Pathways to Mass Transit

Tim Cuthbert - 22nd March 2018

Themes

What is Mass Rapid Transit?

Dynamic Cities

New Zealand Contenders

Iconic Transport Projects

The New City Context

New Mobility and MRT

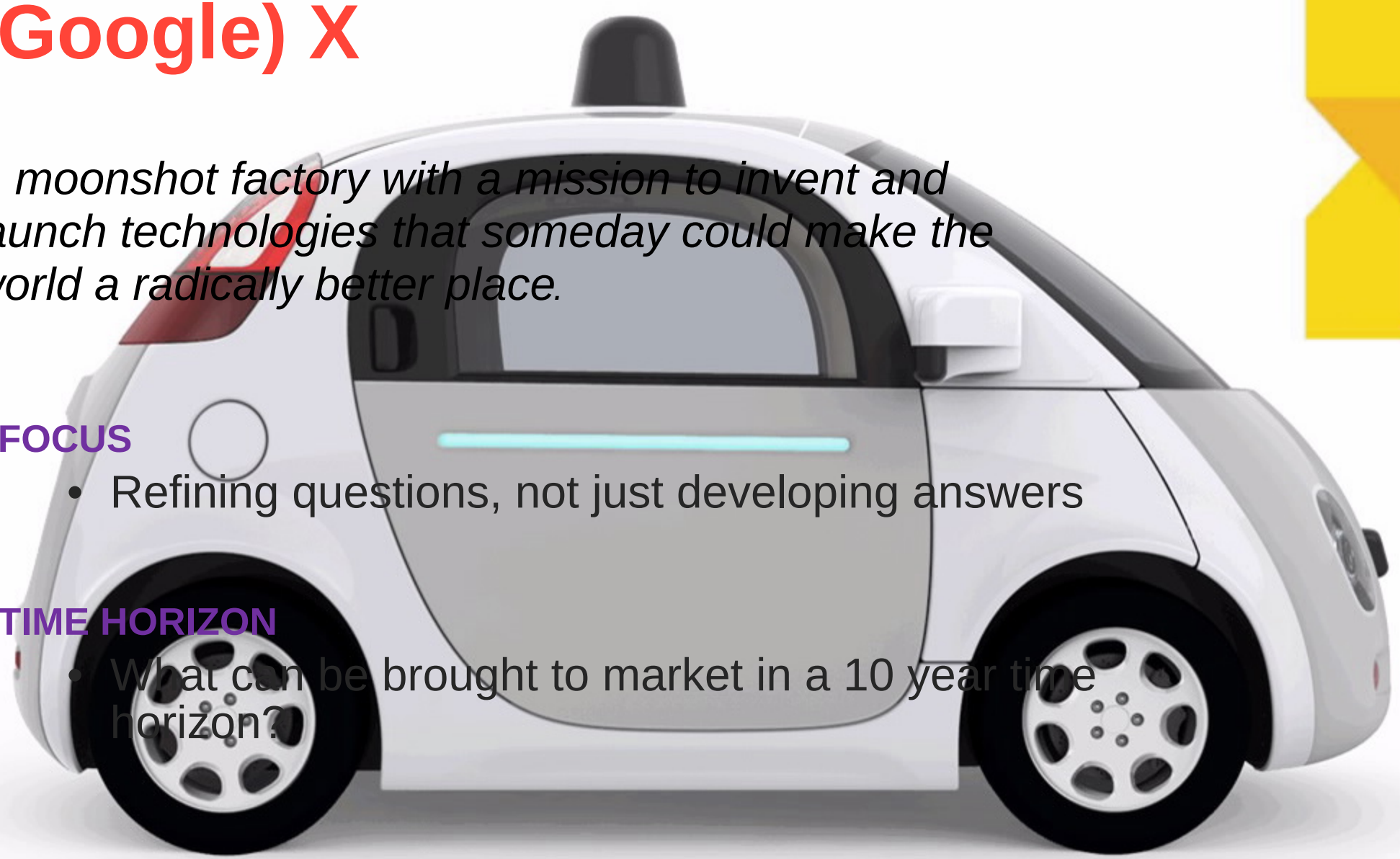
Planning MRT

Technology

Pathways to MRT

(Google) X

A moonshot factory with a mission to invent and launch technologies that someday could make the world a radically better place.



FOCUS

- Refining questions, not just developing answers

TIME HORIZON

- What can be brought to market in a 10 year time horizon?

What is MRT?

MASS

- Potential to move large numbers of people in a given amount of time
- Function of line capacity, network capacity and terminal capacity
- 4000+ passengers per hour per direction

RAPID

- Indicated by end to end journey time
- Function of vehicle speed, frequency, stop/station spacing, level priority
- Influenced by ticketing and boarding/alighting arrangements
- Journey time reliability is just as important

TRANSIT

- Transports people where they want to go
- Is accessible to all
- Caters for relevant journey purposes
- Forms part of an integrated transport system

Dynamic Cities

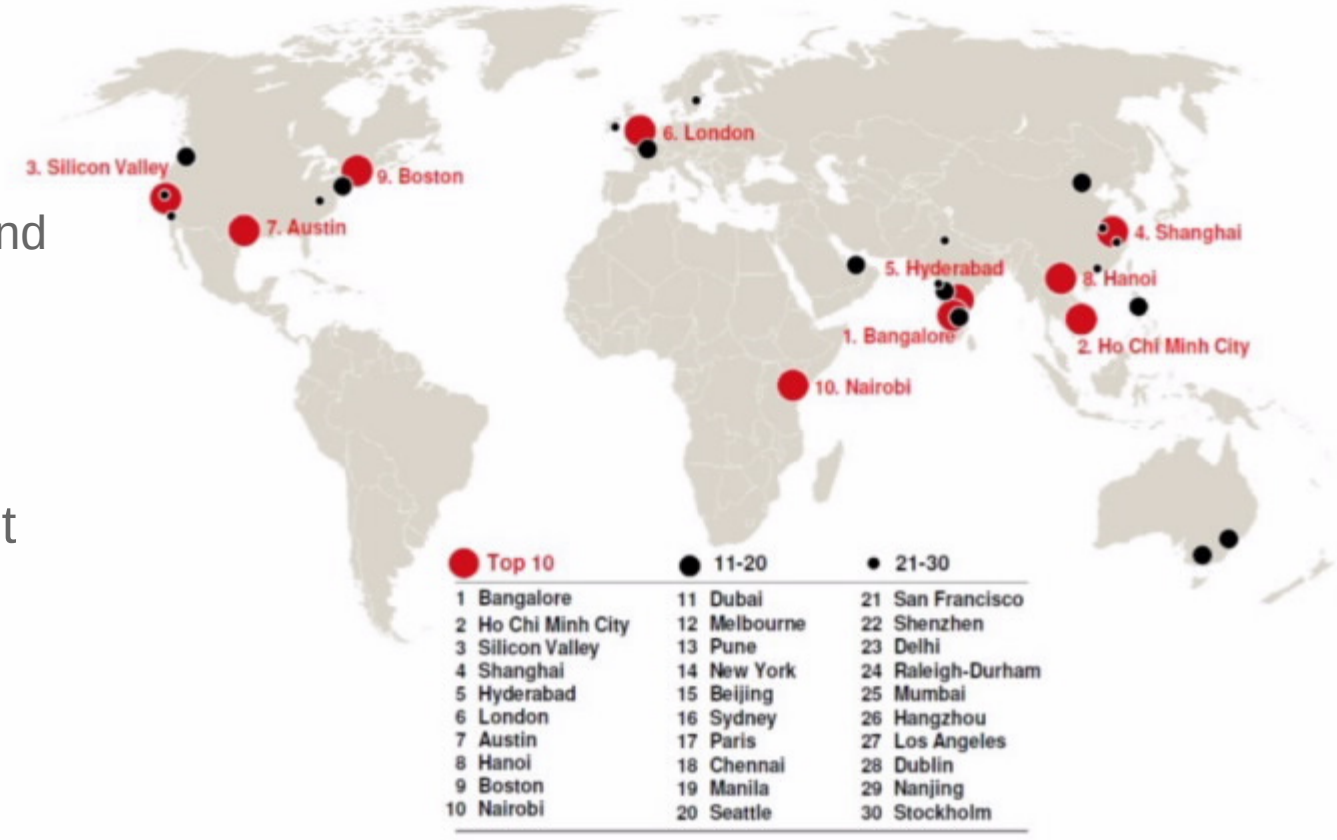
Momentum Index Developed by JLL

- Range of socio-economic, commercial and real estate variables

Population Range 400k to 25m people

Growth Rates 4-30%

All have existing or planned Mass Transit Systems



Top 10	11-20	21-30
1 Bangalore	11 Dubai	21 San Francisco
2 Ho Chi Minh City	12 Melbourne	22 Shenzhen
3 Silicon Valley	13 Pune	23 Delhi
4 Shanghai	14 New York	24 Raleigh-Durham
5 Hyderabad	15 Beijing	25 Mumbai
6 London	16 Sydney	26 Hangzhou
7 Austin	17 Paris	27 Los Angeles
8 Hanoi	18 Chennai	28 Dublin
9 Boston	19 Manila	29 Nanjing
10 Nairobi	20 Seattle	30 Stockholm

History tells us that those who invest in advancing and diversifying tend to get the competitive edge.

WSP Opus

Dynamic Cities

New Zealand Contenders

Auckland

Experiencing significant growing pains

Recently dropped out of the Top 30

Traffic congestion is a major issue

Wellington

‘Let’s Get Welly Moving’ - developing a long term integrated transport strategy

More sustainable future requires mode shift

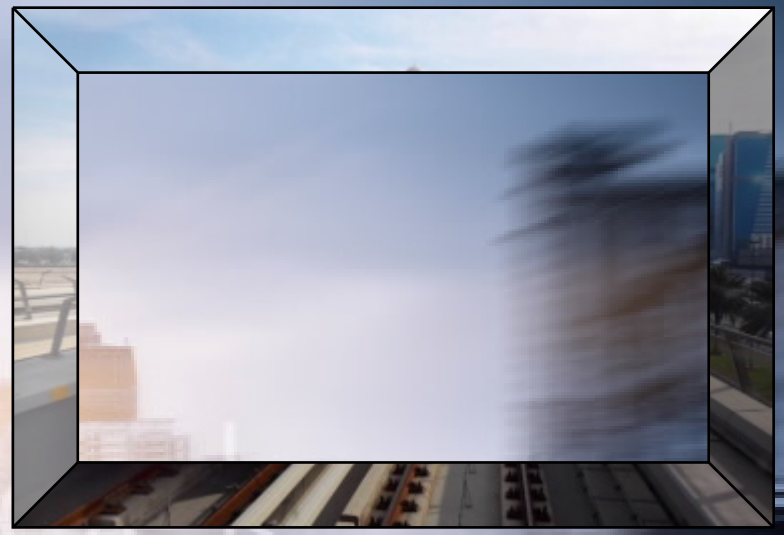
Queenstown

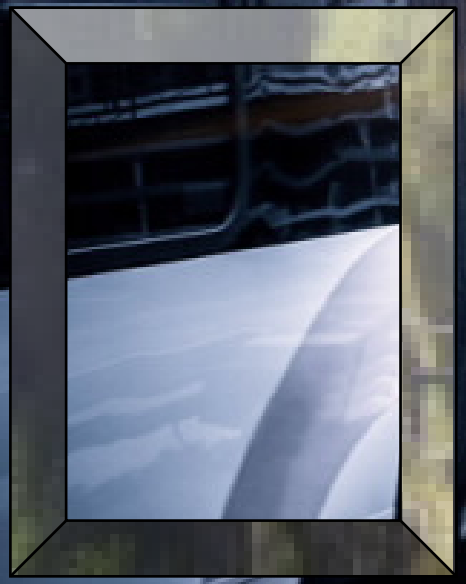
Booming tourism economy

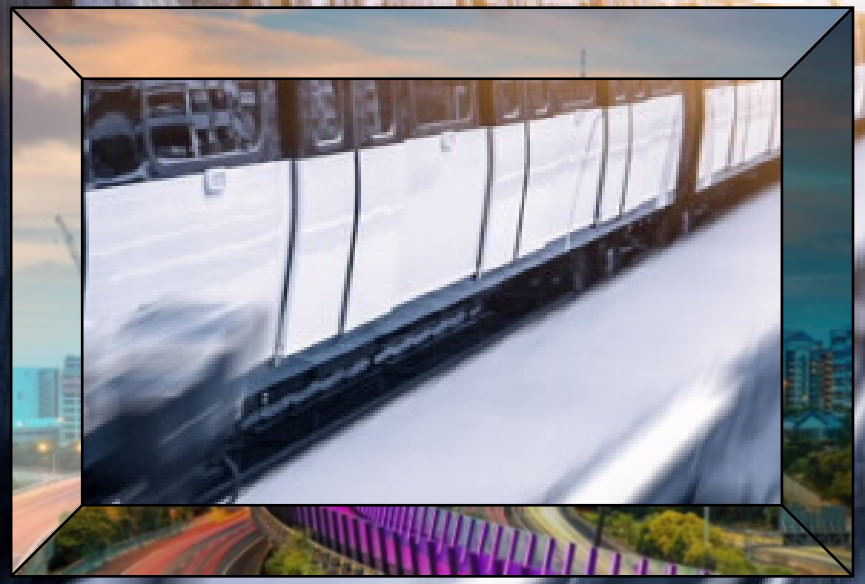
Growing peak period congestion

Highly constrained network

Iconic Transport Projects







…….. are part of the attraction of world class cities.

The New City Context

Liveable

- Safe and Attractive
- Legible
- Pollution Free

Higher Density

- Upwards rather than outwards
- Mixed use
- Focus on transport nodes

Smarter

- Increasing array of electronic data
- Internet of Things
- Assets and resources managed remotely

New Mobility and MRT

Current and Emerging Technology

- Ride Sourcing – Uber, Lyft, Via
- Car Sharing
- Bike Sharing
- Alternative Transit
- Growth of Electric Vehicles
- Autonomous Vehicles
- Mobility as a Service
- Urban Air Mobility
- Hyperloop

Disruption

Reducing car ownership
Manufacturers embracing ridesharing
Impacts on travel behaviour
Increased congestion?

Evolution rather than Revolution
20[illegible] time horizon

Complementary to but NOT a substitute for MRT

Planning MRT

Bottom Up

- Land Use Planning
- Transport Modelling
- Community Engagement
- Option Appraisal
- Business Case for Investment

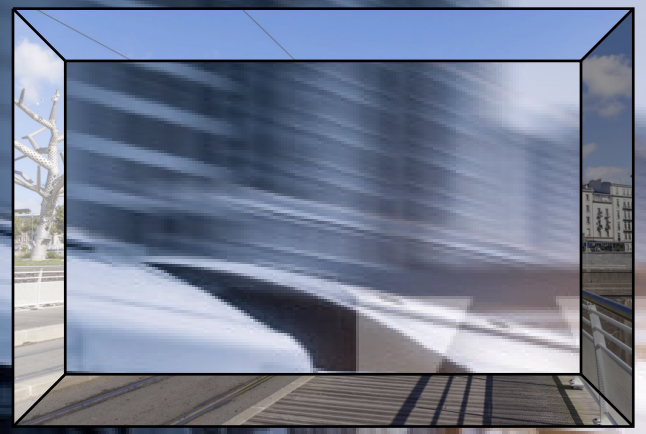
Top Down

- Individual or Organisational Advocacy
- City wide perspective
- Private sector involvement
- Recognising the wider (beyond the manual) benefits

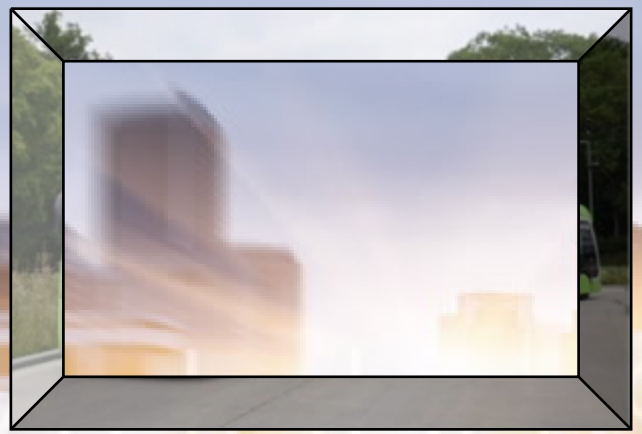


Set objectives with stakeholders that focus on the outcomes

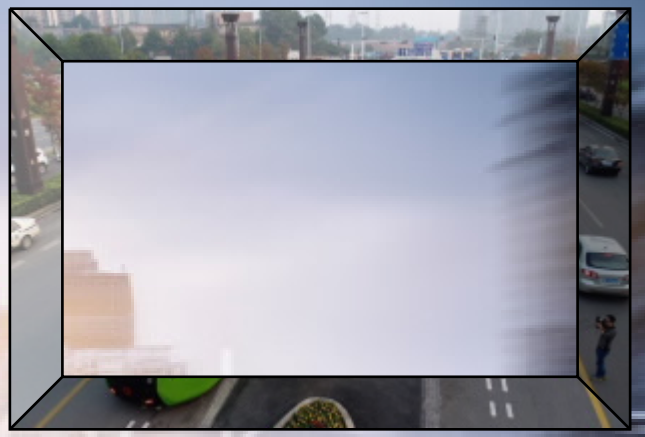
Technology In Service



Light Rapid Transit

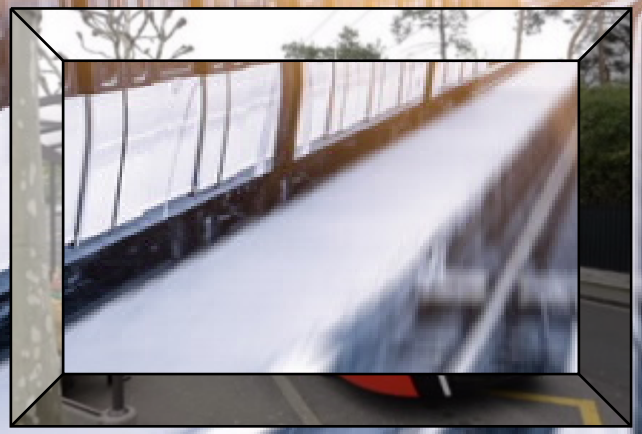


Bus Rapid Transit 24m - Malmo

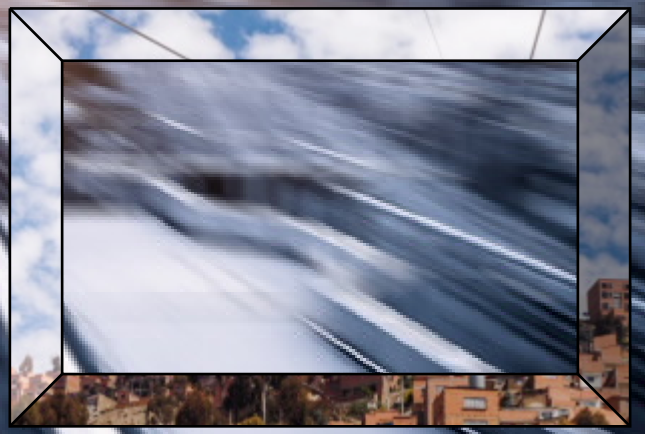


Self Guided Electric Bus - China

LRT (Tramtrain) – Nottingham

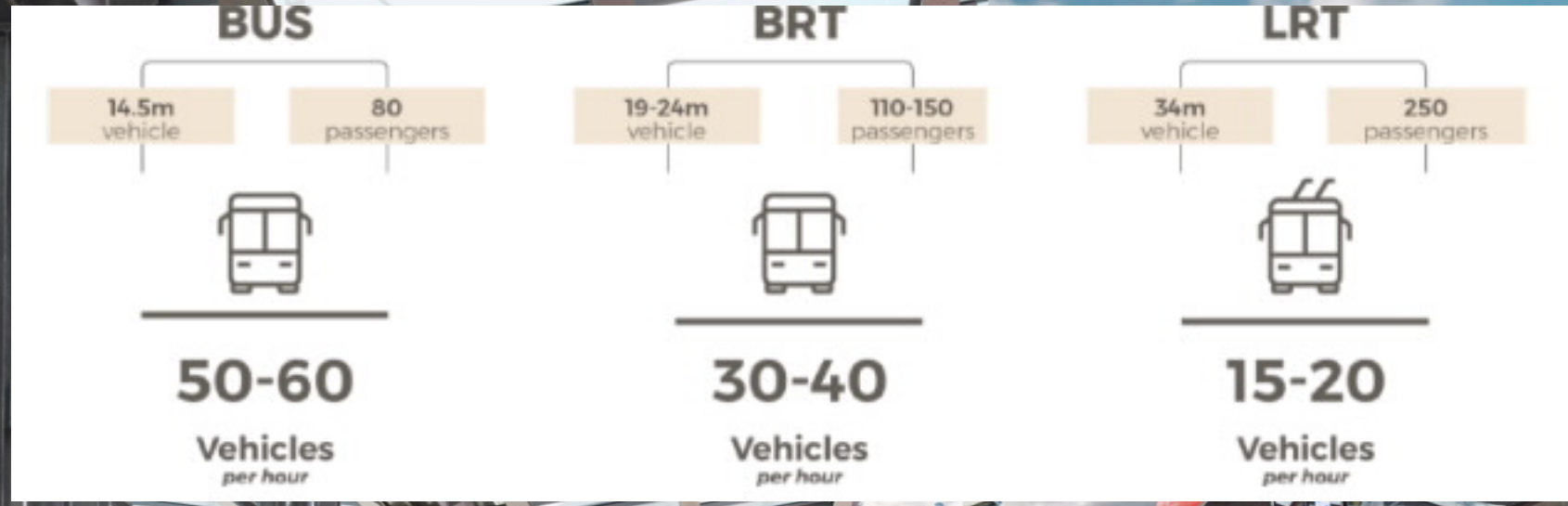


Bus Rapid Transit 18m - Spain



Gondola - Bolivia

Capacity & Cost



Transporting 4500 Passengers

LRT Cost Range - $[illegible] million NZ /km

BRT Cost Range - $[illegible] million NZ/km

LRT typically 2 to 3 times cost of BRT of similar size and scale

13 km Gold Coast Light Rail with 16 stations and primarily on-road - $1.3 billion AUD (2014)

31 km Liverpool to Parramatta Transitway with limited grade separation - $477 million AUD (2016)

WSP Opus

Key Factors in Decision Making

System Specification

Capacity

Geometric Fit

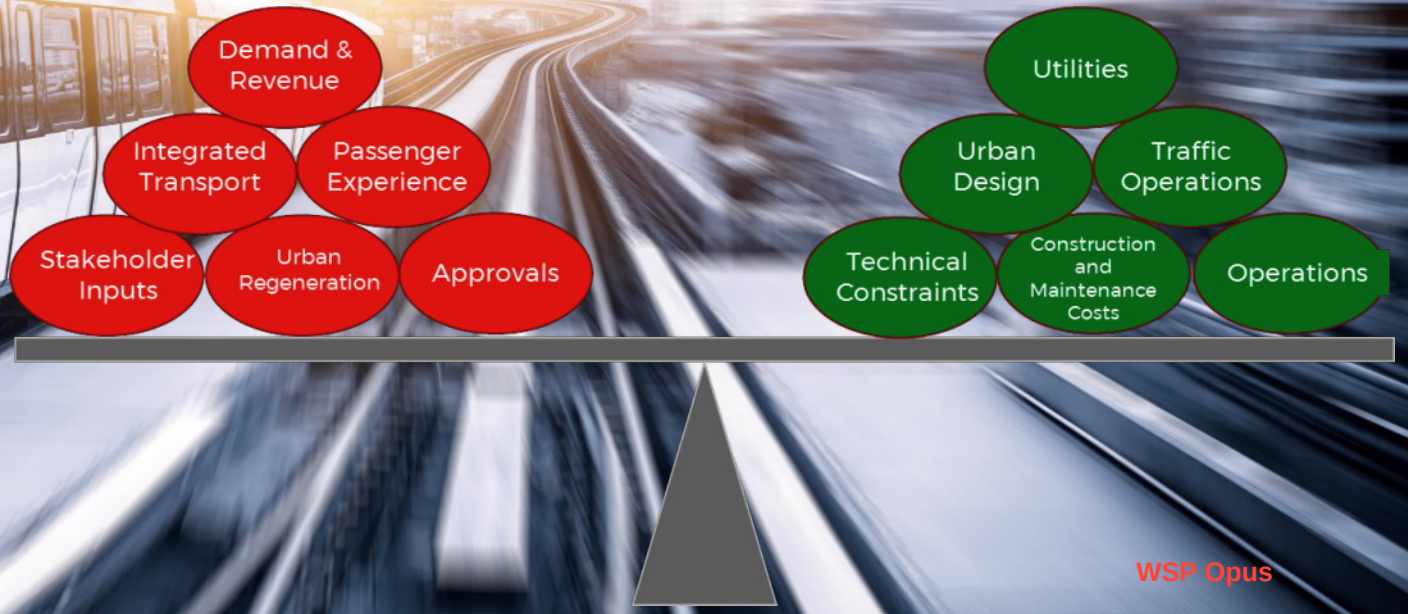
Integration into wider Transport System

Futureproofing

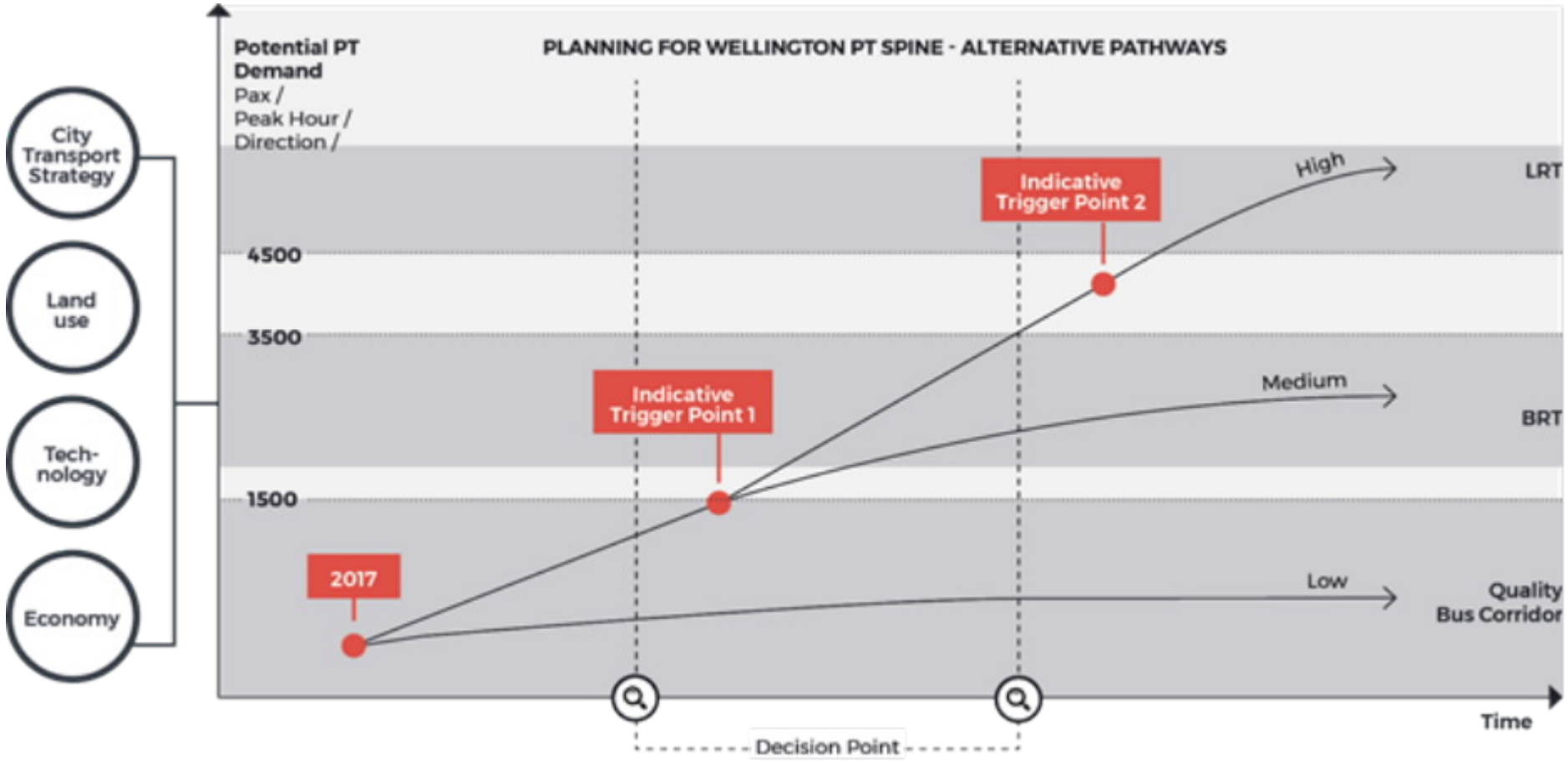
Value for Money

Funding

Operating Model



Pathways to MRT



What problems are we trying to solve?

What is the Vision for our City?

Phased approach can be tempting but:

- Converting from BRT to LRT is technically challenging
- Business cases for upgrades may not be as strong

Takeaways

- MRT is part of the fabric of many dynamic world cities
- City context is changing but MRT still ticks the boxes
- Harness New Mobility to complement MRT. It is not a substitute for moving large numbers of people
- MRT technology is changing but exert caution around proprietary systems; tried and tested is not a bad way to go.
- Be innovative where appropriate but tap into global best practice
- A sound business case will always be needed but advocacy, partnership and innovation can help get projects off the ground

Fortune Favours the Brave!