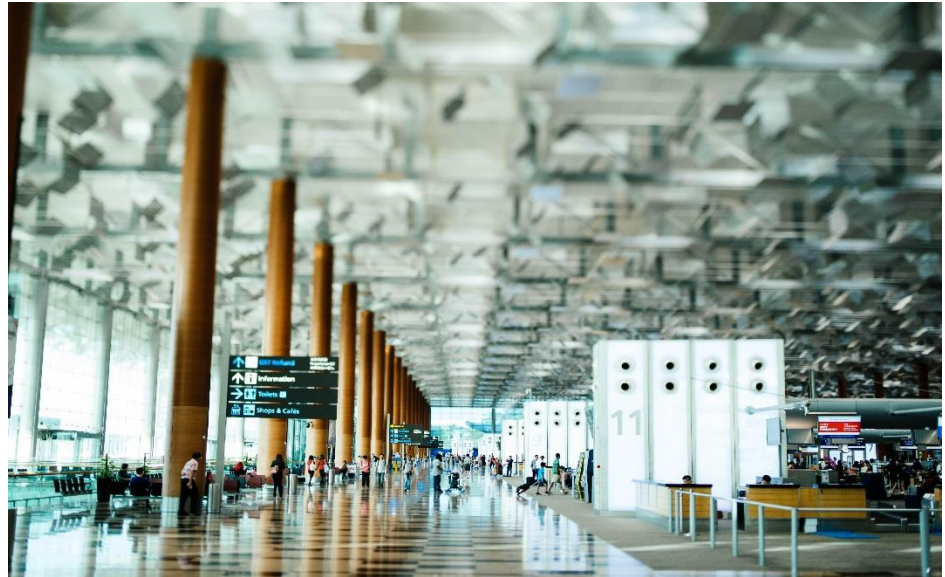


The Future is Taking Off

Key Trends Impacting Airport Planners

By:
Caspar Baum
Director, Aviation



To cope with the increased demand for air travel, authorities of the aviation industry will need to put on their thinking hats to implement new processes and technologies. According to Airports Council International (ACI), air passenger numbers are predicted to exceed 22 billion by 2040, a near tripling of the 7.6 billion air travellers in 2016.

It should be noted that the largest demand for air travel will be routes to, from and within the *Asia-Pacific* region. This gives pressure to air travel & tourism players within the region to better their end-to-end travel facilities, air carrier services, and attractiveness of the country destinations. Not only is the aviation sector required to serve increasing volumes, but passengers are increasingly becoming more discerning and demanding of the level of service they receive. It is forecasted that major airports by passenger volume need major infrastructure developments in the next decade to keep pace with projected growth. However, given the tight timelines for these projects and the scarcity of funding and space, it is unlikely that airports will expand as required within the timeframe.

The solution is to seek out new technologies and processes, and making changes to the airport in the context of the passenger's end-to-end journey.

Planning the Passenger Journey

Successful aviation planning is defined by adopting a forward-looking approach for potential investment in on-ground infrastructure, and one that provides for operational improvements and passenger capacity growth. Planners are not just looking at the transformation of airports, but the complete ground journey experience that moves through the airport - the passenger, the baggage cargo and the aircraft. Not all airports carry the same interface and characteristics, as decisions are made based on the countries' economic climate, circumstances and complexity of transport movement.

This complete passenger journey from home to final destination and back home again has two focus areas:

- Off-airport activities (passenger services beyond the offers of the airport), and advanced processing (pre-authorisation, pre-customs clearance, etc);
- Passenger interface systems

Off-airport and Advanced Processing Activities

One key element in enabling ground facilities to cope with huge increase in passenger volumes, and in the case of land-scarce countries such as Singapore and Hong Kong, aviation planners try to move as many processes as possible off-airport. There are virtual and physical components to this strategy. From the onset of aviation planning, government and authorities will need to embrace moving travel authorisations and customs controls to a digital environment, from the time of booking through to departures/arrivals. Airlines and airports also have a crucial role to play in ensuring data exchanges & integration take place, thus minimising the need for physical document checks at the immigration.

For the airport's infrastructure, all people moving systems will need to conveniently connect airports to the cities they serve. Prevalent in some cities, passengers could even commence their journey from secured entry gates (trains and bus stations) within the city, bypassing the need for processes within the airport terminal building. Linking the airport is the first step towards distributing transportation channels.

Virtual Airport for Passenger Interface

Passenger Interface Systems in airports are taking huge strides forward, thanks to predictive modelling (use of statistics to predict outcomes) and artificial intelligence that crunch real-time data far swifter than any human. Being aware of changes to a passenger's journey or their baggage will enable airport, airline, ground handler and all other stakeholders to optimise the decision-making process across the entire value chain.

Consistent definitions and a workable interface for information-sharing and data mining is vital. A passenger could turn to several touchpoints - staff, website, mobile applications, customers' information desk - for a flight update and get several different answers. Hence, deploying more sophisticated real-time passenger interface systems will facilitate greater choice and flexibility for customers, and at the same time, increased process efficiency and trigger compliance & security.

When a virtual airport is created, it literally means that some digital activities can be undertaken

beyond the offers of the airport. Human capacity can potentially be added without the need for a physically bigger airport. The next few sections will discuss key trends that airport planners need to look out for when designing Smart Airports.

Designing and Developing Smart Airports

There are many factors to consider when airport planners design Smart Airports - ease of movement throughout the airport, efficiency and seamless integration of passenger processing touchpoints, as well as large scale sharing of information between airport operator, airlines, ground handlers and support organisations, thereby ensuring timely flight departures and arrivals.

Enhancing Passenger Processing Efficiency Through Self-Service Options

Planners are given the uphill task of making sure that passengers' airport experience and satisfaction index constantly remains a mark above the rest, even as increasing passenger traffic puts strains on the capacity of various processing touchpoints.

As part of the launch of Fast and Seamless Travel (FAST) transformation programme at the Singapore Changi Airport, Changi Airport Group (CAG) has introduced the new "automated bag drop machines" at the self-service luggage check-in facilities, located at the airport's newest Terminal Four (T4). These machines have incorporated "facial recognition technology", which eliminates the need for manual identity checks by staff and enables the automation of processes and checks for the departure journey.

This helps to address long term manpower productivity concerns. As such, check-in agents can be re-deployed for other airport roles. For travelling passengers, it will mean shorter queue and greater flexibility to check-in at their own convenience using the self-service check-in options.

Enhancing Operational Efficiency for the Airport Community

Airports have their own set of challenges to overcome, including flight delays, unpredictable events, and inefficient use of resources. Better collaboration amongst airport stakeholders is the key to overcoming these challenges and an "Airport Collaborative Decision Making (ACDM)" technology can very well be a key enabler in this respect.

This technology will provide the airport with accurate information on aircraft arrivals and departures to minimise delays and increase capacity. It basically syncs up airports, airlines, ground handlers, and air traffic controllers, on the same collaborative platform to work more efficiently together.

Some key benefits that ACDM brings to the airport eco-system:-

- a) For Airlines – shorter taxi times, fuel savings, reduced delays mean cost savings and customer satisfaction, increased capacity with the same fleet;
- b) For Air Traffic Control – more predictable traffic & therefore reduced workload, reduced probability of errors, better pre-departure sequence, beneficial network effects as more airports become ACDM accredited;
- c) For Airport Operator – reduced environmental impacts such as noise and emissions, improved punctuality, improved gate planning, stand planning and management.

Airport IT Infrastructure

With all systems integrated at the front end to serve discerning travellers, it is important to also provide a robust infrastructure to support successful roll-out of integrated facilities management. A good IT masterplan, coupled with knowledge on how different systems interact and complement one another – will help greatly in keeping good records on maintenance, and ensure sustenance of the business.

In essence, the airport scene will not change dramatically even if such a vision comes to pass. An airfield will always be a necessity for the aircrafts. The airport retail model will, however, evolve. The following section will explore how consumer behaviour in air travel has evolved, and how it has impacted the way smart airports pan out.

Air Travel Passenger – Is It All About Me?

We discussed the importance of integrating passenger systems to capture demographical needs. When planning around these systems, a huge population of the “me-centric” passengers (refer to Illustration 1) use mobile devices to communicate with other computers, kiosks, smart devices and sensors to enable seamless, safe and secured transactions.

Airport interface systems need to be consistent and simple, so the me-centric passenger can

switch between devices, and have the option of speaking with a virtual agent at any point in the airport.



Illustration 1: “Me-centric” passenger who uses her mobile device to communicate with other kiosks, smart sensors (an important factor to consider when planning for Airport Interface Systems)

Changing Demographics and Needs

The growth of the middle class with its additional discretionary money to spend on leisure and entertainment, means that they are explorative, and will be open to new travel experiences.

The Millennials

The new middle class may be led by Generation Y, or better known as the Millennials. While the millennials make up the majority of global travellers, they are also making huge purchases online – Amazon, Alibaba, etc. This begs the question on whether there is a need for shopfronts at the airport. Perhaps, to give the retail experience a more tactile holistic approach, shops in airports can be converted into experiential centres, as opposed to mere transaction venues. Airports can even have a dedicated space for pick-up of goods ordered online.

Millennials also strive on personalising their purchasing needs and travel options. Investing in a robust “customer relationship management (CRM)” system that provides a 360 view of customers - with better integration of data related to travelling and spending - may very well be the airport’s long term business model.

The Silver Generation

The fact that today’s population is living longer, also means there will be more seniors (older than 60 years) travelling. Airports of the future will need to cater to the exponential growth of the ageing population.

The ageing population will have decreased mobility and the inability to cover long distances. Airports will need to build seamless connectivity (with handicapped friendly facilities) within the terminals, and to review walking distance between touchpoints even as terminals become larger in size. At the same time, smaller details that cater to the ageing population, such as incorporating larger purpose-built public washrooms, will need to be taken into account.

Conclusion - So, What Holds for the Airport's Future?

As aviation planners gather feasibility studies based on consumer behaviourism, travel patterns, flows and processes, the basic rule of thumb is to remain flexible to changes, and make adjustments where it requires.

Citing the example of Singapore's Changi Airport, will the airport remain as a key transfer hub, or will there be more planned in/outbound flights to cater to increased air travel demands within the APEC region? Singapore, as a key location for global business exchange, has transformed dramatically from the days when Changi Airport was first opened.

How will new business trends impact Singapore's status as a hub, and how should we implement terminal design that is modular in nature to facilitate nimble operational adjustments to traffic size and mix? Moreover, with the advent of broader mobility developments such as self-driving vehicles, how should the airport design be sufficiently forward-looking and flexible to seamlessly integrate with such new technologies in the longer run, which are critical aspects of building a holistic aviation ecosystem. All these factors will greatly influence planning and design of the future airport.

This article is co-created by Surbana Jurong Academy.

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Connect with Us

Caspar Baum

Caspar.Baum@surbanajurong.com