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# Assessing Usability of Accessibility Instruments



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# 3.1

AUSTRALIA

## SNAMUTS FOR METROPOLITAN STRATEGIC PLANNING: ADELAIDE 2040

Carey Curtis, Jan Scheurer and Oscar Thomson

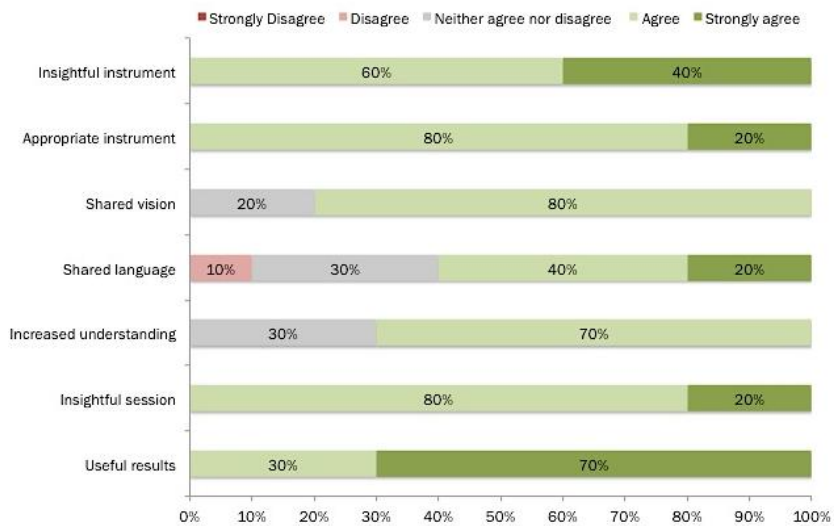
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Participants' profile	# Participants: 10
Male   Female	7   3
<30   31-45   46-60   >60	1   5   3   1
Transport planner   Urban planner   Urban & Transport planner	7   1   2
Public organisation   Private organisation   University	8   1   1

Views about the session and the instrument
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## **SNAMUTS**

SNAMUTS is an accessibility tool that functions as a trans-disciplinary communication instrument, capable of demonstrating the integration (or lack of) between land use and public transport at the spatial level of the metropolitan system. The design of the tool is from the perspective of the individual and how they make their daily travel choices, usually deciding between car and public transport. From this perspective the core variables are

- ‘How can I get there?’ (taking into account travel time, service frequency of public transport and transfer possibilities, compared to travel time by car);
- ‘What activities are available at a given location?’ (taking into account the employment opportunity and number of residences).

The tool has been designed and applied in planning practice to enable the testing and group deliberation of scenarios for future land use development and public transport investment at the metropolitan level. In this way the tool has assisted in developing and/or refining practitioners’ conceptual understanding of land use transport integration for sustainable mobility. Seven indicators of accessibility provide the possibility to measure and compare across scenarios such attributes as closeness between places, transfer penalties, transport network structure and potential network stress, and land use opportunity. A composite indicator utilising a mix of these indicators provides a visual map, thus enabling the practitioners to easily focus on trouble spots and areas of opportunity for use in a group discussion.

The tool utilises publically available public transport timetables to measure the supply of public transport across the network. Data for population, employment and road speeds is sourced locally from public agencies and census data. The interactive nature of the workshops provides the opportunity for practitioners to input local knowledge and internally held ideas about future developments—the accessibility instrument enables such interactivity. The use of maps and the dissemination of the accessibility measures in a visually well-presented medium is intended to significantly enhance the practitioners’ understanding of transport and land use interventions. Thus, it contributes towards a productive discourse on future directions for urban form and mobility. Usability is also enhanced through the open discussion of the tool’s underlying assumptions for accessibility and opportunity for adjustment.

### **Setting the scene**

The participants of the workshop represented a relatively even composition of planning academics and planning practitioners from Adelaide. The participants were identified and invited by the local WU, according to the Action protocol, in

order to ensure a good mix of urban land use planners, public transport planners and transport planners. The academics were representatives from the University of South Australia—School of the Built and Natural Environment, ranging from an Emeritus Professor to urban and transport planners and a PhD research scholar. The planning practitioners were drawn primarily from the South Australian Department of Planning, Transport and Infrastructure (a state government agency with integrated responsibility for metropolitan land use planning, transport planning and public transport). Their representatives included an executive director, several transport analysts, and the manager of network design and communications. The other participants were two transport planners from the Adelaide City Council and two planners from different private sector transport consultancies.

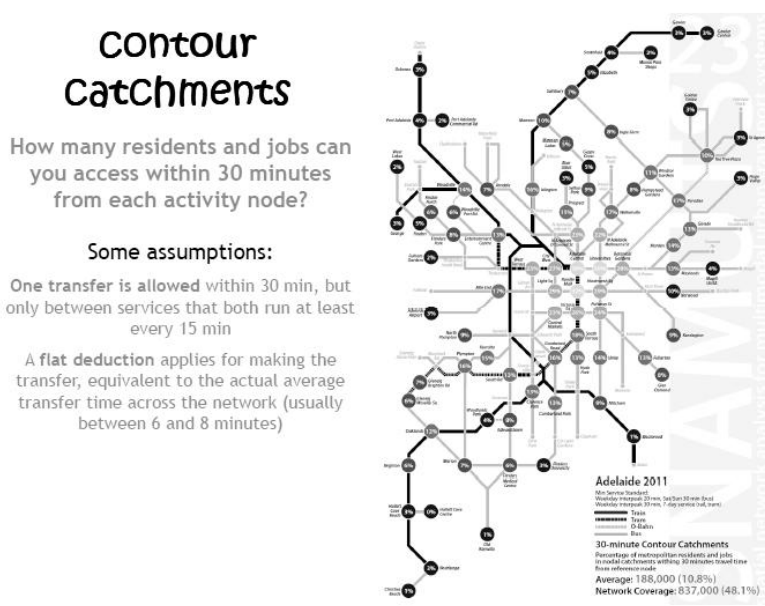


Figure 3.1: Example of SNAMUTS output for the composite indicator

The majority of the participants reported that they had very little or no background in using accessibility modelling in their daily practice work. A transport analyst from the state agency reported some experience with his team doing some minor transport modelling. He was particularly interested in the SNAMUTS instrument as a considerably more comprehensive version of their previous modelling work. Despite this reported lack of use of accessibility instruments, our observation of the engagement in the workshop suggested that the participants had a good conceptual understanding of both accessibility

and land use transport integration. The metropolitan planning instruments recently adopted by the state government are focused on improving accessibility by public transport, enhancing public transport infrastructure and fostering transit-oriented development. This policy direction sets the groundwork for some understanding of land use transport integration.

### **Describing the workshop**

Given the SNAMUTS focus on metropolitan strategic planning, the SNAMUTS team, in consultation with the Adelaide academics, utilised the recently published '30-year Metropolitan Plan for Greater Adelaide' as a starting point for focusing the discussion towards determining future land use and transport investment decisions. The work team planned a two stage workshop (half a day each) with a day between the two workshops. Two half days planned close together was deemed appropriate, bearing in mind the need to ensure participation by practitioners who find it difficult to take a whole day out of their schedule, and to allow some time for their reflections on the accessibility tool and concepts before reconvening. The aim for day one was to develop a collective understanding of accessibility and of the SNAMUTS indicators; to define and agree on the planning problem; and to define the planning interventions envisaged by the group. The purpose of day two was to present the intervention outputs to the workshop for group evaluation and discussion. In addition the COST evaluation was conducted. The workshops were organised with a one-day break between day one and day two, to allow time for the team to input the interventions (changes in the public transport network and land use by activity centres) and produce outputs for day two. This was a test for the accessibility tool—to determine if it was possible to produce outputs in this short space of time—the closest we thought we could get to testing the real-time capabilities of the tool.

#### *Steps 1 and 2*

The SNAMUTS team had recently produced an analysis of the current accessibility of metropolitan Adelaide as part of an Australian Research Council project examining the accessibility of 25 international cities (ARC-D 110104884). This work provided outputs for the full suite of SNAMUTS accessibility indicators for Adelaide. In this way the outputs provided a multi-purpose resource serving to present our conceptual understanding of accessibility; to present and explain each indicator to the group (including the assumptions behind the indicator and what it can measure); to provide our overview of the current state of play of accessibility for metropolitan Adelaide. Showing the indicators by using Adelaide as the place-based case was designed to aid usability for the group.



Prior to the workshop, and accompanying the invitation to participate, the following overview of Adelaide's accessibility at 2011 was presented by the WU together with a set of potential planning questions prepared by the team with the aim of stimulating the discussion.

*Key findings from the SNAMUTS analysis:*

- Adelaide has the highest proportion of network coverage (residents and jobs within walking distance to public transport) at a minimum service frequency standard of 30 minutes (weekday inter-peak in conjunction with 7-day operation) among all Australian cities.
- Adelaide provides for the highest operational input to population (vehicles or train sets in simultaneous revenue service) for all Australian cities.
- Adelaide has a CBD surface network that is second only to Melbourne among Australian cities regarding connectivity and provision for multidirectional movement (though it remains less legible due to the greater dominance of buses over trams in Adelaide).
- Adelaide's uncomplicated urban geography between the coastline and the Adelaide Hills facilitates the provision of a well-connected network across most of the urbanised area (however, low service frequencies on rail lines as well as on orbital and secondary radial bus links impact negatively its transfer friendliness).
- The modal hierarchy between trains, trams and buses remains relatively flat, and efficient task-sharing between modes of different performance (e.g. buses feeding rail) remains patchy and underdeveloped.
- The network is even more dependent on channelling movement through the CBD area than any other Australian city, resulting in the highest measure of central city network stress in Australia.

*Possible issues to be investigated in a SNAMUTS workshop:*

- What effect will the current upgrade and expansion plans for Adelaide's rail and tram network have on public transport accessibility in the metropolitan area?
- How can Adelaide mobilise further efficiency gains in public transport network configuration by establishing better task sharing and integration between rail and bus modes?
- How does Adelaide's public transport network need to change to enable more travel paths to be deflected from the central area and thus make room for patronage and mode share growth?
- What is the role urban intensification in non-CBD areas can play in this process (cf. TOD concept in metropolitan strategy)?

Day one of the workshop started with a presentation by the team that defined accessibility, explained the assumptions embedded in SNAMUTS, and presented the SNAMUTS indicators for Adelaide in 2011. Questions regarding the indicators were addressed during the presentation; each participant was also provided with a paper copy of the presentation, including the SNAMUTS maps and outputs. One participant questioned the process by which the SNAMUTS team selected the activity centres, and it was confirmed that the selection was based on the metropolitan strategy centres and in-person site visits to assess whether or not the level of activity was appropriate in relation to SNAMUTS assumptions. Following the presentation the team worked with the participants to develop a consensus on the existing planning problem in Adelaide. Although numerous issues for Adelaide were easily identified, the most prominent was the considerably higher level of accessibility within the Central Business District (CBD) and relatively low level of accessibility everywhere else in the city. This was seen to result from lack of integration of rail infrastructure with the well-defined and separated CBD. A question was raised as to whether this was a side effect generated by the tool, but it was confirmed that this was a key unique theme in Adelaide, not present in other Australian cities.

Step two was organised by discussing each of the indicators and exploring their suitability to the problem in Adelaide as well as their ability to identify specific issues (e.g., network composition or organisation, frequency, mode, type of land use intensity and integration with transport). No indicators were considered by the group to be inapplicable for accessibility analysis of the land allocations and the network proposed in the 30-year plan. Notably, the composite indicator output was identified by the participants as key to demonstrating the accessibility problems in Adelaide. The other indicators were identified as an appropriate way to explore the composition of accessibility in a particular location in more detail and to define the specific reason behind the low accessibility at that location.

### *Step 3*

Step three was organised by requesting the participants to discuss ideas for interventions in Adelaide in conjunction with those already set out by the 30-year plan. The participants—in particular a transport analyst from the Department for Transport, Planning and Infrastructure—communicated a number of ideas for transport intervention and expanded on those indicated within the 30-year plan where specific interventions were not listed in detail.

#### Step 4

The final step of evaluating the interventions was carried out on day two. First a presentation of the completed interventions for Adelaide 2040 was provided for each SNAMUTS indicator, followed by a group discussion. The participants were slow to become actively engaged until their attention was captured upon viewing the third indicator—network coverage (who gets access). This is presented in a highly visual map using traffic light colours to depict accessibility across the network. This type of visual approach appeared to generate interest, and from that point onwards the discussion gained a lot of momentum. The questions asked during this process clearly indicated that the participants, after seeing the results, were convinced that this tool could be useful. Questions were focussed on clarification of the assumptions made for population and employment and definitions of ‘walkable distance to public transport’, as participants considered the outputs. Toward the end of the workshop the questions were directed toward the SNAMUTS outputs for other cities, with expressed interest in hearing best and poor practice examples.



Figure 3.2: Setting of the Adelaide workshop

#### Lessons on usability

During the workshop we learned that the type of people we are communicating with are keen to learn more about the instrument and to utilise the instrument in some of their workplaces as well. It was apparent that while there was a perceived policy imperative for sustainable accessibility in Adelaide, the state and local governments lacked an appropriate accessibility tool to assist them in their planning deliberations. Despite the lack of accessibility tools it was apparent that the group had a good conceptual understanding of accessibility and land use transport integration. They were quick to develop planning questions in relation to accessibility. We were made aware that several

participants had pre-prepared by reading our web-site and publications prior to attending day one. This no doubt assisted in the usability and strong participation in the session.

During the presentation it was evident that the array of indicators available had the possibility of constituting an information overload. Notably, there were no comments on the 'betweenness indicator', one of the more complex ones. This may be an indication that the participants did not understand the indicator sufficiently to question it. Our use of both presentation and handouts of slides and maps served to assist users. The application of the indicators to a place the group knew well assisted them in being able to explore and question the assumptions behind the indicators and the outputs. The summary of indicators and uses (see figure below) was clearly a useful aide memoire for participants trying to engage quickly with the different indicators—this was not only observed as valuable but also commented on by the group. While most of the group found the composite indicator as the most useful, stating that it was easy to comprehend and a great way to visually communicate the plan to the public, not all agreed. Some felt that also the individual indicators were needed to make sense of the composite indicator, thus enabling an examination of specific land use or network problems.

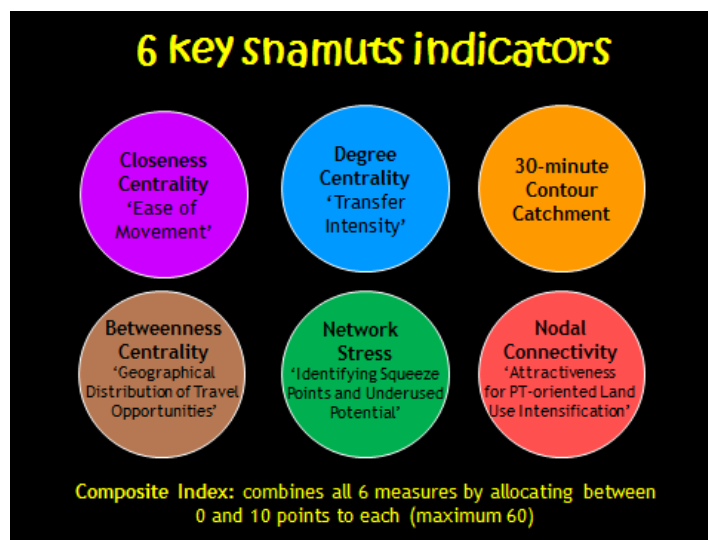


Figure 3.3: SNAMUTS Indicators

Our analysis of current accessibility and future accessibility as a result of interventions highlighted that a small change (previously un-considered by the practitioners) to the network within the central city could achieve significant improvements in metropolitan wide accessibility—in particular for some new

suburban land releases in the northwestern metropolitan fringe. In addition such a network change highlighted the potential for redevelopment of old industrial sites within the middle suburbs. Furthermore, the group commented that they had never thought that the southern side of the metropolitan area was so left out of public transport accessibility in the future. It was clear that these were new ideas to the group that caused considerable interest. We also provided the evidence base to confirm the group's understanding that some of the more peripheral urban land releases at the urban fringe would fail to achieve accessibility by public transport without substantial investment.

The usability of the tool is limited by the inability to incorporate real-time interventions to create SNAMUTS maps. Our approach confirmed that the minimum time to complete changes was 24 hours since the detailed changes to each link and node across the entire metropolitan area have to be inputted manually. Nevertheless, the outputs were quickly grasped and held in high regard by the users.

As a result of the workshop we learned that we still have more work to do in enhancing the descriptors of each indicator and our explanations for the sort of planning questions each can answer, particularly for our 'betweenness indicator'. The pre-preparation, both in terms of good intelligence on current planning issues in the city by the SNAMUTS team and the familiarisation by the participating group with our tool and applications, was critical for the success of the workshop under a tight schedule. It was also confirmed that public transport accessibility is rarely considered at the metropolitan scale beyond a simple policy aspiration. Our tool has shown potential users what sort of infrastructure and land use changes might be needed to achieve policy implementation.