Aviation is constantly evolving, with new and improved technology making aircraft faster and more efficient.

This story illustrates one possible vision for the future of air travel. We want to inspire thought and debate, and to challenge traditional perceptions. The ideas presented here may seem far-fetched from today’s point of view. However, if you look only a short distance back in time, it’s easy to see how far we’ve come.

To help us look forward, we must first look into aviation’s past

New Zealand has a proud history of aviation, beginning with Richard Pearse (a Canterbury farmer and inventor). In March 1903 he made the world’s first uncontrolled powered flight on his farm before abruptly crashing into a hedge.

While eye witnesses described it as more of a ‘hop’, Pearse’s powered (if somewhat inelegant) flight was a full 9 months before the Wright brothers took to the sky in the world’s first controlled powered flight.

We are one century on from the first commercial flight in 1914. Since then, commercial aviation has changed almost beyond recognition.

In 1952, the de Havilland Comet entered service. The Comet was the first example of the commercial jet airliners seen everywhere today.

The arrival of the Comet was a step change for air travel, slashing travel time by more than half. In 1953, the Comet made the scheduled nine-stop flight from London to Tokyo in an impressive 36 hours. This was an amazing achievement compared to the 86-hour trip taken by the propeller-driven airliners that came before it.

Today’s aircraft have more than halved travel times again, with a flight time of about 11 hours between London and Tokyo. And many of today’s flights are direct – the 9 stops the Comet took in 1953 would be unthinkable today.

The arrival of the jet airliner was exciting in terms of speed. However, international travel was largely confined to the rich in the 1950s. Domestic and international flights were a luxury, not the norm.
A New Zealand perspective

Auckland and Christchurch International Airports only opened their doors for the first time in the late 1960s. This coincided with the first international commercial jet flights to and from New Zealand. But even though the option existed, international travel was still largely out of reach for the average New Zealander.

For example, in 1972, some 20 years after the inaugural Comet flight, a young New Zealander embarking on their first overseas experience at the age of 21 would probably choose to travel by ship from New Zealand to Europe. The trip might take five weeks, but few young people could afford the price of an airfare. Today, the average New Zealander about to embark on their first overseas experience wouldn’t even consider a five-week journey by ship to Europe.

In 1969, New Zealand received a modest 241,000 international visitors. The technology advances since then to aircraft design, engine technology, and fuel efficiency, and the proliferation of cheaper flights, have contributed to make far-flung destinations accessible to many more New Zealanders and New Zealand accessible to the many more international citizens. By 1994, more than 1 million international visitors were flying to New Zealand each year, and in 2015 that number is over 3 million.

This backdrop of technological advances and increasing demand in the aviation sector sets a foundation for thinking about the future of aviation in the 21st century.

A new first class, and cheaper air travel for all

The world will continue to move towards an economy based more on creativity and intelligence than on the sale of primary or manufactured goods. Yet even with the rise of applications such as Skype and FaceTime, the intelligence economy in which we live and work still thrives on face-to-face meetings. So global demand for air travel will grow – the International Air Transport Association expect 7.3 billion passengers a year by 2034. Three factors will drive this increase: a growth in the service economy; the growing wealth of the BRIC nations (Brazil, Russia, India, and China); and a growing global middle class who want to travel and can afford to do so.

We envisage a future where this demand will encourage the development of new technology, bringing two separate advances: air travel at supersonic speed for the wealthy, and slower but more comfortable and environmentally friendly options for the wider public.

The return of supersonic aircraft

Fast travel remains important, so we’ll see supersonic passenger aircraft become a possibility again for those that can afford it. They will provide a new first class where a Silicon Valley entrepreneur or Wellington business person can travel to India for software development and China for manufacturing in a drastically reduced period of time compared to today.
We’ve seen supersonic passenger flight before with the Concorde. Now Aerion is developing a $110 million, 12-seat passenger business jet capable of hitting Mach 1.6 – over 1,200 miles an hour. That’s almost twice as fast as the $65 million Gulfstream G650, and would cut the current travel time between New York and London from 7 hours to just over 4 hours. In addition, Reaction Engines and BAE Systems are developing an engine (the LAPCAT) that could power a new generation of Mach 5 passenger jets. The LAPCAT can reportedly power aircraft at 2.5 times the speed of the Concorde. This could result in flights from London to Australia in as little as 4 hours.

The rise and rise of efficiency and affordability

People will still want to travel to new destinations and experience new places. With more aircraft, airlines and efficiencies, air travel will become significantly cheaper for the average consumer. The average speed of most planes will remain similar to today, but we’ll see a halving of fuel use and reduced environmental harm.

We will see long-haul flights following more direct routes. Airbus is currently looking at supplying Singapore Airlines with updated A350-900 to service the Singapore to US route in 2018. This update would use increased fuel capacity and improved aerodynamics to allow the aircraft to fly 19 hours non-stop. We expect longer direct flights to become common, with total travel in a flight from Auckland to London falling from 28 hours to 22 hours.

As flight times increase more focus will go on improving the traveller experience. Economy-class flights will increasingly become within the reach of the average New Zealander. Improvements in fuselage design will reduce the stresses of air travel on the human body, and airlines will increasingly design menus that prioritise the health and wellbeing of their passengers. This will make strapping into seat 57B almost as comfortable as being in your armchair at home.

Smother operators – seamless travel from start to finish

In the future, catching a plane will be as easy as getting on a bus. We won’t need identification as airport systems will know who we are. This innovation will see changes to aviation security, with scanning technology allowing us to walk through automatic doors that filter out those people who have items that might cause harm to others.

Smart gates and eye scanning technology are already improving the experience of today’s passenger. We expect the speed at which passengers transition through airports will only increase.

Instead of buying tickets in advance, passengers will simply turn up at a kiosk at the airport, or consult their mobile travel service to get on the next flight. Passengers could use a borderless version of Wellington’s Snapper or Auckland’s HOP cards to swipe seamlessly on and off domestic and international flights.

This model will cater to demand for immediacy and flexibility.
Passengers would reap the benefits of a streamlined process for arriving at an airport and boarding a plane. Smart gates are a step in this direction, and their uptake and success shows what can be done.

**Future airports – a destination as well as a waypoint**

While stopovers will become a thing of the past for international flights, and domestic air travel will be a step-on service, we still see airports being a place where people spend time – not because they have to, but because they choose to.

The frequency of domestic flights will be such that we will simply step onto the next plane that leaves. We will no longer need to decide about covered or uncovered car parking. Instead, we’ll simply step out of an autonomous vehicle. Airports will no longer require car parking.

Airports will become destinations in their own right, investing in attractions to take advantage of the millions of wallets passing through their doors. Destination marketing is slowly becoming more visible today, with Changi Airport in Singapore planning to build the world’s tallest indoor waterfall and an indoor park filled with native trees.

People still need to travel, but airports will become very much part of that experience.

**Domestic highways in the sky**

Domestic air travel in New Zealand is currently at an interesting stage. The main trunk routes between Auckland, Wellington, Christchurch and (increasingly) Queenstown are undeniably successful. However, air travel to regional New Zealand is less popular.

This is a short-term trend that will change.

We see a future where the bustling metropolitan centres of Auckland, Wellington and Christchurch will become bigger and bigger. Growth in domestic air travel can play a role in that future.

The ‘one size fits all’ view of how New Zealanders want to live no longer exists. The ‘quarter acre dream’ is not everyone’s ideal. But for those who want a lawn to mow, increasing house prices in the main centres could lead to opportunities to commute from the regions.

People could own a larger property in regional New Zealand and commute to work in Auckland. The average commute in Auckland takes 40 minutes. With cheaper flights and more streamlined processes, an employee could maintain a similar commute time but live in a regional centre. The opportunity for private flights to and from small airports via a SkyUber system is possible, with a similar system already taking off in Portugal.

In our vision, New Zealand remains one of the most connected of countries, from our metropolises to our regional centres.
This futures story is a vision

This vision is not presented as the views of industry or government policy. It is the Ministry of Transport’s intention to stimulate wider debate and generate ideas on the possible future of New Zealand’s transport system. So tell us how our vision can be realised, or challenge our assumptions about how technology will advance. Raise questions and opportunities for future work. Because the future of air travel is only limited by the height of our aspirations.

Find out more about transport futures at www.transport.govt.nz/futures

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