

Innovating Road Safety

lessons for transport systems



Safer Journeys
Signature Programme

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Executive summary

Purpose of this guide

This guide draws on local learning and good practice literature to provide a range of principles and practical approaches to support the design and implementation of innovative road safety projects.

The guide is one of a series of documents from the Signature Programme evaluation, which explored learning and impacts from innovative road safety projects. Companion reports explore findings from the projects in detail.

Innovation, from incremental improvements to radical, disruptive advances, is an essential contributor to reducing death and harm on our roads. The gap between society's expectations, and the capacity of current systems to deliver is starkly clear within the road safety domain, where a dramatic reduction in trauma is desired, yet rates of harm increase. Innovation is needed to break this cycle. Yet, to be truly effective, innovation must also work at multiple scales, from the micro level of the community, through to the macro level of national initiatives.

The Signature Programme

The Safe System framework provides a platform for continuous improvement and innovation in improving road safety, encompassing safe roads and roadsides, safe speeds, safe vehicles and safe road use. The Signature Programme was established in 2013 to implement innovative road safety projects that apply the Safe System principles to reduce death and serious injuries. Four independent initiatives were delivered under the auspices of the Signature Programme, which were diverse in location and focus.

Behind the Wheel supported young people and their whānau in Māngere, Auckland, to become safe and fully-licenced drivers. **Te Ara Mua - Future Streets** trialled innovative street design process in Māngere's urban centre, measuring impacts on safety indicators and the uptake of active transport modes. **Visiting Drivers** sought to improve the safety of and for visitors to New Zealand, based primarily in Southland, Otago and the West Coast. The **Eastern Bay of Plenty rural road safety case study** involved rural road safety improvements on higher-risk roads, allied with a community dialogue on road safety.

Learning for road safety

The practices, successes and challenges of the four Signature Projects inform the learning documented in this report. They show what drives successful innovative practice and culture change, as well as the conditions that support the transfer of learning from small-scale interventions to other contexts and spaces.

Key elements of successful innovation

Four key features of successful innovation are identified as making significant contributions to Signature Project successes.

Collaboration and partnerships were commonly seen as integral to the projects, with immense value derived from people with varied backgrounds and skillsets working together towards a shared goal. Such collaboration between agencies and sectors is a cornerstone of the Safe Systems approach. Partnerships can take diverse forms, each bringing unique value to an innovation project. Working in partnership also reduces risks by sharing ownership of issues and solutions, while multidisciplinary collaborations offer new approaches, resources, and perspectives.

People-centric approaches contributed significantly to the success of three Signature Projects. Such approaches value and embed citizens' participation and user experience, and input throughout the lifespan of an initiative. They challenge hierarchical expert or top-down attitudes to complex social problems, and create value and drive innovation by gaining insight, fostering new ideas and ultimately producing responsive solutions that better meet the needs of users.

Communities of practice are learning partnerships in which people come together on an ongoing basis to deepen their shared knowledge and expertise on a particular area, topic or set of challenges. This social model of learning advances innovation through enhancing collaborative efforts, mobilising knowledge, and facilitating change across various structures and organisations. Effective communities of practice are supported by systems for shared reflection and sense-making, ensuring that learning is planned and deliberate.

Building innovation capacity fosters and supports behaviours that will lead to innovative thinking and activity. Providing an organisational environment for innovative practice involves ensuring the availability, not only of necessary skills and methods at all levels of project design and delivery, but also broader structural factors including the wider system that can accommodate an organisation or proposed solution.

Fostering an 'innovation ecosystem'

Beyond the micro-level niches where innovation often develops, are the necessary conditions and drivers for innovations to grow, take root and have a broader impact. In order to learn from innovative projects, systems must be in place to ensure that knowledge is documented, embedded and available for the benefit of the future. Effective documentation and evaluation systems ensure the 'sticky-ness' of learning, so that new knowledge can be shared, absorbed, built upon, and used again and again for the benefit of future innovation, regardless of whether or not an intervention extends beyond its initial test period.

Such learning should, in turn, inform decision-making regarding any proposed scaling of innovation projects. While scaling frequently refers to the spread of a programme more widely than its pilot, there may be instances in which, for example, strengthening the depth of practice or the transfer of responsibility for an initiative to local leadership, are more appropriate approaches.

Embedding innovation requires funding, resources, and leadership commitment to supporting innovation, and ideally an innovation function or innovation teams established within organisation.

In essence, the Signature Projects were all niche-level innovations that functioned as test beds for wider implementation. However, any decision to take a project to a greater level of operation or to integrate new initiatives within existing structures and practice (business as usual transitions) must be informed by robust understanding of the wider system in which an innovation must function. Socio-technical transitions theory is of particular value in considering the necessary conditions for successful scaling, and can help highlight the systemic factors that can work to 'lock-in' or 'lock-out' certain innovations.

Using this guide

Throughout the report are infographics highlighting practical tools and processes; from key elements for successful partnerships in innovation projects, to how to foster a dynamic and spontaneous community of practice. Hyperlinks and a comprehensive reference list point to further resources and reading. This guide should be considered more advice than edict, and its use will be as varied as the applications of innovative approaches in road safety.

Purpose of this document

This guide provides some principles and suggestions for practice, to promote and foster innovation in road safety.

Key features of successful innovation are identified and explained, drawing on local learning from the four Signature Projects, and supported by good practice literature. The guide includes practical tools and advice, applicable both to incremental improvements and radical, disruptive innovations. Considerations for scaling and business as usual transitions are included, along with systems for ensuring that learning from innovative projects is embedded and available for the future (Field, Davies, King & McKegg 2019).

Section 1

**Innovation for road safety:
background and context**

What is innovation?

Innovation is both a process and an outcome, creating value for society by departing from the status quo to achieve better results.

The term innovation frequently refers to the introduction of radical new ideas for positive change, but this also includes the reflexive, iterative process of examining and assessing the present state, then redesigning it. So innovation can be seen as a continuum that includes, but is not limited to technological innovation – from the incremental process of gradually improving existing processes, products or services, to radical innovations that develop entirely new ways of doing things. Both approaches strive to do things differently and more effectively.

Innovation continuum

Lower risk and uncertainty

Incremental innovation

Steady development, doing things better:
such as new generations of products or services
"new for us"

Higher risk and uncertainty

Radical or disruptive innovation

Likely to take place via jumps or breaks from the present state: such as an entirely new service or mode of operation
"new in the world"

Less innovative



More innovative

For example:

Finding ways of overcoming barriers to implementation of known designs nationally / locally

Testing the applicability of concepts from overseas to the New Zealand context

Testing to understand the applicability of new ideas (theory) to reality

Adapted from Bason (2010) and Hirsch et al. (2017)

Innovation must work at a multiple scales to have a significant impact, from the micro level of the community where experimental alternatives to the status quo often emerge, to the meso regional level, through to the macro level of national initiatives (Marletto 2014). These distinct levels of innovation require varying degrees of system change to make sure limitations or constraints do not 'lock out' innovative approaches. Innovation is therefore not only idea generation and implementation, but also includes scaling up and integration within existing systems and processes. This ensures adaptability, resilience or sustainability within changing organisations and environments. Embedding innovation within business as usual allows innovative thinking and practices to become a routine way of working within a system or organisation.

An increasing demand for innovation

Social, economic and environmental challenges resulting from globalisation and greater complexity of markets and society, combined with the ever-present demand for value for money from public spending, means traditional modes of service delivery and problem-solving are no longer adequate. There are widening gaps between what society would like to achieve and the capacity of current systems to deliver on expectations.

Although barriers such as a culture of risk aversion and inadequate infrastructure to support innovative approaches are present, there is increasing acceptance that innovative public sector solutions are required to balance these complex and competing demands. The development of specialist spaces such as innovation labs, where government staff are supported to take risks and develop creative thinking strategies, is one way that innovation is being fostered. Similarly, many public sector bodies are seeing the value of facilitating new relationships with citizens. In New Zealand, the Better Public Services Advisory Group Report (New Zealand State Services Commission, 2011) and the Productivity Commission's 2015 inquiry into social services concluded that involving customers, clients and other stakeholders in service development and decision-making creates a state sector culture that supports and actively encourages innovation and continuous improvement.

Innovation for road safety

The gap between society's expectations, and the capacity of current systems to deliver, is starkly clear within the road safety domain, where dramatic reduction in trauma is desired, yet rates of death and harm increase. Innovation is needed to break this cycle.

A culture of risk aversion may result from the responsibility that comes with spending public money, and the short-term political consequences of getting things wrong. However the real risks with maintaining the status quo are critical in the road safety context. Currently, 45 New Zealanders die on our roads every month, a figure that increased year on year from 2013 to 2018. If the status quo is not working, then the risk of not changing how things are done is further trauma; therefore, a built-in system of innovation is needed if improvements to the road safety system can be possible (Field et al., 2018b). The challenge is that the implications of doing nothing are often generalised rather than attributed to an individual or organisation; at the same time, stepping outside business as usual can raise the spectre of risk and where blame can then be attributed. Taken together, these can create aversion to innovative practice. Risk may be very real in the road safety domain, but the consequences of not improving our transport system in a changing world will far exceed any short-term risk.

Proponents of innovative approaches point to a need for public servants to behave more like entrepreneurs and argue that the sector has a responsibility to take risks because the well-being of citizens and communities is at stake (Bason, 2010; The Conference Board of Canada, 2019). The entrepreneurs designing our smartphones continually improve them via regular software updates. Within the road safety sphere, vehicle manufacturers are delivering ever improving safety features, whereas the publicly delivered road network and the policy and rules that govern its design are evolving at a far slower pace. To counter this challenge, the Safe System framework provides a platform for continuous improvement and innovation in improving road safety, encompassing safe roads and roadsides, safe speeds, safe vehicles and safe road use.

The Signature Programme

The Signature Programme was established in 2013 to implement innovative road safety projects in a range of locations and contexts. Signature projects were to be ambitious, applying the Safe System principles and approach to reduce deaths and serious injuries. Four independent initiatives were delivered under the auspices of the Signature Programme, in different areas of New Zealand:

Behind the Wheel

The Māngere pathfinder project for the wider High-Risk Young Drivers programme: to help support young people and their whānau to become safe and fully-licenced drivers.

Te Ara Mua - Future Streets

A controlled intervention study trialling the innovative street design process 'self-explaining roads' in Māngere's urban centre and measuring its impacts on safety indicators and the uptake of active transport modes.

Visiting Drivers

A road safety programme to improve the safety of and for visitors to New Zealand: engaging with visitors at each stage of their journey but based primarily in Southland, Otago and the West Coast.

Eastern Bay of Plenty rural road safety case study

Rural road safety improvements on higher-risk roads, allied with a community dialogue on road safety. This project concluded in 2015.

Learning from the Signature Programme for road safety innovation

Reflection on the practices, successes and challenges of the four Signature projects offers a collective learning tool, providing insight into the factors that drive successful system and culture change while illustrating the realities of applying innovative ways of working to improve New Zealand road safety.

Integrating this local learning with knowledge from 12 years of good practice literature provides a unique opportunity to understand what best supports innovative practice, both within New Zealand's road safety context and the public sector more broadly.

Section 2

**Features of successful
innovation**

Features
of successful
innovation:

**Collaborative
partnerships**



What this looks like

Collaboration involves working together with people from varied backgrounds and skillsets towards a shared goal. Collaborative practice to foster innovation is most successful with a broad range of stakeholders, developing a shared vision for change with clear strategies to achieve this common purpose (Davies et al., 2018).

Collaborative partnerships can include:

Multidisciplinary partnerships between practitioners from diverse backgrounds such as different cultural backgrounds, professional sectors, academics and central and local government

Partnerships between public sector and private organisations that increase investment and stimulate innovation and knowledge-sharing (Bason, 2013; Bommert, 2010)

Cross-agency working where public servants from diverse professional backgrounds collaborate to address a particular issue or deliver specific outcomes (Sørensen & Torfing, 2012)

Inter-sectoral collaboration in which a systematic and broad consideration of concerns is integrated into the work of other groups and sectors

Public sector-citizen or public sector-voluntary partnerships that draw on the involvement of citizens, users and civil society organisations. Often utilising co-design/co-production methodologies, such partnerships are undertaken to define problems, make decisions and/or design and test potential solutions in order to better meet the needs of users (Bason, 2013). Levels of public participation can vary depending on the goals, timeframes, resources and levels of concern specific to an intervention.

Why collaboration is important

Innovation literature highlights the value of collaborative partnerships that foster public sector innovation, and the pivotal role these relationships play to ensure long-term sustainability and transition to business as usual. In the road safety setting, collaboration between agencies and sectors is a cornerstone of the Safe Systems approach. Collaborative partnerships can bring immense benefits and were important to three Signature Projects, with project members widely agreeing that success could not have been achieved through the efforts of one organisation alone.

New approaches, resources, and perspectives

The multidisciplinary approach requires an open, pragmatic attitude to adapting what is useful in a given context (Yee & White, 2016). A shared definition of the problem and vision for change among collaborators is important, but this need not come at the expense of different perspectives, agendas or approaches. In many instances, it is the tension of diverse positions that can drive innovation, bringing in new methods and ways of thinking or complementary roles across project partners. Such collaborations can however be challenging, as entrenched ways of working can dominate. The collaboration can work to highlight the barriers to progress, and an active willingness to see other's perspectives can overcome these obstacles.

Public-private partnerships can increase the capacity to innovate within the public sector, and increase private investment opportunity. Semi-public organisations (such as private transport companies owned by public bodies) can be influential in such partnerships, acting as effective mediators between public and private organisations and accelerating knowledge exchange and thus improve the innovation network (Weber & Heller-Schuh, 2013).

The Visiting Drivers Signature Project shows the value of collaboration to innovative practice. Strong partnerships were forged between central and local government (NZTA, ACC, and NZ Police and local Councils) and private sector tourism operators, working together to develop tools and joint responses to improve visitor road safety. Partners shared a common purpose, yet each brought their own reasons for participation. The tourism industry saw visiting drivers as a reputational issue since crashes and negative behaviour erode the tourism experience. All partners agreed that visitor road safety was an issue that needed everyone at the table and all saw themselves as having a role to play, yet no one group alone possessed enough levers to make a significant difference.

The diversity of perspectives and resources, along with commitment to individual and mutual goals, let the problem be tackled from a variety of angles.

Dealing with risk

Working with others to develop innovative ideas and solutions helps public organisations address cultural and organisational barriers that can stifle innovation, such as perceptions of risk and risk taking. Working in partnership with other agencies reduces threats by sharing ownership of issues and solutions. Risks are dispersed between partners, enabling new approaches and the achievement of collective and individual needs and visions. This discussed in more detail in *Building innovation capacity*, and in *Section 3: making innovation stick*.

Signature Programme collaborative partnerships

Future Streets was a multi-disciplinary project involving collaboration between transport practitioners, central and local government, researchers and the local community.

Behind the Wheel was led by ACC with a local project team collaborating with young drivers, their whānau and community leaders throughout the project's design and delivery.

The **Visiting Drivers** partnership between the New Zealand Transport Agency (NZTA), police, transport leaders, tourism operators and central and local government enabled diverse motivations, skillsets and resources to be leveraged to address a shared challenge.

How to make collaboration happen

User-insight and receptiveness to change

Benefits of public sector-citizen collaboration include new insights, ideas and receptiveness to change. The value of involving citizens in the co-design of new public solutions is now widely recognised in the good-practice literature. Participatory or 'bottom-up' approaches such as co-design and co-production enhance innovation by challenging assumptions about issues and potential solutions. The perspective and experience of the end user are sought and valued, allowing an iterative process of ideation, prototyping and testing. This ensures that solutions are relevant to users and fit-for-purpose. The value of this approach was strongly evident throughout the Future Streets Signature Project, where commitment to public engagement and co-design ensured the needs and aspirations of Māngere residents were kept front of mind through a challenging collaboration between diverse project partners. This focus on the user experience kept partners committed to their shared vision for change. However, it is important to acknowledge that maintaining a focus on these early insights through project delivery can be challenging. As time marched on through project delays, the good public groundwork that underpinned the Future Streets vision tended to be forgotten and it required a concerted effort to keep these in view.

Evaluation of the four Signature Programme projects, along with insights from best-practice literature, reveals core elements that are the key building blocks for successful partnerships for innovation (Kania & Kramer, 2011; Cabaj & Weaver, 2016). The graphic *Six elements for successful partnerships in innovation projects* on page 17 details these.

A vision and process for change

Laying solid foundations for collaboration fosters an effective team that achieves intended goals, and creates lasting cultural change. A shared vision is needed where the interests of different stakeholders are aligned. Collective agreement must be secured from the outset on what is to be achieved as well as pathways and strategies to accomplish this common purpose. New ways of working may require changes to governance structures, so innovation is stimulated not stifled, encouraging flexibility among multiple agencies with different cultures and processes.

Leadership should support innovative thinking and foster a culture of respect and trust, in which different perspectives, agendas, and areas of expertise are recognised and respected.

Dedicated coordination

The Signature Programme projects illustrated the value of dedicated coordination as a key contribution to project success. This coordination, much like the 'backbone' described in the Collective Impact literature (Kania & Kramer, 2011) ensures the day-to-day work that goes on across multiple organisations, sites and partners, as well as levels e.g., operations and governance is aligned, and learning is shared. A particular person or organisation may play this role or else it can be a collection of duties, shared by designated members of partnering organisations. For example, effective coordination and supportive governance structures sustained the collaborative practice of the Visiting Drivers project team, allowing all partners to contribute to project success. Consequently, all partners had 'skin in the game' - a willingness to work together while offering something unique from their individual sectors, with all partners implementing significant shifts or 'pivots' in activity to support visitor experience and safety outcomes.

Collaborative environment

Successful collaborative partnerships help information sharing, reflection and adaption during the project. Wenger's notion of 'community of practice,' discussed later in this toolkit, is useful when considering the qualities needed for shared learning. A community of practice shares a common identity around a topic or set of challenges, where collaborators draw on each other's experience to reflect and act on situations as they unfold (Wenger et al., 2002). Such environments can mobilise knowledge sharing between different groups, such as between communities, the public sector and project or research teams which help achieve meaningful change. Knowledge increases in an environment of shared learning and evaluation where indicators show progress as well as end goals or outcomes. This shared measurement, or "strategic learning", allows project partners to routinely ask themselves "What progress are we making?" and "How does this information help us make better decisions?", which helps track progress towards a shared goal and keeps a clear focus and course correction if required.

Six elements for successful partnerships in innovation projects

Shared vision



- Agreed common purpose/vision for change
- Shared sense of direction, including project scope and agreed pathways and strategies to achieve vision
- Shared ownership, where each sees the role they bring
- Co-investment of time/resources and shared problem solving

A learning environment



- Partnership facilitates information sharing, reflection and adaptation
- Tangible/measurable successes are established, including intermediate indicators to show progress, as well as end goals or outcomes
- 'Community of practice' is fostered with collaborators engaged in a learning partnership

Clear roles, responsibilities and process



- Adequate, resourced leadership to drive change and hold the course across partners throughout project lifespan
- A mandate for the partnership
- Designated project lead and coordination roles, with responsibilities that may be shared across partnering organisations
- Processes and structure are clear, well-documented and agreed on at project outset

Respect and trust



- Resourcing adequate for project activities or infrastructure
- Sufficient investment in project management/ leadership capacity

- Different perspectives are recognised and respected
- Partnership is a safe environment where risks are taken and frank conversations had
- A willingness of all partners to come together, bring something to the table, and adapt delivery
- Different perspectives, agendas and areas of expertise are recognised and respected

Commitment to collaboration

- Commitment to working in multi-disciplinary and inter-sectoral ways
- Supportive governance structures for collaboration including flexibility when multiple agencies are involved
- All parties have 'skin in the game' – a willingness and ability to offer something from their own sectors



Common challenges

It can be a complex task to engage diverse stakeholders, often from different backgrounds and organisational cultures and concerns. As the purpose of the collaboration is to innovate - to do things differently, often to address a complex social problem - there is an expectation of breaking new ground in many different ways.

Diverse cultures and expectations can pose challenges

The Signature Programme shows different organisational cultures and expectations can challenge partnerships, even when a project vision is shared. For example, the Future Streets experience shows the challenges and benefits of a researcher/practitioner partnership, where the diversity of the core project team impacted project delivery in a range of ways. The research team included academics and designers who consulted with stakeholders to develop and co-design new street treatments. Auckland Transport contributed managers, planners, and engineers to provide project infrastructure, developing design drawings, procurement and delivery. Project management styles across partners differed significantly, causing friction early in the collaboration. For instance, the more linear and established project management structures of Auckland Transport's engineering team, who were output driven, often lacked flexibility for the innovative and iterative plans and designs of the research team, resulting in a protracted design negotiation and development process. It also took time for both the research and transport teams to appreciate different perspectives and ways of working (Witten et al., 2017).

Securing agreement on vision, approach and timeframes is important

Innovation good-practice literature finds that shared problem definition is essential from the outset. For example, the Eastern Bay of Plenty Signature Project showed progress is hampered when partners cannot achieve this critical first step. The lack of shared vision restricted partners' agreement on goals, scope, and activities, leading to substantial debate regarding multiple strands of potential activity and changes in the area of focus. On the other hand the Future Streets collaboration agreed the broad vision of the project, but was challenged by a lack of clarity around funding and a lack of alignment of organisational timelines. The lack of a formal agreement by means of a MOU ratified by all partners, led to professional and organisational friction, with collaborators unaware of the constraints each were working within. The project timeframe was eventually extended and the necessary funding secured, but there was broad consensus that a formalised agreement was crucial and could have clarified expectations, reducing frustrations and the project delays that were encountered.

Collaboration requires strong local leadership

Local champions are important, both for local ownership of an initiative and for their partnership coordination role, corralling resources and people. The Eastern Bay of Plenty Signature project team lacked local ownership; it was nationally-led and locally-recruited rather than locally led and nationally supported. The loss of a key local leader in the project at an early stage contributed to this, adding to difficulties of decision-making and implementation. Buy-in and direction at governance level were lacking, and those partners that were locally based lacked authority, regularly needing to go back to their Wellington counterparts on decisions. Learning from all four Signature Projects demonstrate that transformational change requires local people in leadership roles with a mandate, accountability, ambition to deliver, and capacity to commit.

Features
of successful
innovation:

**People-
centric
approaches**



What this looks like

People-centred¹ approaches to innovation value and embed citizens' participation and input, and champion the end users' perspective and experience. This is widely accepted in the and human factors design literature as an effective means of gaining insight, fostering innovative ideas and ultimately developing effective fit-for-purpose and sustainable solutions that better match people's needs and behaviours (Bason, 2013; Ward et al., 2016).

Working in a people-centred way can include carrying out citizen-centred research to understand the user's values, aspirations and experience. Co-creation develops new services with people, and co-production uses people's own resources, networks and engagement to enhance service delivery.

Why people-centric approaches are important

Adopting a people-centred approach shifts from a hierarchical expert or top-down attitude to complex social problems, to instead developing solutions that are more open, flexible and responsive to change. Some practitioners term the insight obtained by engaging with users 'professional empathy', helping decision makers see how the regulations, programmes or interventions for which they are responsible fit into the context of people's lives.

Understanding what services and outcomes are valuable

People-centred approaches provide in-depth knowledge of the user experience, including how people journey through a system and are influenced by the choices, opportunities and barriers they meet. This forces developers of products or services to consider every problem from the end-point of the user and repeatedly test assumptions and solutions in real situations along the way (Ward et al., 2016).

1. Other terms include user-centric or human-centered, as referred to in the design literature

Understanding is broadened and new perspectives appreciated and existing notions of what is being delivered and how may have to be cast away. Factors influencing peoples' behaviours and decisions are better appreciated as well as the overall system outcomes being sought.

Future Streets made extensive use of people-centred approaches, adopting a community participatory design process to better understand local concerns and aspirations and inform street design solutions. A greater understanding of how local people experienced travelling around Māngere was achieved through engagement with the Local Board, a community reference group, as well as people in the wider community. Mana Whenua (Māori with historic and territorial rights over the land) provided information on indigenous perspectives; identified areas of importance, potential issues and supported the design of cultural references within the intervention. These sources of knowledge gave strong guidance for design solutions, resulting in better outcomes for road users through the delivery of improved infrastructure, more inviting public spaces and safer crossings within the area. However genuinely involving the community right through the lifespan of the project was difficult due to funding uncertainties and project delays. The design team reflected on how limited time and resources resulted in missed opportunities which could have enhanced outcomes, such as user-testing of bike lanes.

Community input increases stewardship and buy-in

Both the Signature Programme experience and good-practice literature highlight the value of in-depth, genuine stakeholder engagement for fostering community ownership and gaining traction in areas where more traditional methods had previously failed.

For example, Behind the Wheel engaged extensively with the Māngere community throughout the programme's design and development. Stakeholders widely agreed that the co-design approach was a key factor in ensuring the successes of the project. These included increased community capacity to support young driver learning and licencing, wider acceptance of the licencing system and significant local changes in the system of driver licencing. The use of co-design approaches helped to ensure buy-in to the project and aided its implementation via advocacy and connection to the broader community (co-production), including community members volunteering to help at workshops. A real sense of whakawhanaungatanga (making connections) between project partners and the community was fostered, where tasks and resources were shared, moving Behind the Wheel from a purely agency-driven

project to one that was community-led. One Māngere community leader highlighted the value of the community connections fostered: “This is a role model project for how to engage with communities. Other government departments could really learn from the way this project has “truly” engaged with the community”.

People-centred approaches employed by Signature Projects

The Behind the Wheel team trained 20 Māngere residents as ‘insight gatherers’, representing a range of types of license holders, ethnicities and suburban areas. This group interviewed 61 of their peers, either young people or their whānau, about their experiences of and attitudes to driving and licencing. Key insights drawn from these interviews informed subsequent co-design workshops in which primary target audience and behaviour change goals were confirmed, and potential solutions developed and tested with community members.

Understanding the discrete stages of the visitor experience was central in developing the **Visiting Drivers** interventions. Considering key elements of the visitor journey from the time they decided to visit enabled the team to identify opportunities to equip people with knowledge of driving in New Zealand with simple and clear advice at each stage of their holiday – planning, booking, in-flight, arriving in New Zealand, and when driving on the road.

One principal aim of **Future Streets** was to demonstrate a process for community participatory design and implementation that could be applied to future innovative road safety projects. The Local Board and a community reference group held leadership roles throughout the extensive engagement process, in which a total of 43 formal sessions were carried out in addition to numerous informal meetings.

How to make people-centric approaches happen

A people-centric approach does not require users to be part of the entire process of developing an innovative product or service, though this can happen. More frequently, users participate at specific stages of a solution's development: usually understanding a problem through gathering insight, and creating and testing potential solutions.

The **co-creation process**, where users actively participate in design and development, is a cyclic one, beginning with problem framing and building understanding, synthesising, creating solutions and finally learning, based on user insight and feedback.

Carry out citizen-centred research

Seeing the world as other people experience it is the first step in a user or people-centric approach, and citizen-centred research methodologies drawn from the social sciences are increasingly employed in order to gain this insight from project outset. Design thinking and citizen-centred literature also makes note of the need for practitioners to first acknowledge and examine their existing knowledge and value system regarding a particular issue or problem, before attempting to understand the perspective of users.

Nevertheless, often what is called citizen-centred research may in fact be researcher-centred, which should be avoided. For example, the process of data gathering may position the researcher as primary observer and learner, but its analysis may take place without the input of users/citizens. This can work to privilege the perspective of the researcher throughout the sense-making process which then goes on to inform problem definition and the design of proposed solutions.

The application of citizen-centred research and other aspects of co-design methodologies have been critiqued by some theorists, including those working with indigenous and underserved communities (Verbiest et al., 2018; Blackwell et al., 2017). If an intervention design is to be genuinely participatory, communities must be given the opportunity to lead the conversation and identify the issues of most concern to them, setting the scene for a collaboration based on shared and equal decision-making (Verbiest et al., 2018).

Citizen-centred research methods include the following (Bason 2010):

- **Observation/shadowing** – the observation of a person or place over time and can include recordings in the form of video, audio, notes, drawings or photographs.
- **Retrospective reviews** – a first-person chronological narrative about an event or series of events where the interviewer asks how events triggered experiences or feelings. Reviews offer the opportunity to hear in a person's own words how a process was experienced.
- **Ethnographic interviews** – thematic, open-ended interviews with an emphasis on flexible, in-depth questioning and capturing illustrative descriptions.
- **Cultural probes** - informants document specific aspects of their daily lives via journals, phones or cameras, capturing emotional and contextual forms of knowledge.

Create user personas

A persona is a fictional character that represents the needs, thoughts and goals of a typical or ideal user of a product or service. Personas are based on data from citizen-centred research and can keep the focus on the experience of the target audience rather than generalisations or the designer's values or experience (Bason, 2010). Personas should be short, personal descriptions with enough information to enable teams to empathise with the individual and test any new ideas through the lens of their experience.

Map the user journey

A user journey map is a visual representation of the user or customer experience as they navigate the use of a product or service. Usually based upon a persona, a journey map shows the emotional impacts of different events or experiences and can be used to enhance understanding of the present state or to detail the functioning of a proposed solution (IDEOU, 2019).

People-centric approaches in Future Streets: Developing a rich understanding of how travelling around Māngere was experienced by local people was central to the development of Future Streets interventions. One particularly successful method for gathering this information was via a stall set up in the local shopping mall with maps. This gave opportunities for people to plot their regular trips and the issues they experienced on them. The team also created a design persona; a 12-year-old independently travelling around their neighbourhood. This persona proved useful for starting conversations about user experience and testing design directions.

Run co-creation workshops with users

Workshops with citizens and other relevant stakeholders are an opportunity to refine problem definition and explore possible solutions. Findings from citizen-centred research are synthesised and key problems defined. Ideas for potential solutions are generated and the most promising developed into prototypes to be tested with users.

People-centric approaches in Behind the Wheel: Co-design was deeply embedded within the delivery of Behind the Wheel, with target audiences (16-24-year-old drivers), community leaders and the wider community heavily involved through the development and refinement of project ideas and initiatives. A co-design group was formed, including project partners, community leaders, young drivers, whānau of young people, and other creative thinkers with a fresh perspective. Drawing on key insights developed from citizen interviews, the co-design group agreed on the project's primary audience and behaviour change goals and then set about designing and testing potential interventions.

Prototype, test, prototype!

Prototypes are developed in order to make an idea or proposed solution tangible. Users may then be invited to interact with and provide feedback on the prototype, allowing an idea to be refined and tested quickly and at a low cost. Solutions that are not fit-for-purpose subsequently 'fail fast' before incurring significant investments of time or money. A prototype can take a wide range of forms, from a 3D model, 2D mock-up of digital tools or websites to a diagram that shows a structure, journey or process. Role-plays can prototype an experience from different perspectives, and a narrative or storyboard can be used to describe an event or encounter. Fictional job descriptions, advertisements or newspaper articles can also be used to elicit feedback. In the road safety space, prototyping could be a cost-effective mockup of a design, applied for a day or other period to test and engage. See IDEO's Design Kit Methods for more information on prototyping.

Utilise digital tools for information sharing and crowdsourcing

Digital technologies offer opportunities for the sharing of information and the generation of ideas on a much larger scale than users workshops or qualitative research methods. Digital tools and sharing networks such as innovation hubs, online communities and open source technologies can enable those working on public sector initiatives to collaborate with each other and people from diverse disciplines, attract specialist contributors and engage with users and border community.

Common challenges

Traditional, hierarchal cultures of public organisations can be a barrier

The ability to adopt a people-centric approach, which encourages co-design and co-production, continues to be a challenge for the public sector. The innovation literature frequently attributes this to traditional attitudes, hierarchal structures, and organisational silos. People-centred approaches to innovation may be disruptive to the existing public governance paradigm as they challenge the linear logic of the policy-making process within these hierarchical (command-and-control) organisations (Bason, 2013). The disruptive nature of people-centred methodologies is their strength because they challenge established power and decision making.

Such challenges to business as usual are necessary for genuine systems change to take place. As with other success factors for innovation, such as collaboration and partnerships, people-centric approaches require leadership committed to innovative ways of working and flexible management structures to reach their potential.

Empower the community by focusing on strengths

When working with citizens to understand and address a particular issue, or to challenge a social norm within their community, it is important not to focus exclusively on deficit or 'what's wrong'. Adopting a user-centric approach such as co-design requires that practitioners relinquish their role as 'expert' and genuinely share power with users. This process can be challenging for public servants who may traditionally be expected to be decisive and knowledgeable about the needs of citizens or communities. Reflecting on process at the conclusion of the project, the Behind the Wheel team noted how a stronger "strengths-based" approach would have added value and avoided alienating the community in which they were working.

A strengths based approach does not negate the fact that many initiatives are brought about in response to very real 'problems', and that honest conversations regarding the nature of those problems and how to address them are needed. Focusing on strengths can however shift thinking and perspective. For example, one rationale for Future Streets in Māngere was poor road safety performance and very high rates of diabetes. A strengths based framing to 'Improving Māngere streets to be a safe and healthy place to live' still allows for honest conversations, but provides a very different starting point than a focus on deficits.

Embed co-design from project outset

The importance of early problem definition and framing is emphasised by the literature, and is critical if the public engagement is to be more than tokenistic. Any problem to be addressed must start with the users, their needs and the outcomes they seek. This can sit at odds with the culture and practice of many public sector organisations, since they may more often accept what 'the top' define as the problem or task.

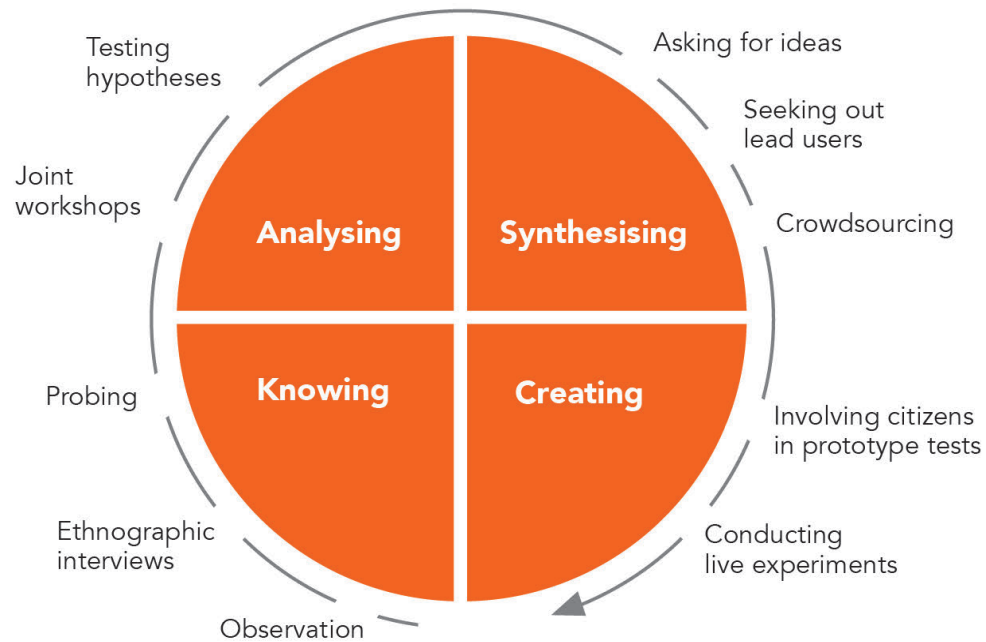
The Behind the Wheel and Future Streets projects activated wide-ranging public involvement in their design and development from the outset. Although both reflected on ways in which engagement could have been strengthened, both showed a determination to understand problems and challenges from a user perspective. The diagram below, drawing from Bason (2010) highlights the range of ways in which the public can be engaged in a design process throughout its cycle of generation, development and reflection.

Reciprocity is important

Extensive community engagement processes such as those employed by both Future Streets and Behind the Wheel can require significant time investment from individual community members along with key people in local government and community organisations. This situation does provide a risk for such projects, in that much of this work relies on the goodwill of individuals, and highlights the importance of, where feasible, recognising or remunerating the time of non-waged contributors. Reciprocity, in terms of understanding each other's way of working, is also important. This highlights the need for those in the transport planning space to understand communities and be willing to engage, while effective participation requires some understanding of road safety and planning processes and constraints. Such understanding will help build stronger joint knowledge.

Forms of citizen involvement in the co-design process

The diagram opposite, from Bason (2010) highlights the range of ways in which the public can be engaged in a design process throughout the cycles of generation, development and reflection.



Bason (2010)

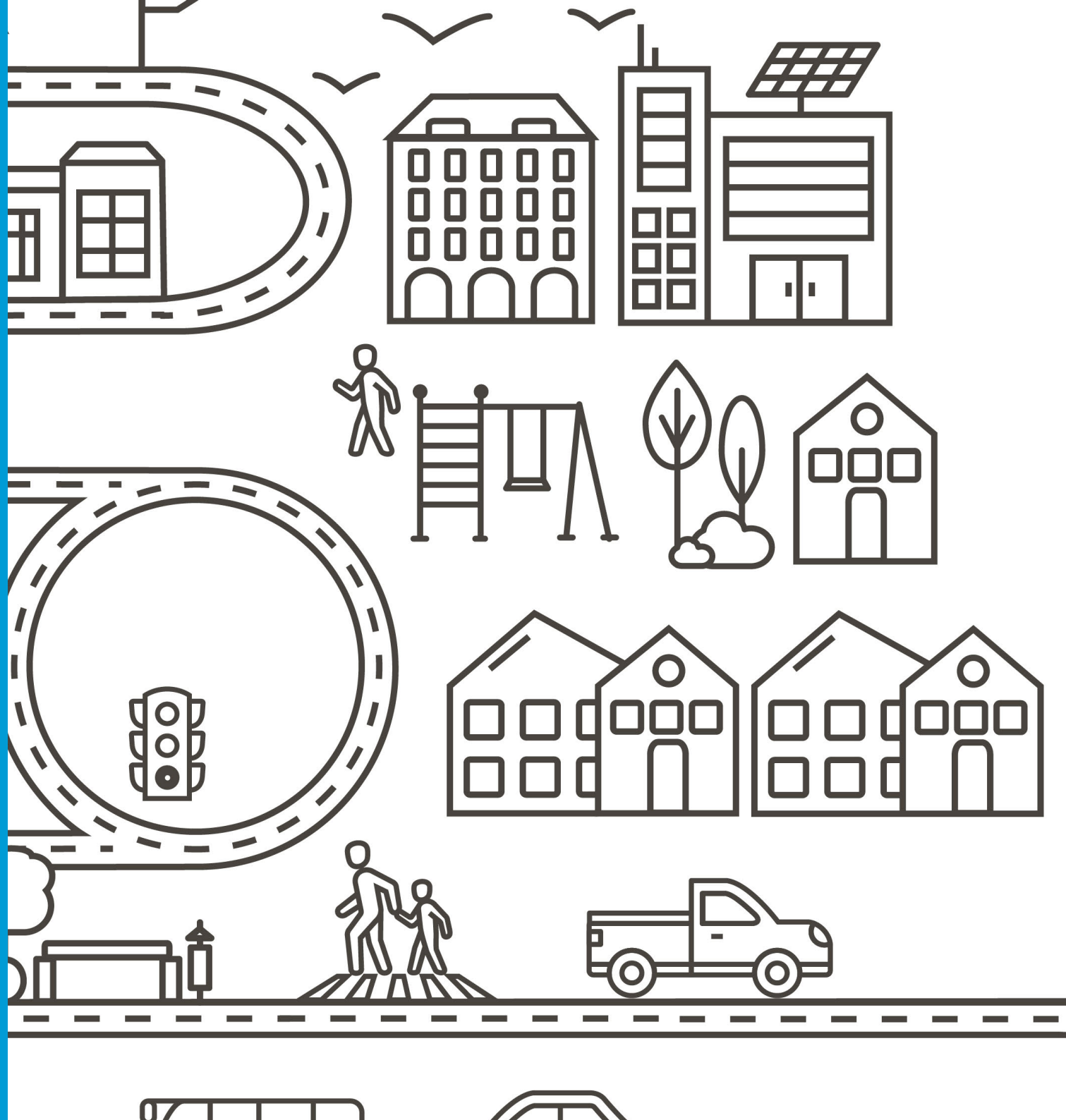
Manage expectations and ensure clarity around funding

Community priorities often differ from those of government agencies. For the engagement to be truly genuine, clarity about scope and limitations is important. This includes being upfront about what is being co-designed and what is not up for debate, managing expectations about who will be involved, when and how, and who will decide what. Feedback to communities that they were heard is also an important part of this process.

For example, consultation for Behind the Wheel revealed that the Māngere community perceived the cost of licencing to be one of the biggest barriers to improving the number of licensed drivers. However most agency partners at the table considered subsidising this cost as either not possible due to legislative constraints, or not a suitable investment. The community saw this as counter-intuitive, highlighting the importance of having clear funding conversations about what investments are possible before community engagement. Agencies need to be clear and up-front with communities about funding, including the amount, duration and scope. A lack of clarity around funding can also be a barrier to engagement with citizens. Collaboration with communities is perceived as risky, and to be avoided if funding is not in place. However funding often needs a good case and to get a good case, dialogue with communities can be a critical foundation. Connecting decision makers with communities from the project outset, such as having senior managers or councillors attend hui, can help build a case for funding community priorities.

Features
of successful
innovation:

**Communities
of practice**



What this looks like

Communities of practice are learning partnerships between groups of people who come together on an ongoing basis to deepen their shared knowledge and expertise on a particular area, topic or set of challenges. Based on the idea that human learning is a fundamentally social act, communities of practice cross over the boundaries of discipline, organisation and hierarchy with an identity defined by a shared domain or interest, and a goal of creating opportunities for shared learning (Wenger et al., 2002).

Why communities of practice are important

Communities of practice are widely acknowledged for their value in advancing innovation through enhancing collaborative efforts, leveraging and mobilising knowledge, and so facilitating change across structures and organisations.

Members of a community of practice join forces to understand and address the challenges they face individually and collectively and use each other's expertise as a learning resource in order to do so (Wenger et al. 2011).

Building a culture that values learning

Forming a community of practice represents a collective intention to steward a domain of knowledge and learn about it. Participating requires a mindset for shared learning, including being vulnerable and acknowledging what is not known as well as being brave enough to share what is. The concept of communities of practice was first proposed by learning theorists Lave and Wenger (1991) while studying apprenticeship as a learning model. Their research revealed that in this context most learning does not take place between a student and teacher but through a more complex set of social relationships with colleagues and more advanced apprentices. They proposed that the community of practice was, therefore, the living curriculum that exists for the apprentice and indeed for many other learners in diverse situations, formal or informal, novice or expert.

Participation directly impacts practice

Communities of practice exist to deliver value – to individual members as well as their teams, projects and organisations. Participants in the community gain immediate value just from taking part, for they share power and their interactions with others and produce resources that enhance their practice. Delivering value is critical because membership and participation are voluntary and take time and commitment. However the development of this shared practice may be more or less self-conscious, and therefore an intentional outcome or welcome by-product of community interactions. Practice, and negotiating the agenda of learning, may require organisations to consider how best to support and enable communities and networks to create key sites of knowledge production.

Communities of Practice for Signature Projects

Governance and working groups of all three operative Signature Programme projects came to operate as communities of practice as the projects progressed.

For example, the **Visiting Drivers** collaboration project working group functioned very effectively, with members from a wide range of industries and backgrounds who shared a desire to draw on and learn from each other's knowledge and skills. This common interest created a shared identity for those participating in the group and created a range of value across the continuum from intermediate to transformative. Future Streets involved collaboration between Auckland Transport, Māngere-Ōtāhuhu Local Board, the research team and NZTA. The **Future Streets** partnership was one that challenged its members but was able to progress constructively. A key strength of the **Behind the Wheel** project governance was its local leadership and project manager with connections across the community.

How to make communities of practice happen

Fostering community and enhancing collaboration

Core to the communities of practice model is that rather than resting with the individual, learning is a social process that takes place through interactions with others as they negotiate competence in a domain over time. Relationships are therefore both the foundation and the fuel, and must be valued and fostered accordingly. This is achieved through collegiality, reciprocity and shared expertise and ownership. Learning between members of a community of practice doesn't 'just happen', it is planned, deliberate and cultivated via practices of shared reflection and sense-making, supported by specific systems for measuring, monitoring and evaluating progress and results. Consequently, the collective learning of the group becomes a bond over time, and as they develop, communities usually build on pre-existing personal networks as well as opportunities for innovative thinking. These include processes of reiteration and revision as well as reflecting and acting on situations as they unfold.

Alignment of work programmes

Aligning plans and action is one of the advantages of working within a community of practice. Members may hold diverse roles and be working towards quite different goals or outputs, yet their engagement in the group can help ensure their activities are sufficiently linked or aligned to others. These alignments bring value beyond participation solely in one particular community of practice.

Communities of practice recognize that it is social structures that enable people to learn with and from each other. Yet because these are organic entities, conditions fostering their development are very different from those supporting the work of a team for example. Wenger et al. (2002) propose seven 'design elements' that can be catalysts for a community's natural evolution. These nurture dynamic and spontaneous communities that are best placed to foster learning and innovation.

Seven catalysts that nurture dynamic and spontaneous communities of practice

Wenger et al. (2002) propose seven 'design elements' that can be catalysts for a community's natural evolution. These nurture dynamic and spontaneous communities that are best placed to foster learning and innovation.

1

Design for evolution

Communities are dynamic and are influenced by new members and their interests. Avoid rigid notions of how a community should look or function, particularly in its early stages. Focusing simply on drawing members to the community is a valid first step, with other elements of community structure introduced once members are engaged in their shared topic.

2

Open a dialogue between inside and outside perspectives

Successful communities use both these perspectives effectively and emphasise learning within and outside the group. While community insiders have a deep understanding of issues and common challenges, an outside view can offer insight on how the group might best leverage their capabilities. Communities of practice may be structured to involve the input of outside experts in multiple ways.

3

Invite different levels of participation

Varying degrees of interest exist within a community of practice and so it is unrealistic to expect all members to participate equally or at all times. Many communities are driven by a small, active core, with a large group of peripheral members who might observe but rarely participate. Beyond these peripheral members are those who may have an interest in the community and may observe or participate from time to time. Such fringe participation should not be judged as passive because it can enhance learning for all involved. Community boundaries are best perceived as fluid and member involvement continually shifting.

4

Focus on value

The nature and source of value changes during a community's lifespan, from solving current problems to developing a systematic body of knowledge for members to draw on. It is therefore important to create opportunities for this value to be realised and harvested. It is often the everyday, informal interactions that deliver the most value yet this may not be evident immediately. Discussions of value should be added to the agenda of more formal community activities so that members and stakeholders can appreciate the impact of the community.



Develop both public and private community spaces

Different types of exchanges bring different values to the community. Public events that are open to all community members such as meetings or websites or forums are spaces for formal and informal information sharing, while also letting members experience community membership. But at the core of a community of practice is the web of relationships between community members and so much of the business of a community takes place through one-on-one, private exchanges. Public events should therefore allow time for members to talk informally, and those coordinating a community should stay abreast of individual as well as public exchanges, identifying potential value for the broader group and their activities.



Combine familiarity and excitement

It is important to foster a space providing both comfort for community members to be open, take risks and share ideas, as well as excitement and adventure to keep participants fully engaged. This balance can be achieved by providing routine community events that strengthen relationships, alongside exciting events that offer a shared sense of adventure.



Create a rhythm for the community

Communities of practice should possess a rhythm that builds familiarity and aids productivity. Events may include regular web-based activities or meetings alongside more informal gatherings. The pace should be strong enough to provide a sense of movement, but not so rapid that members are left feeling overwhelmed and unable to keep up. A combination of community-wide events and gatherings of small groups can add interest and foster a balance between the required mix of excitement and comfort noted above.

Common challenges

A community of practice differs from a team

Communities of practice may share some commonalities with some teams but their purpose, the driver for the collaboration, is quite different. A community of practice is a learning partnership related to a particular domain of knowledge, involving a social process of negotiating competence over time. Teams, on the other hand, are task-driven partnerships. Members of a community of practice may engage in the same practice while working on different tasks in different teams.

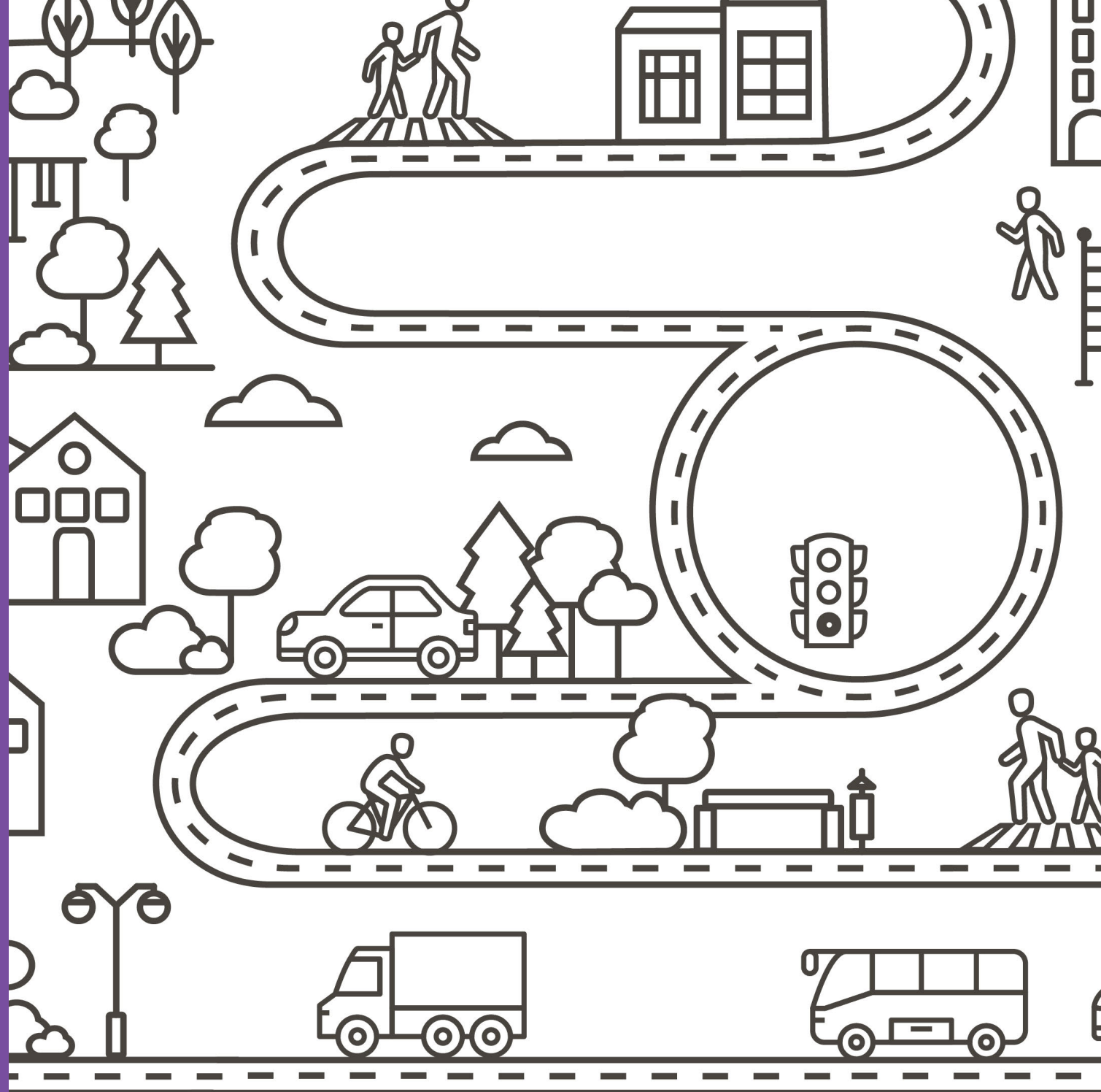
Communities of practice are sustained by collegiality, reciprocity, expertise, contributions to the practice and ongoing negotiation of the learning agenda – not affiliation to an organisation, assigned authority or a commitment to a predefined deliverable. The implications of this are that organisations need to consider how they might support and enable communities of practice and networks as key sites of knowledge production and value.

Power and professional boundaries can limit potential

Traditional organisational or management practices, and formal hierarchal structures, exist within the public sector and between communities and the public sector. But these can limit the learning potential of a community of practice, especially when they are used to define competence and exclude new members and ideas. Power, or perceived power, can therefore stagnate or prevent innovation and learning. Yet there can be tension between the need for a narrowly defined community to push an inquiry deeply, and the need to work across boundaries, which is where innovation occurs (Wenger in Farnsworth et al., 2016).

Features
of successful
innovation:

**Building
innovation
capacity**



What this looks like

To build innovation capacity requires not only the availability of necessary skills and methods for managers and practitioners at all levels of project design and delivery, but also broader structural factors including the wider system in which an organisation or proposed solution sits.

Why building innovation capacity is important

To encourage innovation, organisations must foster and support the behaviours that will lead to innovative thinking and activity. As noted previously, the most innovative organisations generate new ideas and then leverage resources behind those that are most promising, pushing them forward to ownership, execution and scaling. However implementation also demands a multi-level strategy that supports and mobilises actors from the micro, meso and macro scales (Geels, 2011; Marletto 2014).

How to build innovation capacity

Innovation needs to be built-in and requires resources, capability, time, funding and flexibility in programmes. Broad, macro-level, systemic factors influence the 'innovation ecosystem' and therefore determine whether or not a novel idea takes root and eventually supplants the dominant means of provision. The meso and macro factors that 'lock in' or 'lock out' specific innovations are discussed in the following section, *Making Innovation Stick*. However it is at the micro-level that these experimental alternatives frequently emerge (Cohen, 2012). Our present focus is on those skills and practices that, when implemented at a local or organisational level, can generate new ideas and innovative ways of working. These various scales are closely connected and mutually dependent. Therefore, those generating and developing innovative ideas on the micro (e.g. community) level must do so with an awareness and understanding of the boundaries within which they are working, and an eye to any wider system changes may be required. The challenges encountered by some Signature Projects highlighted the importance of building innovation capacity, especially Future Streets, where the system in which it operated was resistant to innovation.

Consciousness is key

Consciousness includes an understanding of the concept as well as the value innovative approaches bring, and is a natural starting point when considering the mechanisms that foster innovation. Common awareness of innovative practices, both within and outside the organisation, must be actively cultivated, built, shared and maintained.

Future Streets: Innovate and demonstrate

A commitment to innovative ways of working was deeply embedded within the Future Streets Signature Project. For example:

- A core goal of Future Streets was to trial the application of an innovative approach to street design, self-explaining roads, where design reinforces desired driver behaviour.
- The research team set out to measure diverse impacts - not only the improved road safety benefits of any interventions but also positive public health outcomes brought about by any greater uptake of active travel methods such as walking and cycling.
- A further goal of the project was to demonstrate a process for participatory community design within road safety projects. Hence, extensive community engagement and co-design took place throughout the lifespan of the project.
- Innovation capacity building emerged as an off-shoot of Future Streets, through a multi-sector workshop that built directions for making trials easier in the transport sector.

A culture that fosters both trust and divergence

Research on project teams shows that adopting innovative approaches, including idea generation and realisation, involves making one's ideas and position vulnerable. Trust in colleagues and management is therefore very important for innovation to flourish. People must perceive their team members to have genuine care and concern if they are to use their skills and knowledge for innovation (Shazi et al., 2014). Thus an organisational culture fostering innovation is one in which managers and staff are willing to embrace new ideas and share power with colleagues and users. This is necessary for the implementation of co-design methods for example. Leadership that is committed to innovation and possesses the skills to both encourage and manage divergence is also important.

Reframing the problem

The notion of reframing or redefining the issue or problem that needs 'solving' is essential to integrating innovative thinking and approaches. Reframing can also be effective in addressing the risk-averse nature of the public sector, a characteristic that is widely agreed to stifle innovation. In this context, the focus is not on generating solutions, but on developing new approaches to the problem situation itself. This methodology is particularly relevant for service innovations, which address the complex, dynamic, and networked problems, and therefore require transformational changes rather than temporary fixes (Dorst, 2015a, 2015b).

The Signature Projects employed reframing at varying stages of the intervention. Behind the Wheel reframed the driver licensing issue by considering the user journey for driver licensing, as well as the role of key influencers in the community, particularly family members in supporting norms and behaviours around licensing. The active collaboration and buy-in of community members, and local organisations and agencies, allowed many different services to promote improved uptake of licensing processes. For Visiting Drivers, a key shift in understanding and practice was acknowledging that different partners could bring their diverse expertise and resources together to enable viable and sustainable change. Key was recognising that although different partners had different motivations, all ultimately wanted the same solution of a safe and enjoyable visitor experience. Rather than limiting the issues to a 'road safety problem' it was reframed to be a wider New Zealand tourism issue. This enabled shifts in practice across all partners. Reframing opened the door for new collaborative partnerships which helped to adapt previously siloed activity and allow for a wider dispersal of road safety messages.

Embracing failure

The New Zealand Productivity Commission (2015b) suggests that an effective system which learns and innovates requires a willingness to tolerate failure and the ability to deal with failure quickly. The fear of failure is undoubtedly linked to perceptions of risk, the aversion to taking risks and the struggle to readily accept new approaches. However, failure is often part of any process, and it is how one learns from, and rapidly adapts to, episodes of failure, as well as minimising the size or magnitude of failures that is key to long term innovation and success.

Prototyping

The iterative process of developing and testing low-fidelity models is of great value for bringing ideas to life, providing opportunities for early feedback, and serving to reduce perceptions of risk of innovative process by allowing for 'fast fails'. The value of prototyping is discussed elsewhere in this toolkit with reference to human-centred approaches, because of the opportunities they provide for eliciting user input to design and development. By working in small chunks of building, testing and revising, prototypes also provide quick response (and improvements) to previous failures.

Development of core competencies

An innovation skills profile has been developed by the Conference Board of Canada Centre for Business Innovation, listing the key skills for both team members and managers that contribute to an organisation's innovation performance. These include seeking new ways to create value; rethinking design and delivery; assessing and managing risk; engaging others; listening to and valuing diverse opinions and perspectives, and accepting feedback. Likewise, the Australian Government Public Sector Innovation Network asked members for suggestions on what actions are most important for those seeking to work in innovative ways and a list of key 'gateway' behaviours for innovators and those supporting or leading innovation was subsequently compiled.





Common challenges

Problem definition is a critical first step

The first Signature Project was in the Eastern Bay of Plenty. This project concluded early in 2015 and did not progress or continue as long as the other Signature projects did. A key reason for this was the failure to agree on a mutually agreed problem that different local partners could address. In contrast, the three operative Signature Projects all had a clear understanding across partners that there was a problem, that it needed addressing and that different partners could use expertise and resources to solve. These projects reframed the nature of the issue each was dealing with, allowing new responses to emerge.

Ensure adequate resourcing for project activities and infrastructure

The Eastern Bay of Plenty Signature project suffered from a shortage of local capacity to develop and implement a complex project with multiple local, regional and national stakeholders. Progress on the project was hampered at many levels by being discretionary and peripheral to people's work programmes. In contrast, Visiting Drivers had two experienced team members from within the Transport Agency to drive action across organisations and sectors; Behind the Wheel had an experienced project manager with expertise in driver licencing to forge alliances with the community; and Future Streets had a funded multi-disciplinary research team working alongside Auckland Transport.

Embracing experimental error is hugely challenging in the road safety context

It is important to acknowledge that the road safety domain is very different from the settings in which many products or services are developed; the stakes are high as failure can result in trauma or death, legal risks, and intense interest and scrutiny from many sections from the community, including the media, is ever-present. Such factors work to foster an environment of risk avoidance and conservatism that stifles experimentation and subsequent reflective learning (Opit and Witten, 2018). However, managed learning can still happen in a safe way with the support of close monitoring and commitment to address any issues that may arise. Strategies for overcoming the barriers to experimentation were explored by road safety practitioners and other stakeholders in a workshop titled Making Trials Easier, conducted in research that followed and built on the Future Streets intervention (Hirsch et al., 2017).

Business as usual, embedding learning and taking projects to scale

The transfer of learning from small-scale interventions to other contexts and spaces is one of the big challenges for innovation. This transfer can take a range of forms at different points in the process. Most important to this process are 'scaling out' or 'scaling up' to take a project to a greater level or depth of operation; 'business as usual' to integrate new initiatives within existing structures and practice; and 'scaling deep', through creating culture change so that the idea underlying an innovation is supported and embedded (Moore, Riddell & Vocisano, 2015). 'Scaling deep' is closely related to sustainability and ensuring 'sticky-ness' through introducing systems to ensure new learning, change and intervention resulting from the innovation remain.

Taken as a whole, the Signature Projects can be compared to a 'concept' product that includes a range of innovations from which more workable solutions can and have been developed. In essence these were all test beds for wider implementation, and so these three aspects of transfer have particular importance to these projects. Scaling out involves extending an innovation project to a greater level of operation, in order to reach more beneficiaries. Approaches to this can be varied, according to the different kinds of 'scaling' required. Frequently this refers to an expansion in an initiative's reach, replicating a local success more widely, for example in multiple settings, perhaps involving a process of mutual adaptation to meet the needs of a new context. Geographic proximity can be a further kind of scaling, where the goal is increasing the number of engagements or interventions within a bounded area.

However scaling does not simply encompass the spread of a programme more widely than its pilot. Additional dimensions include systems changes (scaling up) such as strengthening the depth of practice and challenging norms and beliefs in behaviours and practice, or changing policies, regulations or resource flows, and recognition of the key role of culture (of people, the organisation, system or community) in facilitating change (Moore, Riddell & Vocisano, 2015). In addition there may be a shift in responsibility for ownership and growth, from external actors, central government agency for example, to internal, local leadership with the capacity to sustain this new initiative (Coburn, 2003). These aspects also contribute to the "sticky-ness" of the projects, and are discussed again below.

The innovation ecosystem: as much social challenge as technical puzzle

Any initiative that seeks to apply an innovative approach beyond its initial test bed must be mindful of the wider system in which the activity must function. The notion of socio-technical transitions is increasingly drawn on by theorists and practitioners of innovation processes as a framework for understanding the high-level, structural factors that either 'lock-in' or 'lock-out' the potential for innovative practice.

A socio-technical approach asserts that innovative change is never neutral and apolitical. Nor is it purely technical (Opit and Witten, 2018). Technology rather is just one among a number of structural elements, including relationships among people, policies and systems, that influence the potential for change, new approaches and departures from the status quo. A socio-technical approach proposes that in many cases, the technical solutions to innovation challenges already exist; of key importance is having the organisational structures that enable their proper use. This approach signals a shift in focus towards relationships rather than actors, on actions rather than functions. It is the purposeful action and interaction of individuals and groups and with policies and systems that are at the heart of socio-technical inquiry (Marletto, 2014).

The importance of leadership

Leadership that supports and embraces the advocacy for, and implementation of, innovative thinking and approaches is vital if innovation projects are to reach their potential. A commitment to flexible ways of working is also essential, particularly when collaboration is involved. Managers have a large influence on how innovative approaches are disseminated across an organisation, and the extent to which strong, engaged leadership, both at a community and senior management level, played a pivotal role in the successes and challenges of all Signature Projects, driving change and maintaining a focused project direction or scope across partners, have been identified throughout this document.

As well as being important for micro level innovations, there is a strong need for leadership in innovations that challenge existing structures. Leadership from within NZTA was key success factor for the Visiting Drivers Signature Project. The agency took ownership of the initiative, allocating funding and setting up the required systems before then bringing in project partners.

These partners were subsequently given the freedom to work as the expert in their areas, and to develop and deliver solutions. NZTA's leadership was noted by one project member as very good at keeping people focussed on solutions rather than problems, and bringing people back to the issues when they weren't thinking about things from a collective point of view. Programme leadership was able to drive change and hold the course across partners. There were also seen to be supportive governance structures for collaboration, along with flexibility to manage delivery across multiple organisations (Field & McKegg, 2018).

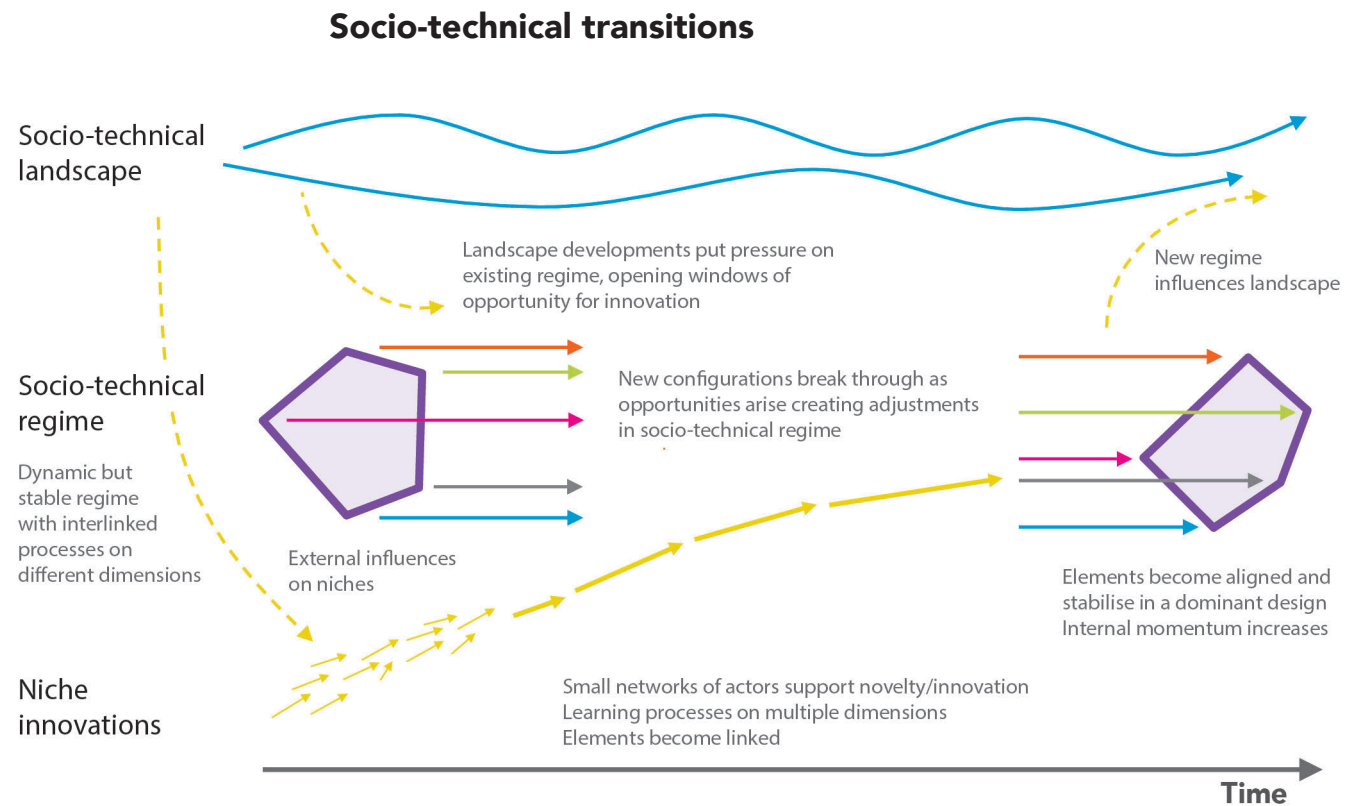
Drive Community Toolkit: Local-level innovation taken to scale

The Drive Community Toolkit is an example of learning from a local innovation taken to scale. The toolkit grew out of one of the nine initiatives developed by the Behind the Wheel intervention – Test Preparation, set up to ensure young people were adequately prepared for their practical driving tests. The Test Preparation initiative developed with the Māngere community included an in-car “test readiness” assessment, supporting and shepherding young people to sit their test, as well as the design and delivery of test preparation workshops. Test Preparation was seen as one of the most successful of the project's initiatives, largely due to the development of an engaging toolkit to guide workshop delivery. This comprised interactive resources, activities and presentations to support providers/facilitators to deliver engaging workshops that were aligned to best practice.

The 'Drive' toolkit was the scaled product built on Behind the Wheel's local test preparation success. Consultation with over 50 community driving education providers across New Zealand ensured the training resource supported the driver education already in place. The resulting kit comprises 14 physical resources that support community providers to make learning to drive accessible, engaging and fun, regardless of trainer teaching experience or level of license held by participants. The resources include virtual reality 'Drive' goggles and a card game titled 'Drive Go' which helps young people become familiar with the road code. Uptake has been steady across New Zealand, and the toolkit also won a Best Design Public Good award in 2018.

The challenge of working within a system that preserves the status quo

Socio-technical transitions are changes that alter the configurations of whole systems. For such transitions to take place, change must occur within micro-level niches (or innovation sites), socio-technical regimes (the 'deep structure' of rules and systems that stabilise current practice) and the socio-technical landscape (the wider context that influences niche and regime dynamics, such as trends, values and ideologies) (Geels, 2011).



Geels (2011)

It is in most cases the micro-level niches, often protected spaces where innovation can flourish, where experimental alternatives to the status quo emerge. The Signature Projects are all examples of niches where innovation was given permission to flourish. However it is when these innovations mature to a point at which they could supplant the dominant means of provision that genuine change takes place. Yet, according to socio-technical perspectives, such shifts are hugely challenging because there are many ways in which the actors within a dominant system work to preserve its position (Cohen, 2012). New innovations must break through to the socio-technical regime as opportunities arise, creating adjustments, stabilising and eventually establishing themselves as the new regime, influencing the socio-technical landscape (Geels, 2011). Such extensive system change therefore requires that supportive changes take place at the meso and macro level, through purposeful and coordinated action of a coalition of actors. Organizational, political and social system influences must be systematically addressed along with any technical challenges (Field et al., 2018a).

Thinking beyond constraints

Although systemic factors may work to 'lock out' certain innovative approaches, being open to the system limitations or constraints uncovered by the innovation process is an important quality for those seeking to innovate. The following questions may be helpful in considering the potential of local (micro) level innovation to address a given problem, vs a need for regional (meso) or national (macro) level change:

- What are the things outcomes local level innovation can achieve?
- What are the constraints that are present at a system level that may work to limit scope and form of innovative approaches?
- What are the opportunities to address these constraints, even if they are beyond the scope and capacity of the original project mandate?

Overcoming risk-avoidance and conservatism: a socio-technical challenge for Future Streets

In the 2018 report 'Unlocking Transport Innovation' Opit and Witten (2018) employ a socio-technical approach to explore the organisational processes and systems that led to the rejection of the trial of an innovative design of pedestrian crossing proposed as part of Future Streets. In analysing what processes within AT and NZTA prevented the introduction of the trial, the authors concluded that the presence of certain 'logics' within the organisation's culture worked to preserve the status quo and block the testing of experimental alternatives. The logics identified were:

Problem definition and framing

New ideas are framed in relation to pre-defined problems, and their legitimacy assessed accordingly. As such, the proposed trial crossing was not deemed beneficial enough to warrant trialling. This limits space for innovation because it ties the search for solutions to a restricted perception of what constitutes a problem.

Desire for consistency

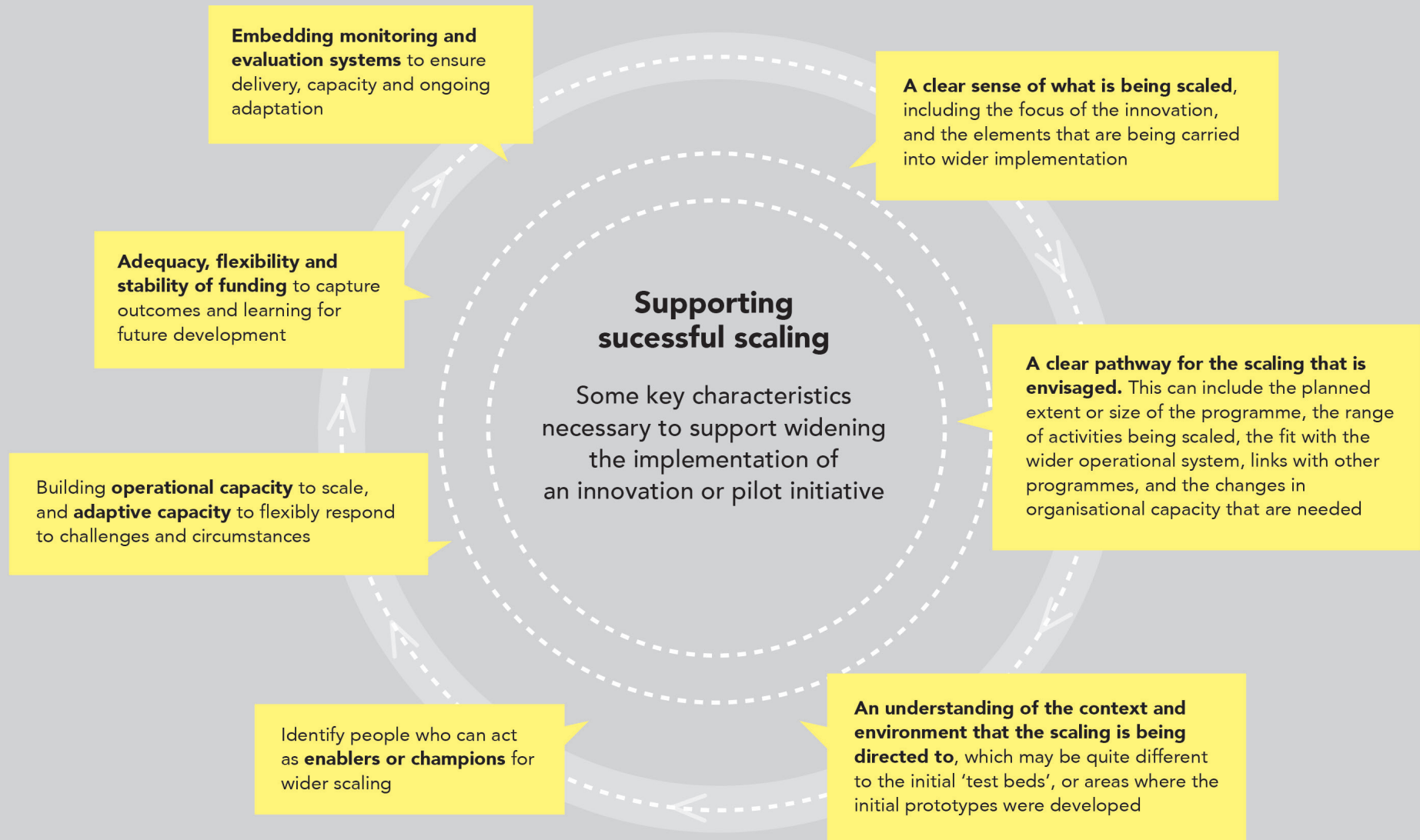
A requirement for predictability and the pressure of legal accountability fosters a culture in which change (and therefore greater inconsistency) is seen as unpredictable and risky. New ideas are subsequently devalued and seen as divergent and unnecessary. The authors assert that when change does take place there is a preference for gradual evolution over revolution.

Shared ownership and collective agreement

A focus on 'shared ownership', where 'buy in' and collective agreement are seen as an important aspect of good decision making, maintain the status quo. Technology is embedded within existing socio-technical relationships that favour stability and the use of existing technologies, fostering a culture that resists change.

Risk-avoidance and conservatism

Managing and avoiding risk are key concerns within transport planning. As noted above, new trials offer uncertain outcomes, and can therefore be seen a liability to be avoided. Organisational structures also work to limit exposure to risk by restricting individual decision making, which in turn restricts opportunities for innovation and adaptation as projects evolve.



The Signature Projects are as important for the systemic barriers that they reveal, as they are for the impacts they have had on their participating communities. If we simply treat innovations as local level pilots, we lose sight of the broader system levers and changes that we need to scale local innovation. Innovation 'niches' like the Signature Projects provide locations for learning to take place, and to challenge existing rules or ways of working. Often, there can be a mismatch between the innovation itself and the capacity of the system to respond in a way that enables scale.

Looking ahead: 'sticky-ness' and ensuring learning has a lifespan

Discussions of how best to foster transfer of knowledge and practice from innovation efforts sometimes refer to the 'sticky-ness' of learning. Knowledge and practice which is 'sticky' is shared, absorbed, built upon, and used again and again for the benefit of future innovation, regardless of whether or not an intervention extends beyond its initial test period. Achieving this is critical to successful scaled innovation.

Effective documentation and evaluation systems ensure the 'sticky-ness' of any learning. This extends its lifespan beyond that of the innovation project. Sometimes new knowledge is acquired, yet how it might be usefully applied is not known at the time, and such systems ensure learning is preserved and available for future use. 'Strategic learning' approaches emphasise the value of embedding evaluation as a key part of intervention design. Short-term data can enable groups to learn quickly from their work and adapt their strategies accordingly, while long-term learning pushes broader innovation efforts and outcomes (Cabaj & Weaver, 2016). This is also consistent with developmental evaluation.

Developmental evaluation can be built in specifically to support this sort of learning; ensuring learning happens, is documented along the way, and is applied in order to inform decisions about next steps (Patton, McKegg & Wehipeihana, 2016). The evaluative question cycle (Davidson, 2004) is a useful model for ensuring that strategic learning continually takes place and is acted upon, and involves three stages of evaluative thinking:

1. **What happened?** (What progress are we making?)
 = A process to assemble an evidence base

2. **So What?** (What are we learning?
 How well are we doing?
 How valuable is it; according to whom?)
 = A process to interpret and judge the evidence

3. **Now what?** (What does this mean for our next set of actions?)
 = A process to make action plans / recommendations
 about what we are going to do next.

Knowledge mobilisation is a further approach that facilitates the spread of learning both from research and practice to build on initial success, scaling innovative thinking more widely. Learning from evaluating the use of interventions in practice is fed back into the broader evidence base and into future practice (Powell et al., 2016). A knowledge mobilisation approach highlights the importance of tailoring knowledge-sharing strategies to the learning needs and goals of those who are going to apply the information (Worton et al., 2017). This helps achieve 'sticky-ness' because for knowledge to be useful it must be accessible and relevant.

A broader view: looking beyond the innovation

Socio-technical systems theory offers a useful framework for the important work of questioning how wider systems enable or stifle innovation. The evidence from Future Streets viewed through this lens (Mackie et al., 2018; Opit & Witten, 2018) uncovered ways in which the transport planning system is resistant to innovative approaches. Opit and Witten (2018) frame these barriers as core organisational logics; problem definition and framing, a desire for consistency, attachment to shared ownership and collective agreement and an embedded culture of risk-avoidance and conservatism, that are reinforced through relationships and organisational structures and processes. The rules and regimes (Geels, 2011) that govern this wider system in turn determine the ability of novel approaches to take root, flourish and potentially surpass the dominant means of provision.

The Signature Programme experience and the broader innovation and socio-technical systems literature therefore raise some significant, probing questions about the nature of this wider system and its current capacity to foster innovation:

- Is there leadership support for innovative practice in the face of local or sectoral resistance?
- Are coherent and stable teams able to be developed and work with continuity on the innovation?
- Is there innovation capability and resourcing within the system?
- Are attitudes to risk constraining or preventing innovation from occurring?
- Are standards and rules stopping innovation occurring? Is the cost of maintaining the status quo and ignoring lost opportunities being considered?
- How is an innovation function within road safety being developed nationally and locally?

Section 4
Conclusions

Conclusions

The successes and challenges of the four Signature Projects offer considerable opportunities for reflection and learning. They show **what drives successful innovative practice** as well as the conditions that support the transfer of learning from small-scale interventions to other contexts and spaces. This guide has sought to present these conclusions, supported by good-practice literature, as well as to provide practical approaches to support the design and implementation of innovative road safety projects, applicable both to incremental improvements and radical, disruptive innovations. Four key features of successful innovation are identified as making significant contributions to Signature Project successes:

Collaboration and partnerships for the immense value derived from people from varied backgrounds and skillsets working together towards a shared goal. Such collaboration between agencies and sectors is a cornerstone of the Safe Systems approach. However, we see that collaborative partnerships can take diverse forms, each bringing unique value to an innovation project. Working in partnership with other agencies also reduces risks by sharing ownership of issues and solutions, while multidisciplinary collaborations offer new approaches, resources, and perspectives.

People-centric approaches value and embed citizens' participation and input throughout the lifespan of an initiative, and contributed significantly to the success of three Signature Projects. Such approaches challenge hierarchical expert or top-down attitudes to complex social problems. They create value and drive innovation by gaining insight, fostering new ideas and ultimately producing solutions that more open and responsive, to better meet the needs of users.

Communities of practice are learning partnerships between groups of people who come together on an ongoing basis to deepen their shared knowledge and expertise on a particular area, topic or set of challenges. This social model of learning advances innovation through enhancing collaborative efforts, leveraging and mobilising knowledge, and so facilitating change across various structures and organisations. Effective communities of practice require systems for shared reflection and sense-making. Learning does not 'just happen', rather it is planned and deliberate.

Building innovation capacity fosters and supports behaviours that will lead to innovative thinking and activity. Providing an organisational environment for innovative practice involves ensuring the availability, not only of necessary skills and methods at all levels of project design and delivery, but also broader structural factors including the wider system that can accommodate an organisation or proposed solution.

In order to learn from innovative projects, so they have a lifespan beyond the discrete project, systems must be in place to ensure that knowledge is documented, embedded and available for the benefit of the future. Effective documentation and evaluation systems ensure the **'sticky-ness' of learning**, so that new knowledge can be shared, absorbed, built upon, and used again and again for the benefit of future innovation, regardless of whether or not an intervention extends beyond its initial test period. The value of strategic learning approaches that embed evaluation as a key part of intervention design is highlighted by the Signature Programme experience.

Such learning should in turn inform decision-making regarding any proposed **scaling of innovation projects**. While scaling frequently refers to the spread of a programme more widely than its pilot, there may be instances in which, for example, strengthening the depth of practice or the transfer of responsibility for an initiative to local leadership, are more appropriate approaches to scaling.

In essence, the Signature Projects were all niche-level innovations that functioned as test beds for wider implementation. However, any decision to take a project to a greater level of operation or to integrate new initiatives within existing structures and practice (business as usual transitions) must be informed by robust understanding of the wider system in which an innovation must function. Socio-technical transitions theory is of particular value in considering the necessary conditions for successful scaling, and can help highlight the systemic factors that can work to 'lock-in' or 'lock-out' certain innovations.

The factors discussed above are part of fostering an 'innovation ecosystem', the necessary conditions and drivers for innovations to develop, take root and have an impact beyond their micro-level niches. This guide should be considered as such, more advice than edict. Different aspects will be applicable to different projects at different stages of development.

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