The SMART Infrastructure Facility at University of Wollongong is one of the largest infrastructure research centres in the world.

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SMART INFRASTRUCTURE MODEL
PROVIDING NEXT GENERATION ANALYTICS FOR DECISION MAKERS

CONNECT: SMART INFRASTRUCTURE FACILITY
Mr Les Wielinga
Director General, Transport for NSW (retired)
SMART Advisory Council Member

Since 2010, Transport for NSW (TfNSW) has been in a research partnership with the SMART Infrastructure Facility to help enhance the capability of the Department in long term integrated transport planning.

My vision with this research has been to ensure TfNSW can deliver better transport infrastructure, where priorities more precisely reflect community requirements by choosing the right projects and delivered in a timely way.

To achieve this, the SMART modelling team has helped to better inform policymakers with critical information by connecting the requirements of transport assets in a geographic area with changes in demographics and land use activity.

SIM is both fundamental and cutting edge and represents a step forward with more evidence based infrastructure planning.
Policy-makers are faced with a very challenging environment, to provide infrastructure assets and services that are not too costly and have a very long-term impact. The SMART Infrastructure Model (SIM) recognises that an infrastructure intervention requires careful consideration of its impact across the different layers of society in both the short and long-term.

SIM provides an analytical framework for decision-makers to clarify their objectives by simulating what-if? scenarios to test for outcomes, reveal unintended consequences and allow greater knowledge sharing and contestability of ideas.

The 7 step infrastructure decision process envisioned by SMART is detailed below.

1. What are the intervention objectives?
2. Data
3. Analysis
4. Scenarios (options)
5. Visualisation
6. Recalibrate
7. Confirmation

= SIM

THE SMART INFRASTRUCTURE MODEL ENABLES

RIGOROUS DATA DRIVEN SCENARIO PLANNING

to improve the quality of decision making for infrastructure, land use and planning.

SEWERAGE TELCO SOCIAL INFRASTRUCTURE TRANSPORT H2O ELECTRICITY

OUR APPROACH

State of the art computational model.
Purpose built for large scale urban policy and planning evaluation.
Extensive visualisation to engage policy makers and the community.

Different population groups have differing needs from the land regulations

Land use can determine the population type and size

Land Use Planning

Population Demographics

Infrastructure Requirements

Creating population impacts on type of infrastructure required

Land use activity impacts infrastructure

Infrastructure changes land use

Population changes because of infrastructure provided

Changing population impacts on type of infrastructure required

Different population groups have differing needs from the land regulations

State of the art computational model.
Purpose built for large scale urban policy and planning evaluation.
Extensive visualisation to engage policy makers and the community.
The SMART Infrastructure Model will be an essential partner to assist our future planning and to inform government of what choices need to be made to ensure liveable communities. The ability to create and interrogate ‘what-if’ scenarios and visualise physical and social impacts is fundamental to delivering better planning and projects. SIM provides decision makers with the tools to make more reasoned and informed infrastructure decisions.

**SCENARIO QUESTIONS**

**Land Use and Population**
Cities exist because people want to live there but as cities grow and change so does the population and the land use requirements.

Q. What would be the physical and social consequences of land use policy changes on demographic, mobility and traffic patterns in the study area?
Example: Influence of urban zoning changes favouring high density (1-2 bedroom units) development in given precincts?

**Transport modal choice**

**Activity and Transportation**
Economic and social activity relies on transport infrastructure to meet the expectations of a modern community.

Q. What are the potential effects of transport policy changes on socio demographic, mobility and traffic patterns in the study area?
Example: Impact of a new public transport facility, like a light rail line, on surrounding precincts?

**Tipping Points**
Policy makers need to know how infrastructure performs under different capacity constraints.

Q. What are the implications of a larger population on a precinct’s transport system?
Example: At what point in the future do buses no longer meet the requirements of the community?