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Joining the Dots:

Connecting different transport modes

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Contents

Introduction 4
Why now? 6
How do we connect the dots? 10
What's next? 14
Contact us 16

Joining the Dots: Connecting different transport modes

Introduction

"An accessible, integrated and connected transport network enables commuters to seamlessly complete their end-to-end journey, delivering measurable benefits."

We have never invested more in transport infrastructure, yet the challenges we face are as pressing as ever:

- Australian communities are changing, with greater reach and more complex needs
- Severe weather events and planned major events are increasing
- The pressure on our transport infrastructure is increasing at a time of fiscal constraint.

The customer won't wait, and nor will our major events. We need to solve these issues now. By joining the dots of our existing (and future) transport network, we can create a more accessible and connected transport network. But what does this mean in practice?

- Provide customers with access to information to plan their end-to-end journey in one place
- Ensure the information is timely and meaningful (e.g. delays, accessibility needs)
- Enable their preferences – considering both public and private transport options.

How is this different to today?

The transport information our customers have today is primarily by mode, and presents challenges for users who have limited knowledge of the transport network, those looking to integrate private or active transport, and those with accessibility challenges. It may enable customers to plan part of their journey (e.g. rail travel) but not the end-to-end journey (e.g. travel to and from the train station, or a connecting bus).

Today, most investments in our transport network look to address a targeted component of the customer journey. For example, upgrading a train station to improve accessibility and resilience, or widening a road to allow for greater traffic flow. However, this does not address the overarching connectivity of the network and how a customer best navigates their end-to-end journey.

There is a five-year pipeline of $126 billion for transport infrastructure projects in Australia, which is over 59% of the total public infrastructure pipeline. Given the scale of the pipeline, there is limited capacity in the supply chain to accommodate further projects and very limited appetite for further investment.

To create a more accessible, active and connected transport network, we need to drive greater utilisation of existing infrastructure and assets, and help to channel customer demand from congested parts of the network towards public and active transport routes.

Connecting the dots by better leveraging our existing infrastructure and integrating active transport will help commuters get from A to B in a way that works for them. Done well, an accessible, integrated and connected transport network enables commuters to seamlessly complete their end-to-end journey, delivering measurable benefits:

- Better leveraging of existing transport infrastructure
- Improved visibility and use of accessible transport options
- Increased use of public and active transport.

More accessible and connected transport encourages commuters to leave the car at home and shift to public transport options, increasing usage of the passenger transport network and utilisation of existing transport infrastructure. This is a more sustainable, long-term solution and reduces our reliance on new infrastructure as we prepare for major events and the continuous changes experienced in our cities and regions.

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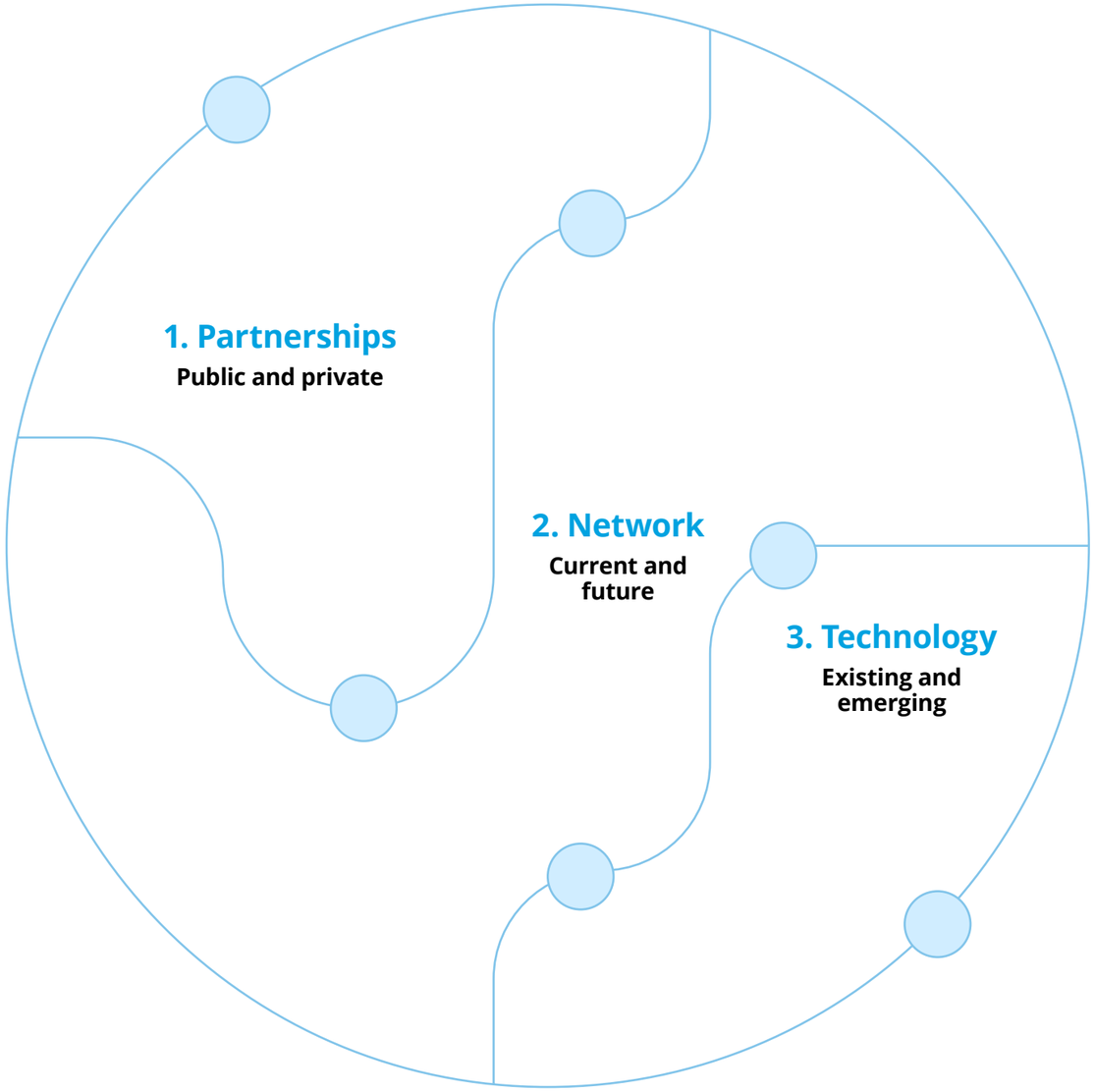
Bringing this to life requires a more holistic consideration of the transport network:



Why now?

As cities grow, or host major events, the connection between different transport systems becomes more important.

Across Australia, we are navigating population and tourism growth, as well as major event preparation. We explored global case studies to better understand how other cities navigated these challenges to improve the connectivity of their transport networks.

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Los Angeles

Need
Major event

Response
The “GoLA” app reduces LA congestion by integrating public transit, ridesharing, biking and walking routes, cutting traffic and emissions.

London

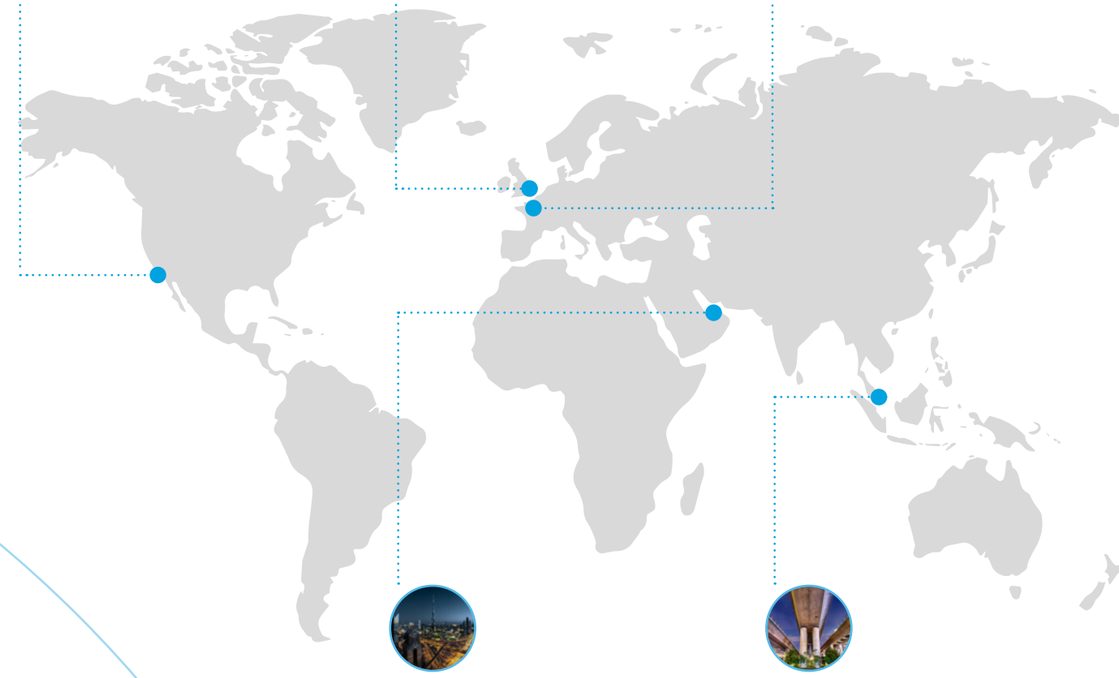
Need
Population growth

Response
TfL integrates roads, transport, security and emergency services for real-time management and proactive planning.

Paris

Need
Population growth

Response
The “Jelbi” and “Whim” apps integrate public transit, bike-sharing, car-sharing and ride-hailing into one platform for planning and payment, leveraging real-time data and GPS to enhance connectivity and accessibility.



Dubai

Need
Population growth

Response
The Enterpise Command and Control Centre (EC3) uses AI to integrate transport planning, monitoring and incident response, providing real-time information to customers as part of the Smart City initiative.

Singapore

Need
Tourism growth

Response
Real-time sensors are connected to a city-wide digital twin, enabling simulation and optimisation for sustainable urban planning and better infrastructure use.

Los Angeles

In the lead up to a major event, the city developed an app incorporating public transit, ride-sharing, biking and even walking routes. The app uses advanced algorithms and open data standards to provide users with optimised travel options based on time, cost and environmental impact. This has helped mitigate LA's notorious congestion by promoting alternative transport modes, thus reducing traffic and emissions.

London

Transport for London (TfL) delivers a highly connected transport network across London, integrating roads, passenger transport, security and emergency services to provide real-time management as well as proactive planning and customer information.

Paris

Paris has led the way in integrated platform delivery, using tools like Jelbi and Whim to combine public transport, bike-sharing, car-sharing and ride-hailing services, allowing users to plan, book and pay for journeys through a unified app. In the background, real-time data analytics and GPS tracking facilitate seamless connectivity between modes, enhancing user experience. Paris transport authorities facilitated this by fostering strong partnerships with stakeholders and implementing robust cybersecurity measures, leading to improved accessibility and user satisfaction.

Dubai

Dubai's Roads and Transport Authority (RTA) launched the Enterprise Command and Control Centre (EC3) as part of the Smart City initiative. The EC3 uses AI and other emerging technology to connect transport network planning, monitoring and incident response, while delivering better connected and up-to-date information to customers.

Singapore

The Singapore Land Transport Authority addresses its high prevalence of tourists and hire cars through the application of real-time sensors, connected to and informing a city-wide digital twin. This enables real-time simulation and optimisation, and informs more sustainable urban planning to better use the existing infrastructure and transport assets.

So what does this mean for Australia?

While each example has its own nuance and context aligned to a specific outcome, there are consistent themes to consider in "how" they delivered this change:

Integration of partners

Government and transport authorities play a key role in enabling and facilitating a connected transport network, but they cannot deliver it alone. Transport operators and technology providers are key partners in providing modern services, gathering and using data, and communicating to the public in a way that can be tailored to meet their requirements and preferences. As shown in Los Angeles, bringing together partners and modes is critical to maximising the effectiveness of current infrastructure.

Integration of time horizons

Collapsing time horizons and connecting strategic transport planning with operational management and responses has proven to enable a more connected transport network that provides seamless journeys from door to door. Connecting this with technology enables long-term and real-time optimisation of transport operations. As shown in Singapore, connecting deep insights on real-time network operations enables more effective planning and optimisation of that network in the longer term.

Integration of technology

Effective use of current and emerging technologies, such as digital twins, simulation and AI, is integral to the more effective utilisation of transport infrastructure. It's also key to providing customers with the right information at the right time, so they can make informed choices about their transport options. As shown by Dubai's E3 facility, technology will play an ever-growing role in understanding, monitoring, controlling and optimising how travellers move and connect across the transport network.

By applying these learnings, we can meaningfully tackle known issues and deliver a more sustainable and connected network for Australians.

How do we connect the dots?

It won't be the same solution for each state, or even each city or regional area. It won't solve every transport challenge we face. But it will alleviate some of the pressure when applied for an aligned purpose to achieve a defined outcome.

This means we can **identify key opportunities** for more accessible and connected transport to **reduce stress and address specific challenges in our network** in a relatively short time frame.

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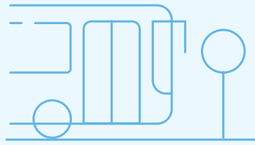
How can we do it?

Five interconnected steps:



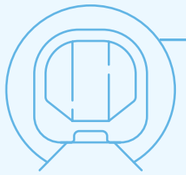
1. Agree on the opportunity
The part of the network and measured outcomes.

2. Understand the selected network
Current and future transport infrastructure.

3. Define the ecosystem
From customers to agencies, operators and suppliers.

4. Identify Partners
Private and public partnerships to support the delivery of the outcomes.

5. Implement technology
Underpinning technology that connects the dots.



1. Agree on the opportunity

The first step is being clear and gaining alignment on the opportunity, the broader enabling environment and the outcomes to be delivered. Government can set the agenda to connect customer requirements with service providers, as well as the policy, regulatory and investment frameworks that enable service providers and partners to meet these customer requirements. By establishing clear outcomes and measurable metrics, this provides the certainty and clarity of direction to enable the broader ecosystem to invest.

2. Understand the selected network

To manage and optimise the network now, there must be a connection into longer-term planning to inform decision making and investment. Service providers and operators can provide insight into operational constraints, which government agencies can feed into the long-term plans for the network. This enables us to identify the challenges and capacity of current transport network infrastructure, and what we'll need to address these in the future.

3. Define the ecosystem

Effectively addressing these challenges requires a clear understanding of the ecosystem's players, the role they play and their unique needs. At a high level, these players can be grouped into four key types:

- **Customers** – Customers are any user of the transport network, including public transport users, drivers, pedestrians and freight operators, and many more. Their needs vary, yet they are ultimately looking for safe, reliable and connected transport to get to and from their destination.
- **Agencies** – Set standards and regulations, promote interoperability, user safety and data privacy, while providing a central coordination and planning function.
- **Operators** – A mix of public and private transport providers who operate across the network.
- **Suppliers** – Provide specialised capabilities like data management, payment processing, infrastructure delivery and maintenance, as well as software and hardware development.

4. Identify Partners

Integration and partnerships between these key players are key to enabling a more connected transport network. Government can act as integrators, facilitators and suppliers of the different service types to create a single connected transport network. Frameworks and standard contracts set a clear expectation across the ecosystem, and service level agreements enable partners to align in their responsibilities and provide more consistent customer outcomes. Providing visibility of customer demand and key service connection points enables partners and suppliers to focus their services where it serves the greatest need. This approach helps to level the playing field, reduce barriers to entry and ultimately foster a thriving and equitable transport system.

5. Implement technology

Finally, a robust data and technology framework is the cornerstone of a more modern, connected transport system. Establishing consortiums of technology providers and other suppliers enables effective collaboration, and rapid identification and deployment of new and innovative solutions. This can be further supported through innovative procurement models, co-designing data and privacy standards, APIs to provide access to relevant and up-to-date data, and establishing common platforms for application development and deployment.

What's next?

We have an opportunity to meet changing customer needs and creating more connected and accessible journeys. This will be a significant step forward for our cities and regions in solving long-term transport challenges.

From local councils to state government departments and events management, we have the opportunity to enable more accessible and connected transport in a way that makes better use of our transport infrastructure – now and in the future.

This will be enabled by public and private partnerships, adapting the roles played by government agencies and industry players to collaboratively deliver a modern, more connected transport system.

More integrated transport enables greater access and participation in public transport. This drives improved economic outcomes for all participating cities and regions. The technology is ready, and so are our customers. Let's make it happen.

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