

A photograph of two young women on a bus. The woman in the foreground, with long brown hair and sunglasses on her head, is holding a black smartphone and looking at the screen. The woman next to her, with curly hair and glasses, is also looking at the phone and smiling. They are standing near yellow handrails. The background shows the interior of a bus with windows and lights.

User centred design

Getting better bang for your transport buck



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Intro

To enhance the quality of life for people in cities, transport planning must be user-centric, with a focus on meeting the needs of the people who use the transport system. User-Centred Design (UCD) is an approach to design that places the needs and preferences of end-users at the forefront of the design process.

In Australia, we're starting to see some great examples of the application of UCD to improve the accessibility, safety and convenience of transport. By enhancing the user experience of public transport, governments can steer transport users toward the modes and projects that offer the best overall value to tax payers. In essence, spending less money to create better outcomes.



Design frameworks that feature UCD

There are several user-centred design thinking frameworks and methodologies that focus on the user throughout the design process to create solutions that truly meet their needs. They include:

The Double Diamond: Developed by the UK Design Council, this framework emphasises the importance of divergent and convergent thinking in the design process. It involves four stages - Discover, Define, Develop, and Deliver - which help ensure designers are creating solutions that are truly user-centred.

The Design Thinking Process: This framework involves five stages - Empathise, Define, Ideate, Prototype and Test. It puts a strong emphasis on understanding the needs and wants of the user before generating and testing potential solutions.

Lean UX: This process focuses on creating minimum viable products (MVPs) quickly and testing them with users to gather feedback. It involves three stages - Design, Measure, and Learn. It encourages continuous iteration and improvement based on user feedback.

Human-Centered Design: This process involves three stages - Hear, Create and Deliver. It's based on the idea that solutions should be designed with the user, not just for the user. It emphasises the importance of empathy, and understanding the context in which the user will interact with the design.

Attributes common to all UCD approaches

The below attributes are common to all frameworks that prioritise users in their approach:

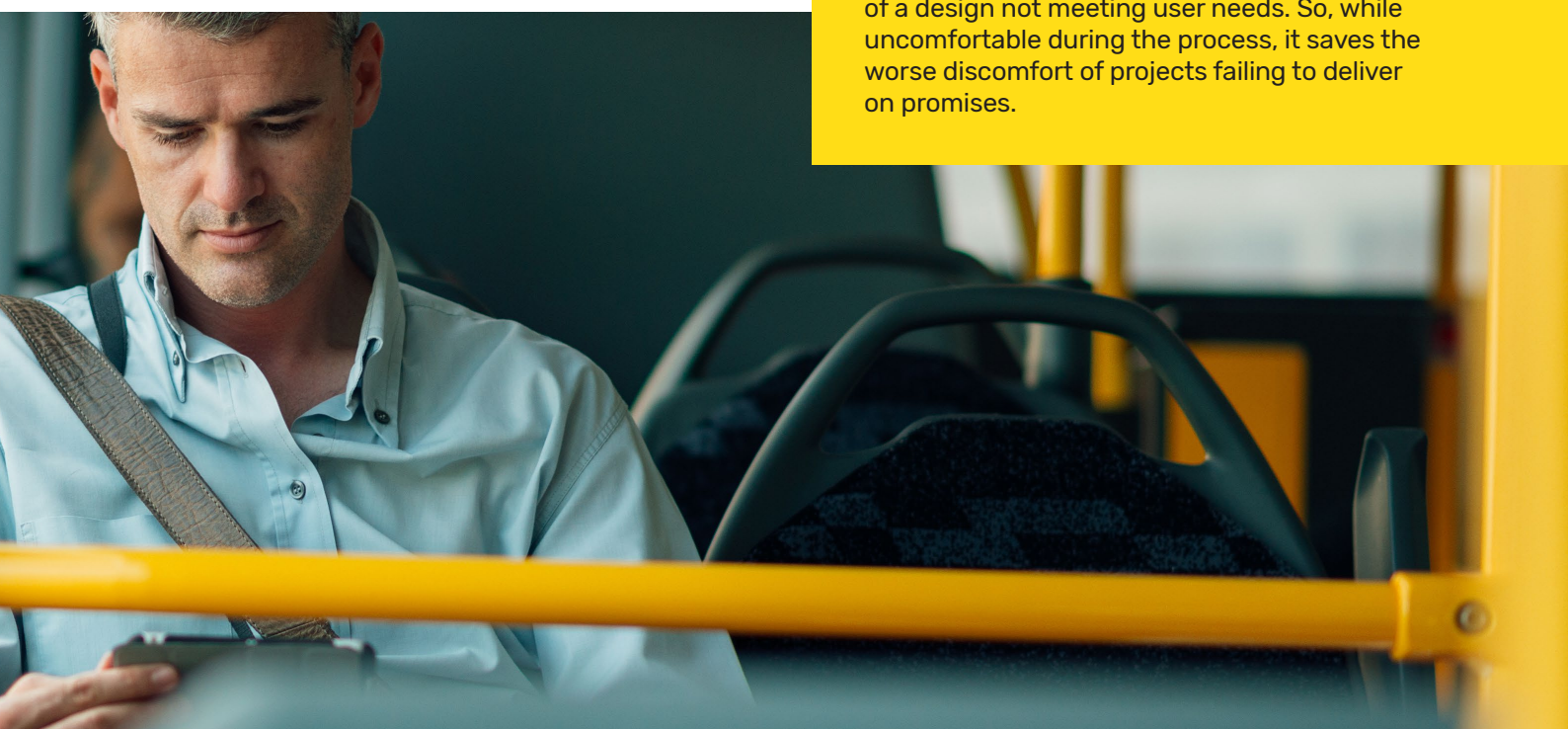
- **User-centred** – everything is experienced through the user's eyes first and foremost.
- **Iterative** – multiple ideas are developed, tested and refined a number of times, with weak ideas dropped in the process.
- **Collaborative** – a diverse group across the transport portfolio, working together, gets the best outcomes. This includes planners, policy makers, analysts, architects, engineers, behavioural scientists, marketers, legal, stakeholders, customer service and actual users.
- **Holistic** – the focus is on the whole user journey.

Further, all approaches combine both divergent and convergent thinking:

- **Divergent thinking** – conduct exploratory research, create lots of ideas.
- **Convergent thinking** – refine and rationalise ideas, answer questions.

A little discomfort up front, to avoid failures and poor outcomes

This can make the design process uncomfortable and messy, but it's important to trust the process and ensure projects don't jump to conclusions. The iterative process allows for quick testing and multiple failures, which mitigates the risk of a design not meeting user needs. So, while uncomfortable during the process, it saves the worse discomfort of projects failing to deliver on promises.





Where to apply UCD

Transportation planners use UCD to gain a deeper understanding of how people interact with transport systems, including their behaviours, preferences and pain points.

UCD can be applied to all aspects of transport planning, including:

Infrastructure design: UCD can help designers create transport infrastructure that is accessible, safe, and convenient for all users. For example, by involving people with disabilities in the design process, designers can ensure that footpaths, crossings, and bus stops are designed with their needs in mind.

Service design: UCD can help planners design transport services that are easy to use and meet the needs of different user groups. For example, by involving commuters in the design process, planners can create train schedules and routes that are optimised for peak travel times.

Information design: UCD can help designers create transport information that is clear and easy to understand for all users. For example, by involving non-native speakers in the design process, designers can create signage and maps that are easier to comprehend.

Australian examples

Across Australia, UCD has been applied to the planning, design, delivery and operation of transport networks in the following ways:

Carriage occupancy indicators have been implemented across **Sydney Metro** to improve the passenger experience. The indicators are digital screens located on the station platform that display real-time information on the occupancy levels of each carriage of the train. The system uses sensors to detect the number of passengers entering and exiting each carriage. The information is displayed in a simple and easy-to-understand format, with green, amber, and red indicators representing the level of occupancy. This initiative provides several benefits for passengers, including improving their comfort and safety. By displaying real-time information on carriage occupancy levels, passengers can choose to board carriages with lower occupancy levels, reducing overcrowding and enhancing their comfort during the journey.

The **Gold Coast Light Rail** was developed with UCD principles and a focus on improving the accessibility of the light rail network. The network was designed to be fully accessible to people with disabilities. This included low-floor trams and audio and visual announcements. The trams also included air-conditioning, real-time information systems, designated spaces for strollers and bikes, and upgraded seating. This makes it easier for passengers to use and navigate this system, which in turn results in a smoother experience when using the network.

As part of the **'Movement and Place'** movement, Transport for NSW delivered a program of popup transport measures giving people more options to travel safely in response to the COVID-19 pandemic. This led to an increase in active transport as users sought alternative modes of transportation to avoid crowded public transport. They were implemented in locations with high cycling demand, such as busy commuting routes and popular recreational areas, and were designed to be fully separated from private vehicles. The cycleways were also designed to be accessible to all types of cyclists, with a range of features to enhance safety and comfort. This included features such as designated lanes for different types of cyclists, secure bicycle parking and repair stations. These cycleways implemented in Sydney provide an excellent example of UCD, with features added specifically to enhance the safety, accessibility, and comfort of cyclists, and to encourage cycling as a sustainable mode of transportation.

With the goal of improving the speed of travel and enhancing the user experience when travelling by car, the **WestConnex Motorway** has implemented advanced technologies, such as intelligent transport systems, that provide real-time information on traffic conditions enabling drivers to plan their journeys more efficiently. As well as this, the motorway uses smart technology to monitor traffic conditions, fix congestion hotspots and respond to incidents across the motorway. This technology has been embedded across the motorway to ensure motorists are getting the smoothest and safest journey possible.



Benefits of UCD

The implementation of UCD in transport planning has numerous benefits, including:

Improved User Experience: By designing public transport systems that are comfortable, accessible and reliable, transport planners can encourage more people to use public transport instead of private cars, which can reduce congestion and air pollution.

Improved Safety: By understanding the needs and preferences of users, transport planners can identify potential safety hazards and design systems to mitigate them. For example, by designing safe and accessible pedestrian and cycling paths, transport planners can encourage more people to walk and cycle, which can reduce the number of cars on the road and improve safety for all users.

Reduced Costs: By designing systems that are efficient and user-friendly, transport planners can reduce the need for expensive infrastructure and maintenance costs. For example, by designing public transport systems that are accessible and efficient, transport planners encourage people out of their cars and onto public transport. This reduces the need for other costly infrastructure projects, such as road widening projects.

Improved Accessibility: For example, by designing public transport systems that are wheelchair accessible, transport planners can ensure that people with disabilities have the same opportunities as other users to access transportation.

Improved Sustainability: By designing systems that are efficient and user-friendly, transport planners can reduce the environmental impact of transportation. For example, by designing public transport systems that are accessible and reliable, transport planners can encourage more people to use public transport instead of private cars, which can reduce carbon emissions and other environmental impacts.

Transport agencies and their partners need to ensure the user-centred design process they adopt is flexible enough to adapt and be incorporated into various stages of the investment and project lifecycle. Importantly, UCD must be embedded into the existing decision-making frameworks, from the investment logic, to the benefits management plan, requirements documentation, design and construction. In doing so, it will ensure the user's needs are understood and solutions respond to the context of the user's life and the end-to-end journey experience.

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hello@tsamgt.com | tsamgt.com

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