning for sustainable urban planning in Aotearoa – New Zealand



College of Science, Department of Geography
Dr M Rita Dionisio, Prof Simon Kingham

2017, 14 - 16 June

23rd International Sustainable Development Research Society Conference



Challenges and potentials of the use of geospatial tools for evidence-based decision-making in New Zealand's cities

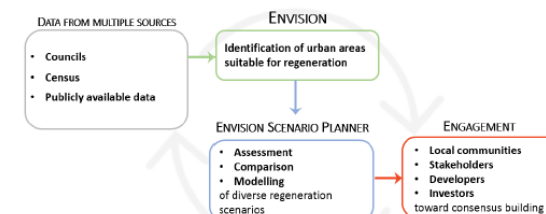
Mirjam Schindler, Rita Dionisio, Simon Kingham
Geospatial Research Institute, University of Canterbury

Cities are facing many challenges as they seek to accommodate an increasing population, without degrading the local environment and also seeking to improve liveability, health and wellbeing. Decision-support tools are increasingly used in urban planning to help decision-making through the modelling of trade-offs and effects of urban regeneration.

For New Zealand's cities, we developed geospatial tools (ENVISION and ESP) to support decision-making in relation to residential, institutional and commercial redevelopment. The tools provide urban practitioners with a deeper understanding of environmental and socio-economic effects of 'business as usual' or alternative redevelopment scenarios.

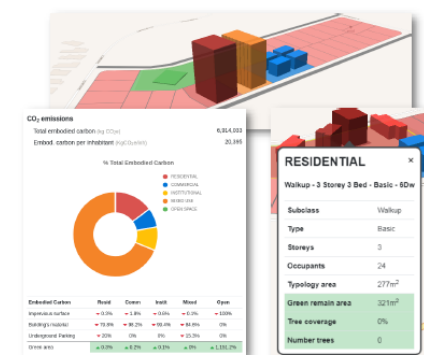
Urban practitioners can model and compare alternative regeneration scenarios for an urban neighbourhood, such as:

- Urban intensification through land amalgamation and allocation of high density typologies, interspersed with green spaces providing environmental and socio-economic benefits;
- Minimization of a city's carbon foot print through carbon sequestration of open spaces, energy- and water-efficient buildings and allocation of cycle-ways;
- Balancing environmental and economic costs through buildings and open spaces enabling water capture and energy generation;
- Exploration of economic feasibility through evidence-based cost and benefit assessment of redevelopment



The suite of tools (ENVISION and ESP), their spatial data sources and stakeholder engagement

The research developed tools ENVISION and ESP are funded by the National Science Challenge 11 and free to use by local authorities.



Development of a geospatial toolkit to aid better urban decisions

Key stakeholders: end-users & decision-makers (Local Planning authorities)

- Stakeholder engagement

Assess specific needs for infrastructural & urban modelling

Development of geospatial planning tools, addressing stakeholders' needs

Testing the developed geospatial tools with key stakeholders

Development & Implementation of geospatial planning tools, incorporating stakeholder feedback

- Outcomes of 'Greening the Greyfields' research

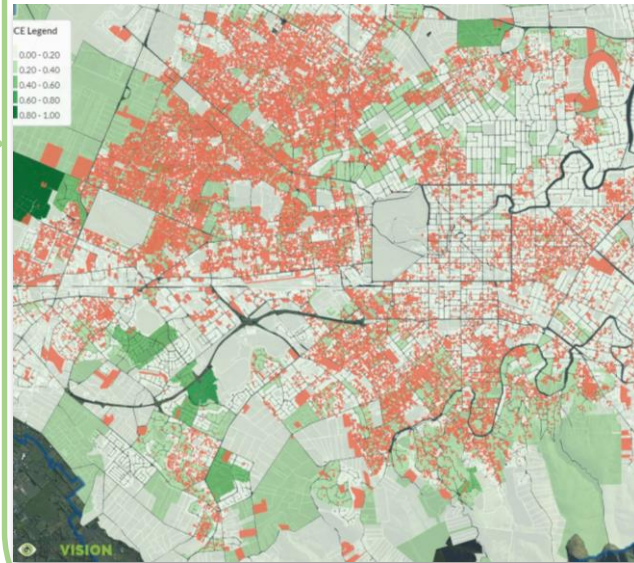
- Advancing current geospatial tools
- Assessing the need for new tools

- Collaborative engagement with multiple stakeholders

Geospatial planning tools for better decision-making

ENVISION

**Identification of urban areas
suitable for regeneration**



ESP

Envision Scenario Planner

- **Assessment**
- **Comparison**
- **Modelling**
of regeneration scenarios



DATA FROM
MULTIPLE SOURCES

ENGAGEMENT

Geospatial planning tools for better decision-making

Stakeholder engagement - progress

Councils

Christchurch City Council	Currently preparing two storylines: benefits of Envision & ESP for strategic planning
Nelson City Council	Assessment of regeneration scenarios (lot & precinct scale)
Hamilton City Council	Engagement started in March 2018

Other Planning Authorities

Regenerate Christchurch	A meeting will be held in June 2018 to define next steps
Ōtākaro Limited	Stakeholders have access to ESP and Envision

Housing & Regeneration Trusts

Office for Holistic Urbanism	Identification of areas suitable for urban regeneration for OHU's communities
Te Matapihi	Stakeholders to define some regeneration scenarios to be assessed in ESP

Geospatial planning tools for better decision-making

Highlights & Outlook

- **Completed & deployed the geospatial tool ESP (new code)**
- **Analysis of other tools used by councils to support decision-making** in regeneration (e.g. MBIE Feasibility tool) to better position our research
- **Identification of key challenges** associated with the usability of the tools for our stakeholders (e.g. translation of planning strategies into scenarios)
- **Identification of key areas for improving geospatial planning tools** - alignment with key processes (e.g. RMA consenting process)

Ecology of community: Māori understandings and values in relation to spatial data

- Attend the BBHTC Māori Strategy Planning Day, Auckland (15 Feb 2018)
- Attend Unitec, Auckland hui with researchers in new Kainga tahi Kainga rua SRA (12th March, 2018)
- Amend ethics approval to include wider-than-Maori community developments (Earthsong Eco-neighbourhood, Sweden, Denmark, Netherlands)
- Network building and set up interviews at Ngati Whatua, Tamaki Makaurau –Orakei housing and well-being initiative; Hamilton Kaumatua housing projects.
- First seven interviews now completed, and modifications built in
- Presenting peer reviewed paper in Turkey next week
- Interviews in Sweden, Denmark and Netherlands

Now onto the hard work of interviewing...



Discussion points/outputs

- Building good relationships prior to interviews, an important part of our kaupapa, is a significant time investment.
- Robust qualitative research often relies on contrasting comparisons - secondary literature suggests that Sweden, Denmark and the Netherlands have relevant experiences in communal housing development, making these the obvious choices for case studies.
- Database of Māori papakāinga/housing projects (spatially referenced)
 - Avoid duplication and some communities being “over researched”.

Research outputs to date

Peer reviewed conference papers

- Berghan, J, Goodwin, D and Carter, L. (2018). Remaking community: Building principles of communal tenure into contemporary housing developments. Remaking Cities 2018 conference, RMIT university, Melbourne.
- Goodwin, D and Berghan, J. (2018). A planning model to incorporate socially-based tenure principles into mainstream planning. FIG, Turkey, 6 – 11 May, 2018. Embracing our smart world where the continents connect.

Conference/seminar/hui presentations

- Berghan, J., Goodwin, D.P., & Carter, L. (2017, November). Ecology of community: Māori understandings and values in relation to spatial data. In L. Porter (Chair), *Whose Land is it Anyway?* Symposium conducted at the Royal Melbourne Institute of Technology, Melbourne, Australia (there is a possible special journal issue out of this).
- Goodwin, D.P. and Berghan, J. (2017) Planning from a communal land tenure heritage. Geospatial Research Conference, 4th – 5th December, University of Canterbury, Christchurch.
- Carter, Lyn, David Goodwin, James Berghan, (2017) Ecology of community: Māori understandings and values in relation to spatial data. Presentation at National Science Challenges hui, Building Better Homes, Towns and Cities Ko Ngā Wā Kainga hei whakamāhorahora. Christchurch, Novotel Hotel, 5th and 6th September.

Crowd-sourced and urban sensor data insights for better cities, towns and homes

- Complete aligned masters project (funded by CCC)
- Completed conceptual framework
- Scoping potential of a 'regional' crowdsourcing using sensors and citizens (Timaru)

Received: 13 March 2017

Revised: 30 November 2017

Accepted: 3 December 2017

DOI: 10.1111/tgis.12317

RESEARCH ARTICLE

WILEY **Transactions**
in GIS 

Crowdsourcing the character of a place: Character-level convolutional networks for multilingual geographic text classification

Benjamin Adams¹  | Grant McKenzie²

D. van Weedenburg, S. Scheider, B. Adams, B. Spierings & E. van der Zee, 2018, Where to go and what to do: Extracting leisure activities from Web data on urban space, ***under review***

Highlights

- David Garcia has arrived and has begun systematically identifying potential planning use cases at varying scales: local, regional, and national.
- Deeping engagement with stakeholders through identification of general usability issues.



You shall not pass!!!



Digital Information Infrastructure for New Zealand

- *How can Digital Information Infrastructure (DII) enable and drive good decisions about how we build our homes, towns and cities?*

Project 5a: State of play review of the drivers and innovations in NZ's DII

Literature review

Engagement with sector

DII typology to identify barriers & opportunities for better DII

Project 5b: Case studies – setting community-centric levels of services (with Urban Narrative project)

Literature review

Practitioner workshop

Local cases

– data needs, uses, & challenges

– action research to create an **information-rich, community-centric digital model of infrastructure levels of service**

National data practice survey

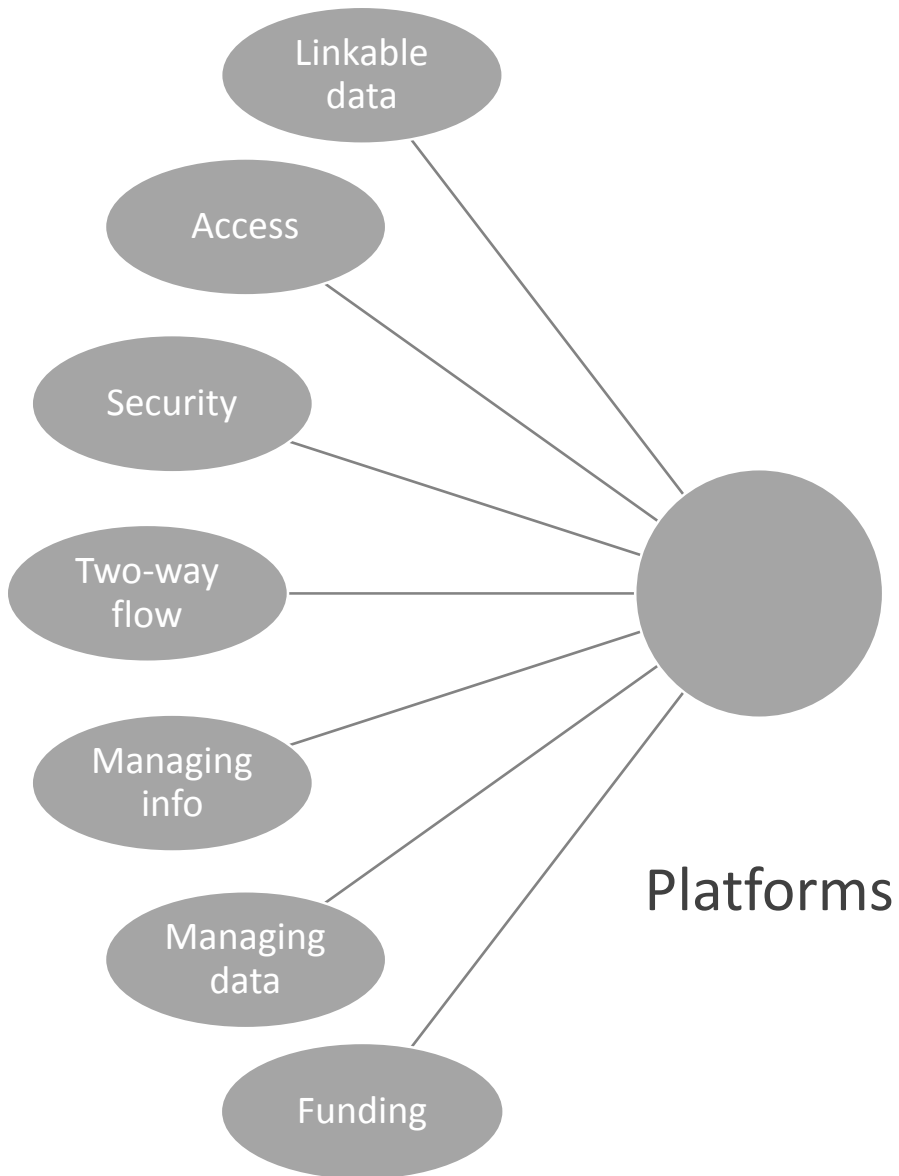
Value stories & visualisations of shared / integrated data through DII

Project 5c: Guidelines for digital information infrastructure in New Zealand

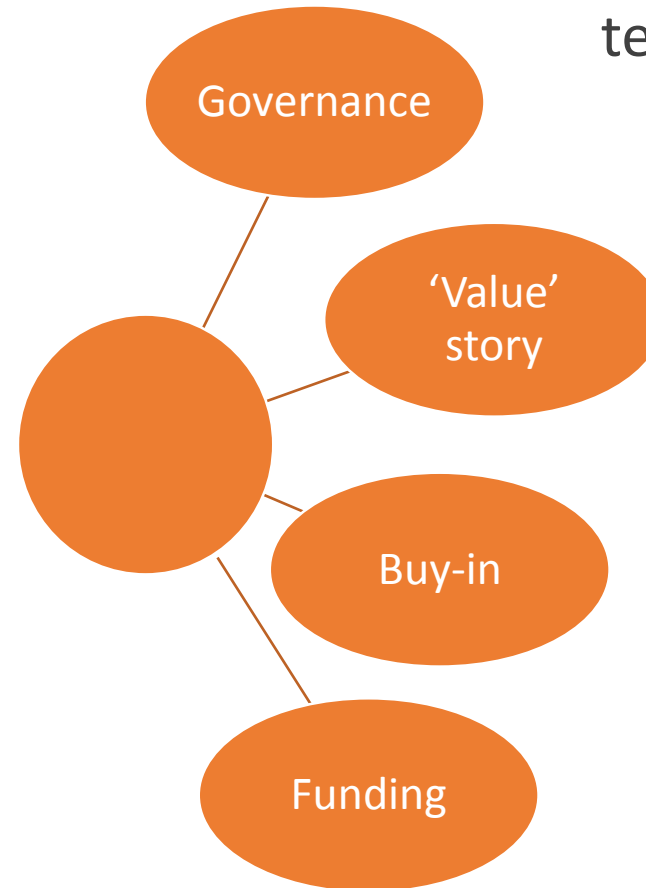
Workshop to triangulate and review lessons and determine guidelines

Report guidelines

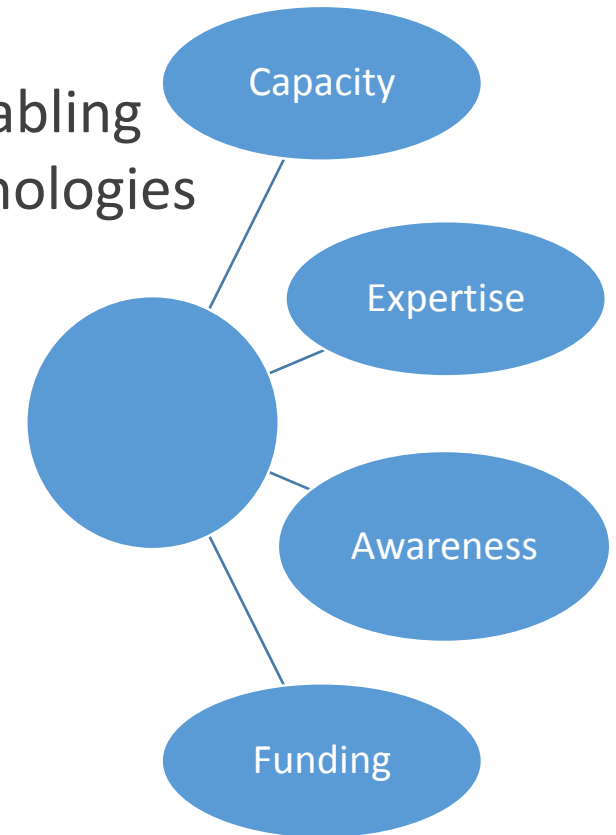
Issues for effective DII in NZ – a sociotechnical systems perspective



Practice/policy

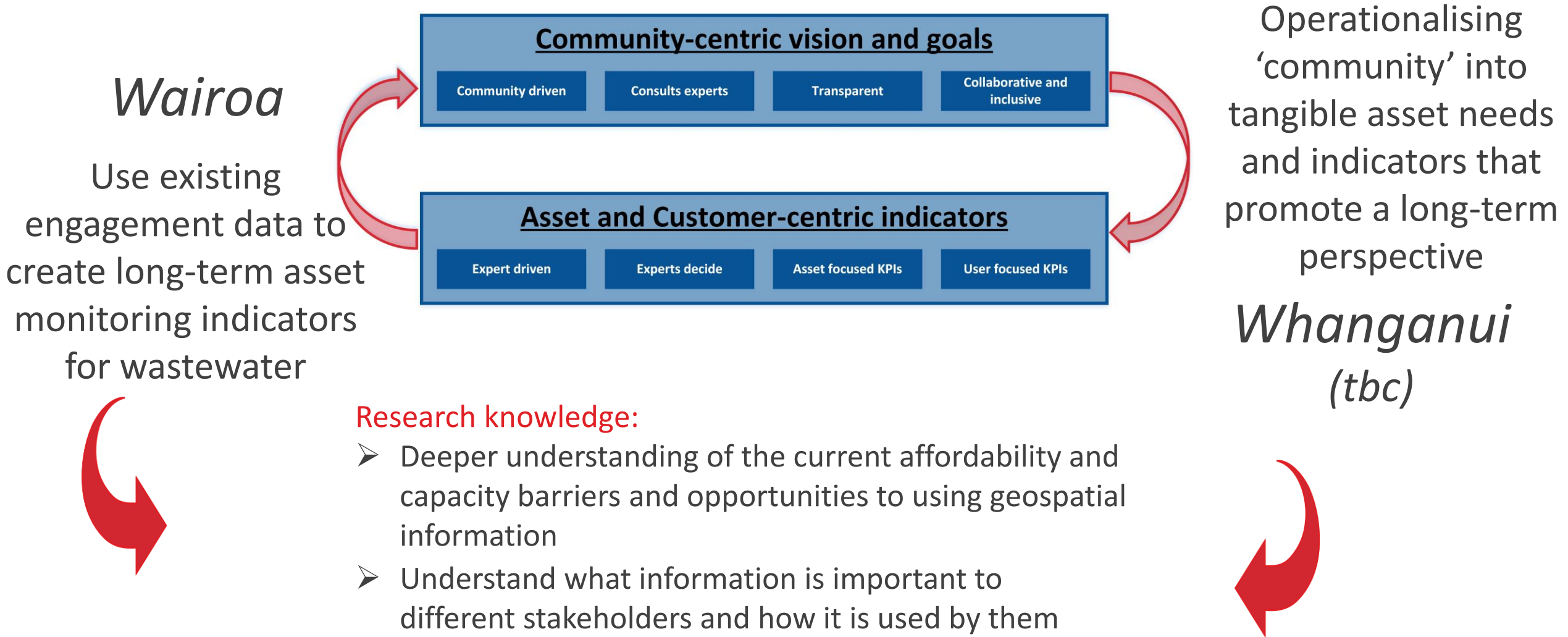


Enabling technologies



Provincial cases ('smart – lite'): Wairoa & Whanganui setting community-centric levels of service for infrastructure assets

Get better value from geospatial data by integrating community and technical asset information affordably and effectively



What next?

- Better integration & coordination of data/projects
 - Spatially coordinated (including Māori papakāinga/ housing projects)
 - Coordinated data use/management - reducing costs & benefits across silos
 - Issues of data sovereignty, especially Māori
- Wider range of geographical settings and uses
 - Community-driven tools, information and technology
 - Smarter/'lighter' data
 - Public engagement tools
 - Individual decision making tools
 - Tools for density, regions, affordability
 - Geospatial tools *across* projects
 - Transport into geospatial tools