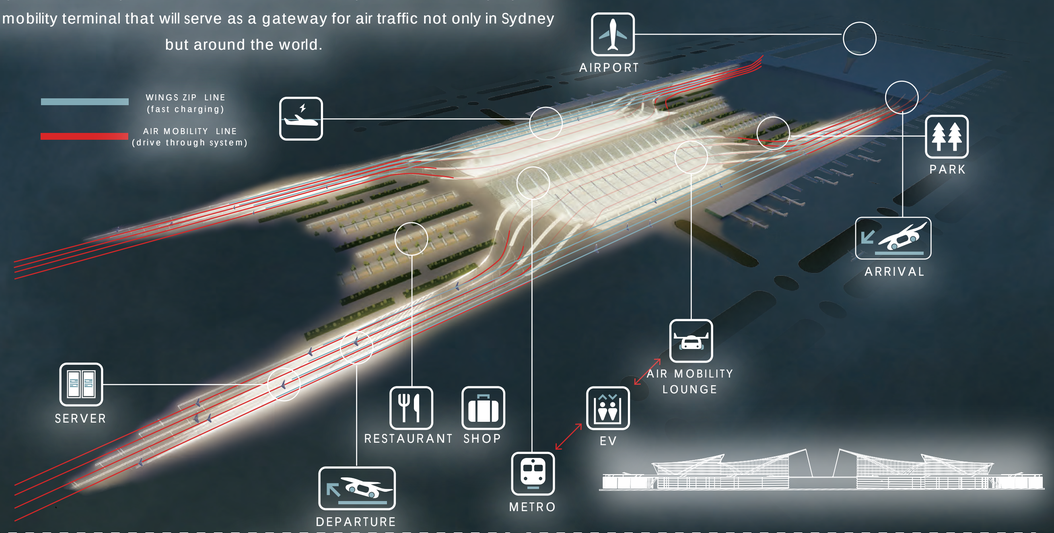
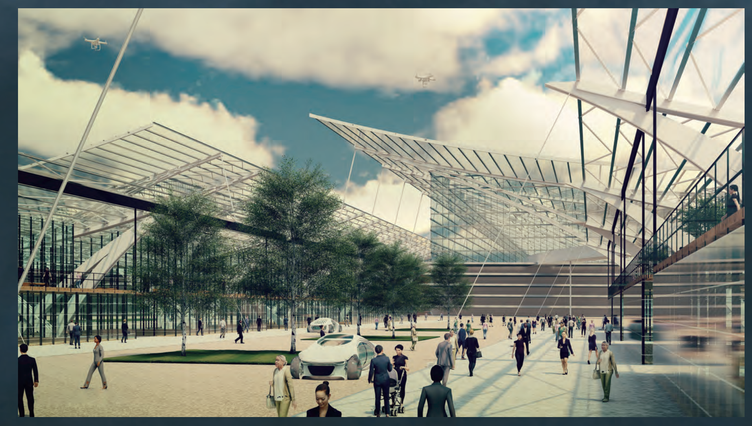
AMT

AIR MOBILITY TERMINAL

Concept

In 2050, Western Sydney Airport is expected to attract 80 million tourists and 200,000 jobs. This number cannot be accommodated by conventional land transportation. To solve this problem, it is imperative to revolutionize air transportation. This is a proposal for an air mobility terminal that will serve as a gateway for air traffic not only in Sydney but around the world.





Air transportation (air mobility)

In 2056, Western Sydney Airport is expected to attract 80 million passengers, employ 200,000 people and attract 400,000 residents to and around the airport. The 2056 plan calls for 7% for active transport, 43% for public transport and 50% for private cars. This definitely causes traffic jams. The proposed ATM (Air Mobility Terminal) will be able to carry about 300,000 people a day from the air. It accounts for about 60% of annual airport passengers.

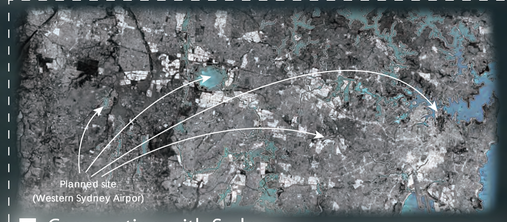
	CAR	public transport	active transport	air mobility
Traditional plan	50%	43%	7%	
proposal plan	13%	20%	7%	60%

Takeoff method

Air mobility glides and takes off. Vertical take-off is unstable and takes a long time per vehicle, so it cannot carry many people. By gliding and applying wind to the wings to generate lift, the take-off time per vehicle is reduced and the take-off weight is increased, making it possible to carry more people more efficiently.
Headwinds are also very important when gliding and taking off.

Cooperation with Sydney

Air mobility runways run parallel to large airliner runways. This is because the lines of flow do not intersect with large airliners. The eight air mobility runways are parallel and all take off in the same direction to improve air mobility circulation. The takeoff direction can be reversed for each season when the wind direction changes.



Cooperation with Sydney

Government plans are focused on connectivity with cities such as Sydney. High density Sydney makes it difficult to build a small airport like Air Mobility. So we focused on the geographic features around Sydney. Access can be made more efficient by using the many lakes and rivers around Sydney as airstrips. This allows you to connect even in dense cities. Vertical landing is also possible in cities with parking lots and rooftops.

Fusion of runway and architecture (utilizing updraft by server)

Air Mobility is controlled by a quantum computer. The quantum computer server room is on the ground, and the roof of the server room is a runway. The air entering the server room is warmed by the computer, creating an updraft due to the chimney effect. The angle of the horizontal louvers installed at the opening of the roof adjusts the updraft in real time, creating a headwind that makes it easier for air mobility to take off. Sensors installed in the server room can observe and analyze wind volume and wind direction. Air circulates quickly in the server room to prevent thermal runaway.

Grasshopper — Try & Error / feedback — DesignBuilder

A wind analysis was performed with designbilder on a model created with a parametric design software (Grasshopper).
You can derive the optimum horizontal louver angle throughout the year.

Cross section of data center and runway