

Problem Description

Question	Response
<p>Description of the problem and purpose of the proposed research</p>	<p>Transport for NSW (TfNSW) has the stated purpose to make NSW a better place by shaping and managing a connected transport system.¹ It was created with a strong mandate to increase coordination of the NSW transport system.</p> <p>A number of initiatives have been developed and applied by TfNSW to progress this. This includes an increased focus on integrated service planning² and service procurement options that facilitate closer coordination of public transport service provision.³</p> <p>However, a possible impediment to further progress is the absence of a comprehensive set of performance and evaluation metrics by which TfNSW can assess its performance in increasing transport coordination/integration.</p> <p>TfNSW is not alone in this regard. At present, there does not appear to be a comparable transport authority with a well-developed performance framework that measures how their transport networks operate as an ‘integrated’ system. Most transport performance reporting systems around the world appear to remain modally based.</p> <p>A recent initiative that may put TfNSW near the forefront of thinking and application in this area is the adoption of the ‘30-minute city’ as a performance measure/target.⁴ This is based on people reaching their nearest metropolitan and strategic centres within 30 minutes, by public and/or active transport. It is therefore a target for the public transport system, rather than specific modes.</p> <p>TfNSW is seeking to increase its knowledge of both ‘best practice’ and ‘next practice’ in the area of integrated performance measures. On the basis of ‘what gets measured gets managed’,⁵ the intent of this research project is to identify other ‘holistic’ or ‘system’ measures that can be developed, which will help TfNSW measure progress towards managing a more ‘connected network’. A key direction for this research is included in Future Transport Strategy 2056, which highlights a future direction to investigate as:</p> <p>“Identify new ways for intelligent systems to bring together services and assets on the network to deliver better connections and integration between services.”⁶</p> <p>A key challenge that the research project may encounter is the diversity of activities for which TfNSW is responsible. TfNSW’s accountabilities for increasing transport coordination include not only public transport, but also active transport, roads, freight and point-to-point transport.</p> <p>The challenges that this presents may possibly be offset by the increasing number of new digital data sources that are available. Despite the breadth of TfNSW’s activities, these new data sources could provide a measurable basis for developing a performance framework that TfNSW could assess its progress in increasing transport integration.</p>

¹ TfNSW, *Our Organisation*, accessed at <http://www.transport.nsw.gov.au/about/our-organisation>

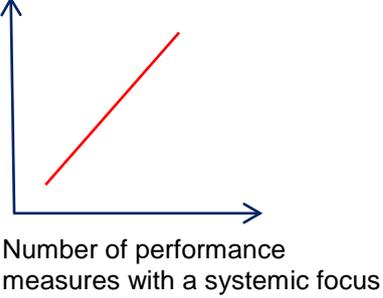
² TfNSW, *Integrated Service Planning Guidelines*, accessed at <https://www.transport.nsw.gov.au/sites/default/files/media/documents/2017/integrated-pt-service-planning-guidelines-sydney-metro-dec-2013.pdf>

³ NSW Government, *Newcastle Transport*, accessed at <https://revitalisingnewcastle.nsw.gov.au/what-we-are-doing/newcastle-transport/>

⁴ TfNSW, *Three Cities For Sydney*, accessed at <https://future.transport.nsw.gov.au/designing-future/three-cities-for-sydney>

⁵ Drucker P., *The Practice of Management*, Harper Collins E-Books.

Hypothesis & Variables

Question	Response
<p>For explanatory research, please describe a clear hypothesis with variables for testing</p> <p>For exploratory research, please describe how the proposed research will contribute to future explanatory research</p>	<p>The general hypothesis underlying this research is that if TfNSW is to meet its objective to increase the integration of the transport system, it needs ways in which it can measure its progress in meeting that aim, that is, what gets measured gets managed.</p> <p>Integrated performance of the NSW transport network</p>  <p>Number of performance measures with a systemic focus</p>

Strategic Criteria & Alignment

Question	Response
<p>Alignment with strategic theme</p>	<p>This Problem Statement is aligned with the Strategic Research theme of 'Future Mobility'. This theme is focused on the improved management of the transport network as an integrated system.</p>
<p>External driver of change analysis</p> <p>Outline how the research will better position TfNSW to respond proactively to macro drivers of change</p>	<p>TfNSW uses PESTLE analysis to identify and describe the external drivers of change that this research would help TfNSW be in a better position to respond to.</p> <p>Political</p> <p>It is a recognised strategic trend that there is an increasing public and political expectation for closer coordination of government services i.e. for more 'joined-up' and integrated service provision.</p> <p>Economic</p> <p>New service offerings such as Mobility as a Service will be dependent upon closer integration and coordination of services to offer an end-to-end transport product.</p> <p>Social</p> <p>Increasing the ability of the TfNSW to measure its progress in increasing integration coordination could allow it to be able to respond to key social trends and challenges. These include benefits for health and wellbeing that can be attributed to less travelling time, more time in incidental physical activity (walking and cycling), more opportunities to participate in work, education and civic, cultural and recreational activities.</p> <p>Technological</p> <p>New technologies and digital data sources are driving innovative approaches to measuring performance, and these are likely to be increasingly more aligned with how customers experience the transport network.</p> <p>Environmental</p> <p>On the basis that an ability to measure means an ability to improve, there are environmental benefits likely to arise if closer integration of services means efficiencies that lead to lower emissions.</p>

⁶ TfNSW, *Future Transport Strategy 2056*, 91, accessed at https://future.transport.nsw.gov.au/sites/default/files/media/documents/2018/Future_Transport_2056_Strategy.pdf

Question	Response
Forward looking	This research project is not attempting to address a pressing issue, and therefore offers time for a considered approach to researching, developing, testing and possibly to the staged implementation of an integrated performance framework.
Potential research impact	The potential research impact is significant. If developed and adopted, an integrated performance framework could possibly change how TfNSW measures and evaluates its macro-level performance.

Technical Criteria

Question	Response
Innovation Outline how the proposed research will result in new knowledge	<p>As indicated, despite an increased focus and public expectation for 'integrated' public transport services, there does not appear to be any transport agency (nationally or globally) that currently has a comprehensive performance framework for integrated transport.</p> <p>There are also likely to be learnings from other comparable industries that TfNSW could benefit from. These could include IT, aerospace and defence industries, where there may be mature frameworks for measuring progress in developing integrated measures that cover a diverse set of 'sub-systems'. The application of this experience to the issue of integrating transport would appear to be a useful and innovative consideration.</p>
Basis in completed research and/or observed practice	<p>A 2014 Audit of Public Transport Coordination, carried out in Victoria by the Victorian Auditor-General, found that:</p> <p><i>"the current absence of clearly defined objectives for public transport coordination, and associated agency performance measures — including systematic reporting by agencies on related initiatives — compromises the state's ability to effectively oversee and manage the performance of coordination initiatives across the portfolio."⁷</i></p> <p>A transport commentator has noted:</p> <p><i>"if you're not measuring the performance of what you're trying to improve, you're off to a bad start ... The technological limitations that once existed, requiring physical checking and sampling, can now be entirely automated using realtime data streams for passenger information. There is no longer a technological limitation to evaluating whole-of-system performance..."⁸</i></p> <p>Other possible starting references include:</p> <p>Givoni, M., and Banister, D. (Eds.). (2015) <i>Integrated Transport: From policy to practice</i>. (1st Edition), Routledge, Abingdon.</p> <p>Goddard, M., and Mannion, R. (2004) <i>The role of horizontal and vertical approaches to performance measurement and improvement in the UK Public Sector</i>. Public Performance & Management Review, 28(1), 75-95.</p> <p>Hine, J. (2000) <i>Integration, integration, integration: planning for sustainable and integrated transport systems in the new millennium</i>. Transport Policy, 7, 175-177.</p> <p>May, A. D., Kelly, C., and Shepherd, S. (2006). <i>The principles of integration in urban transport strategies</i>. Transport Policy, 13(4), 319-327.</p> <p>Potter, S., and Skinner, M. J. (2000). <i>On transport integration: a contribution to better understanding</i>. Futures, 32(3-4), 275-287.</p>
Feasible data requirements	<p>TfNSW can provide internal performance data (including Opal data) for the purposes of investigating and developing new performance datasets. Other data sets may be available from commercial sources.</p>

⁷ Victorian Auditor General's Office, accessed at <https://www.audit.vic.gov.au/sites/default/files/20140806-Public-Transport.pdf>

⁸ Caldwell D, Lies, Damned Lies and Transit KPIs, accessed at <http://www.davidrcaldwell.com/2013/05/lies-damned-lies-and-kpis-in-transit.html>

Level of Collaboration & Resource Requirements

Question	Response
<p>Level of collaboration</p> <p>Please select the level of collaboration required to complete the proposed research</p>	<p>1. 'Quick-Fire' Research <input type="checkbox"/></p> <p>Intense bursts of research activity (e.g. under 8 weeks). Intended to make use of 'hackathon'-type environments, where students/researchers work collaboratively and intensely on particular problems involving data interrogation and visualisation.</p> <hr/> <p>2. Undergraduate Final-Year Research <input checked="" type="checkbox"/></p> <p>Suitable for final-year undergraduate students (e.g. capstone, Honours) as part of the research requirements for their undergraduate degree (i.e. 1 to 2 semesters).</p> <hr/> <p>3. Higher Degree Research <input checked="" type="checkbox"/></p> <p>Project may form whole or part of a postgraduate research degree (i.e. Masters, PhD), and contribute to new knowledge (i.e. 1 to 3 years).</p> <hr/> <p>4. Major Collaborations and Funded Research <input type="checkbox"/></p> <p>Project may form the basis for a significant collaboration agreement between TfNSW and the relevant research institution, including major competitive grant funding (e.g. Australian Research Council funding with TfNSW as an industry partner).</p>
<p>Comments</p>	<p>This project could form all or part of a PhD or Master of Research. The project could also be broken down into a series for separate research projects, possibly suitable for 'capstone' type projects.</p>
<p>Supporting TfNSW resources</p>	<p>TfNSW will facilitate access to data requirements and subject matter experts (up to 4 hours per week).</p>