

AIRPORTS THROUGH THE AGES

Lets look at how airports have evolved over the years...

1

The early airstrip

Many airports started out as simple airfields during World War I (1914-18), just like this one. There wasn't much to it - just of a grass strip where military planes could take off and land, plus a handful of small buildings and tents used by the pilots and the people who looked after the aircraft.

Aircraft were stored in large huts or big canvas tents called hangars.

Most early planes were biplanes with two sets of wings.

Planes took off from and landed on a closely mown strip of grass.

Early planes were made of a wooden frame covered in canvas or linen.

These planes were often started by someone spinning the propeller by hand.



2

The 1930s airport

By the 1930s, the small military airfield had grown into an airport where people came to catch flights on planes called airliners. Airports sprang up all around the world at this time, but weren't very big or busy. This was because flights were expensive, so only a few people flew. Back then, a pair of return flights across the USA cost the same as a brand new car!

Long-distance air travel was only possible in short hops. So, passengers often needed somewhere to stay between flights, such as this smart new airport hotel.

New, faster planes were made of metal, not wood. Most could hold between 10 and 40 passengers.

The new airport had a terminal - a building where passengers arrived and departed. On top was a control tower from where staff kept in touch with pilots.

Boarding

Passengers had to walk across the airfield to climb stairs up into the plane.



4

The airport today

My, how our airport has grown! It sprawls across the land and is now more like a small city. Thousands of people work here. As airports expanded, so did the numbers of people they looked after. In 1946, London's Heathrow Airport handled 63,000 passengers. In 2016, the same airport welcomed over 73 million people!

A series of planes queue up on the taxiway. They're waiting for their turn to take off.

Day and night
Many airports don't sleep but keep operating 24 hours a day.

Fuel stores

Modern airports store large amounts of aircraft fuel to keep all their planes flying.

The first flight
Open the flap to learn about the first flight.

Super jumbo

This Airbus A380 is the world's biggest jet airliner. It can carry up to 853 passengers on its two passenger decks. The plane's body is twice as long as the distance of the first flight made by the Wright Flyer.

Terminals

This modern airport has an enormous terminal. Some big airports deal with so many flights they have more than one terminal.

Mini city

The original hotel is now surrounded by many more buildings, including hotels, offices and multi-storey car parks.

This cluster of hangars is where planes are stored and repaired when they're not being used.

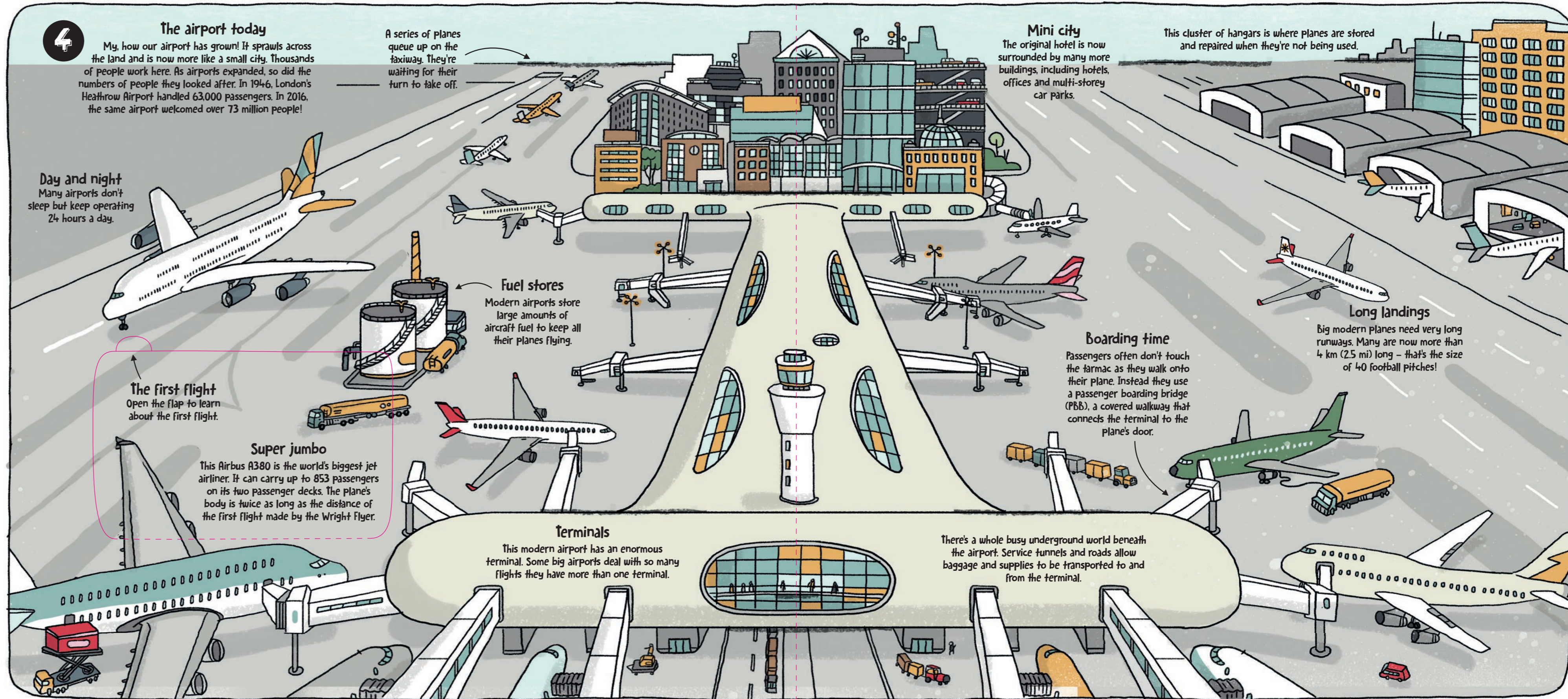
Boarding time

Passengers often don't touch the tarmac as they walk onto their plane. Instead they use a passenger boarding bridge (PBB), a covered walkway that connects the terminal to the plane's door.

Long landings

Big modern planes need very long runways. Many are now more than 4 km (2.5 mi) long - that's the size of 40 football pitches!

There's a whole busy underground world beneath the airport. Service tunnels and roads allow baggage and supplies to be transported to and from the terminal.



IN AND OUT OF THE AIRPORT

Tickets? Check! Passport? Check! Baggage packed? Good. It's time to go to the airport, and you'd better not be late! Most airports offer many ways for passengers and workers to reach them. Some, like Venice Airport, even have a boathouse so that people can arrive in motorboats or water taxis. Most people, though, travel to and from airports by road or rail. How many different types of vehicle can you spot here?

Roads

The network of roads around an airport can be complicated. Follow the signs carefully or you might get lost!

Bus station

Buses arrive and leave from here.

Railway station

Trains connect the airport with nearby cities and towns.

At Gisborne Airport in New Zealand, the train tracks cut right across the middle of the airport's runway! Turn to the last page to see what this looks like!

Make sure you allow plenty of time to get there! Traffic jams on busy roads can lead to frustrating delays.

Car parking

Most airports have lots of car parks. Some people leave their vehicle in a long-stay car park, like this one, and collect it when they return from their holiday or a business trip. The biggest airport car park is in Detroit and holds 10,930 cars. Can you count the number of cars in this car park?

Dropping off

Drop-off areas allow people to ferry their friends and family close to the passenger terminal.

Short stay

This short-stay car park is usually for people parking for between an hour and a day.

Shuttle buses

Shuttle buses ferry people from car parks and hotels to the airport.

Long luxury cars called limousines carry VIPs to the airport in style.

A helicopter whisks people from the city centre to the airport in minutes.

The city

Major airports take up large areas of land, and so have to be built outside of cities.

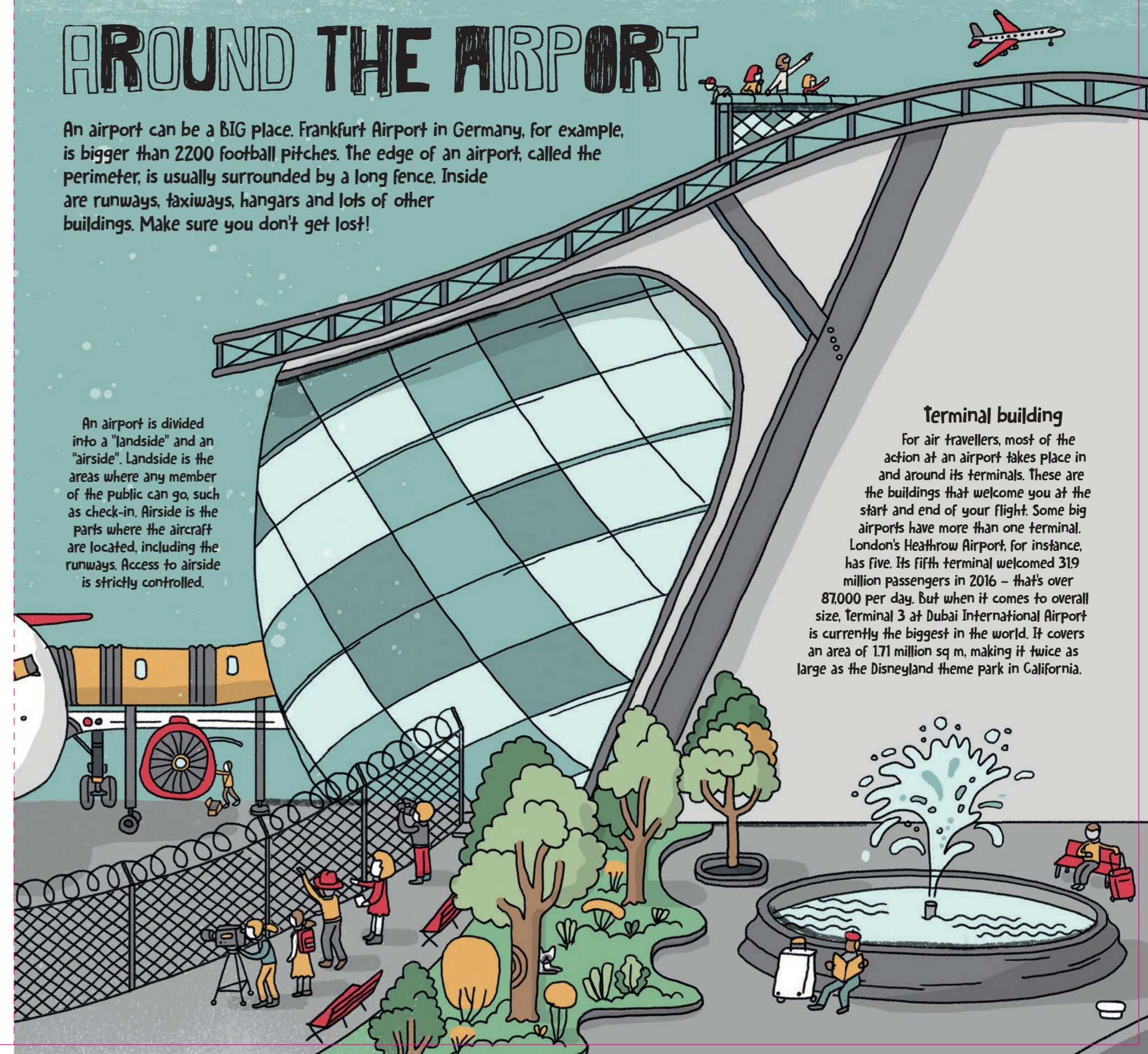
AROUND THE AIRPORT

An airport can be a BIG place. Frankfurt Airport in Germany, for example, is bigger than 2200 football pitches. The edge of an airport, called the perimeter, is usually surrounded by a long fence. Inside are runways, taxiways, hangars and lots of other buildings. Make sure you don't get lost!

An airport is divided into a "landside" and an "airside". Landside is the areas where any member of the public can go, such as check-in. Airside is the parts where the aircraft are located, including the runways. Access to airside is strictly controlled.

Terminal building

For air travellers, most of the action at an airport takes place in and around its terminals. These are the buildings that welcome you at the start and end of your flight. Some big airports have more than one terminal. London's Heathrow Airport, for instance, has five. Its fifth terminal welcomed 31.9 million passengers in 2016 - that's over 87,000 per day. But when it comes to overall size, Terminal 3 at Dubai International Airport is currently the biggest in the world. It covers an area of 1.71 million sq m, making it twice as large as the Disneyland theme park in California.



Airport terminals come in all shapes and sizes. Some even have skydecks or open platforms, such as this one, in their roofs, where you can watch planes take off and land.



The passenger boarding bridge lets passengers walk directly onto their plane while staying warm and dry.



SKYDECK

A food court gives hungry passengers a place to eat and drink.

Restaurants

An airport has to cater for the thousands of hungry people who visit it each day. Huge amounts of food are consumed at a large airport. Visitors to Chicago's O'Hare Airport, for example, eat around two million hot dogs a year!

Solar panels

Terminals use lots of power for heating and lighting. Some terminals have their roofs covered in solar panels that turn sunlight into electricity.

Departures

This is the area where people enter the airport to check in, pass through security and board their flights. They usually have to wait in an area called a departure lounge until their flight is ready to leave.

Security

Airports are guarded by tight security. CCTV cameras watch over everyone coming and going, and there are security guards and police officers on hand to deal with any emergencies.

The amazing baggage robot

Robots are going to make arriving at an airport even easier in future. Leo is a smart robot that has been tried out at Geneva Airport in Switzerland. It approaches passengers outside the terminal, collects their bags, prints out luggage tags and then takes the bags away to be loaded onto the passenger's plane.

Better remember where you left your car - some airport car parks have many floors!

Security

People and their hand luggage are checked for any items that cannot be carried on board.

Check-in

Here, passengers hand over their large bags and receive a boarding pass telling them which seat they have on the aeroplane.

DEPARTURES

People hop off a shuttle bus, grab their bags and hurry inside. They don't want to be late!

CAR RENTAL

BOARDING

BAGGAGE

Suitcases and bags travel round the baggage carousel, waiting to be collected by passengers.

PASSPORTS

CUSTOMS

Friends and family greet travellers coming back from holiday.

ARRIVALS

Tired after a long flight, an arriving passenger uses a baggage trolley to carry her heavy bag.

Staff are on hand to help with arriving passengers' enquiries, telling them how to catch a train or where to go to hire a car.

ARRIVALS

HELP DESK

DEPARTURES

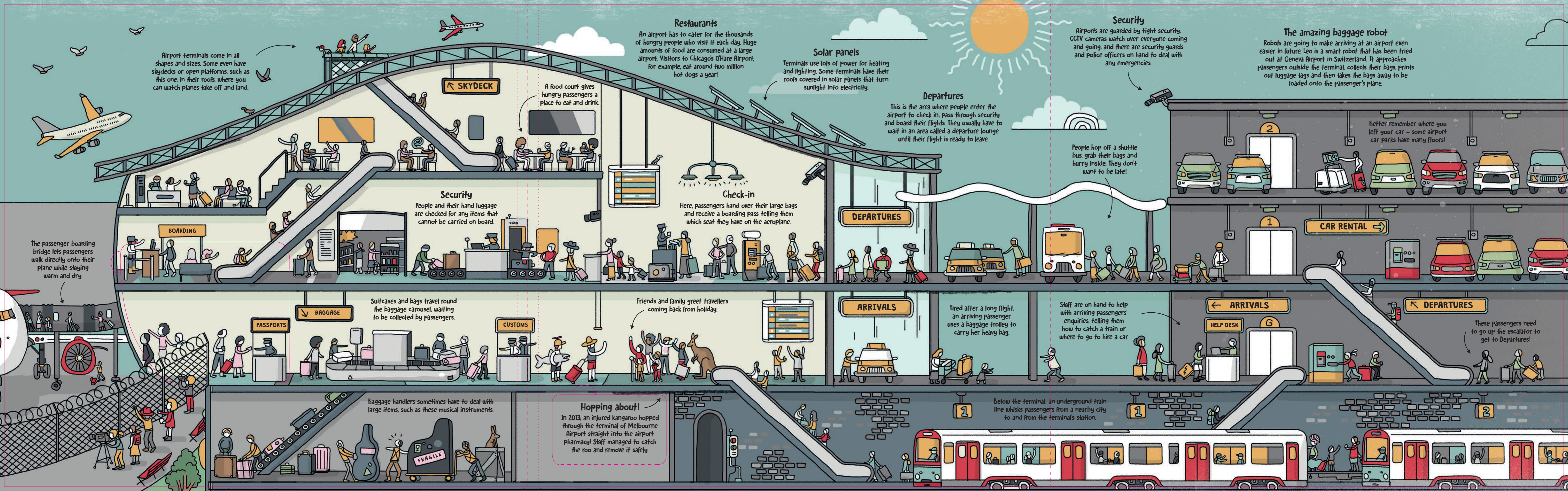
These passengers need to go up the escalator to get to Departures!

Baggage handlers sometimes have to deal with large items, such as these musical instruments.

Hopping about!

In 2013, an injured kangaroo hopped through the terminal of Melbourne Airport straight into the airport pharmacy! Staff managed to catch the roo and remove it safely.

Below the terminal, an underground train line whisks passengers from a nearby city to and from the terminal's station.



THROUGH THE AIRPORT

Getting to the airport is just the start of your journey. Passengers have to pass through a number of stages in the terminal before they can board their plane for take-off. At the other end, they go through similar stages before they leave the airport. These stages take time, which is why you need to get to the airport nice and early – so you don't miss your flight!

DEPARTURES

In the USA, travellers have their passports checked at check-in.

Travellers can keep smaller bags, known as hand luggage, with them on the flight. Each passenger is given a boarding pass telling them their flight details and seat number.

1. Check-in

Passengers hand over large items of luggage to be weighed, tagged and loaded onto the plane.

Travellers can keep smaller bags, known as hand luggage, with them on the flight. Each passenger is given a boarding pass telling them their flight details and seat number.

2. Security

Passengers empty their clothing of any metallic items and place their hand luggage into trays to be scanned. They step through a metal detector and may be scanned more closely or searched if the detector beeps.

An airport security officer studies the scanner screen for any suspicious items packed inside the bags.

And you're off
Passengers now head to the departure lounge where they can rest, eat or shop before they board their flight.

Passports from Finland act as a flipbook! Flicking the pages shows a moose running along the bottom of the passport.

3. Passport control

Passports are little book-like documents issued by a nation to prove who you are. They allow you to travel between different countries and are checked at airports by officials to see if they are valid.

After your bags have been thoroughly checked, it's on to passport control.

ARRIVALS

You may be tired or restless when you get off your flight, but there's just a few more things to do in the Arrivals Hall before you can leave the airport and get going.

1. Passport control

Your passport is checked again at your new destination. Some airports use biometric scanner gates. These scan features, such as your face, your fingerprints or the coloured part of your eye (the iris). If the scan matches the data in the passport's microchip, the gates will open for you to walk through.

Biometric passport gates

2. Baggage reclaim

Passengers wait while baggage handlers unload the aircraft. Their luggage will eventually appear, travelling around a conveyor belt called a baggage carousel. Is your bag on there? In 2016, 21.6 million bags were lost by airlines. Most, though, were reunited with their owners within 48 hours.

Sniffer dogs

Dogs can be trained to sniff out explosives and other substances that it is against the law to carry at an airport or bring into a country.

A customs officer gets a surprise. A live crocodile has been smuggled into the country, hidden inside a suitcase!

And you're there!

Time to head out of the airport and take a bus, coach, train, taxi or hire car to your final destination. Yippee!

3. Customs

Laws stop people bringing certain things into a country. For example, many nations have strict rules against bringing in plants, wild animals, weapons and other hazardous things. Customs officers search some passengers' bags and clothing on the lookout for these illegal items.

Some bags look spookily similar. Better make sure you pick up the right one!

Some passports don't have biometric microchips. These have to be studied by a passport control officer by hand.

Signs display which carousel a flight's baggage will arrive on.

Big items are unloaded separately and placed in the baggage area, ready for collection.

OVERSIZED BAGGAGE

FRAGILE

PLANES - INSIDE AND OUT

Loaded with passengers, crew, baggage and fuel, an airliner gets ready to take off. Inside, the flight attendants offer assistance and prepare food and drinks while passengers take their seats. It's time for you to settle in for the long flight ahead.

Staying in contact

The pilot and co-pilot sit at the front of the plane. They keep in contact with the ground by radio, onboard computers and by peering through their windshield.

The plane's long body is fitted with many rows of seats. The number of seats can be changed in just a couple of hours by ground crew.

Windows

Oval-shaped passenger windows give amazing views once in the air. They are made of layers of tough plastics.

Aircraft marshalling

A member of the ground crew, known as an aircraft marshaller, communicates with the pilots using paddles, telling them which way to go.

Wheels

All the heavy weight of a fully loaded airliner is carried on just a few very strong wheels. Each rubber tyre on an Airbus A380 is replaced after 320 landings and costs over US\$90,000!

First class

Passengers in first class are served the finest food and drinks, and have plenty of space to work or relax. These are the most expensive seats on the plane.

Galley kitchen

Cabin crew work hard inside the plane's small kitchen – known as a galley – getting everyone's meals ready. Food is prepared on the ground and packaged in trays. The cabin crew use convection ovens, which blow hot, dry air over the parts of the meal that need heating up. Some galleys also have coffee machines and other kitchen equipment.

Business class

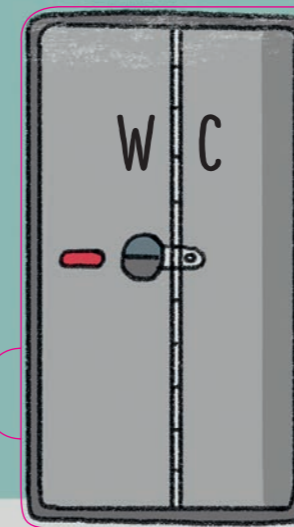
This area is less luxurious than first class but still much more comfortable than economy. It has fewer seats per row and more space between the rows than economy class. Most business-class seats are adjustable and may recline into a mini bed for long flights. They also feature USB ports to power a passenger's laptop or other digital devices.

Cabin crew

Flight attendants prepare food and drink in the galley, serve it from trolleys wheeled down the aisle and assist passengers. At the start of each flight, they perform a safety demonstration, showing where the emergency exits are and how to use the life jacket that is stored under passengers' seats.

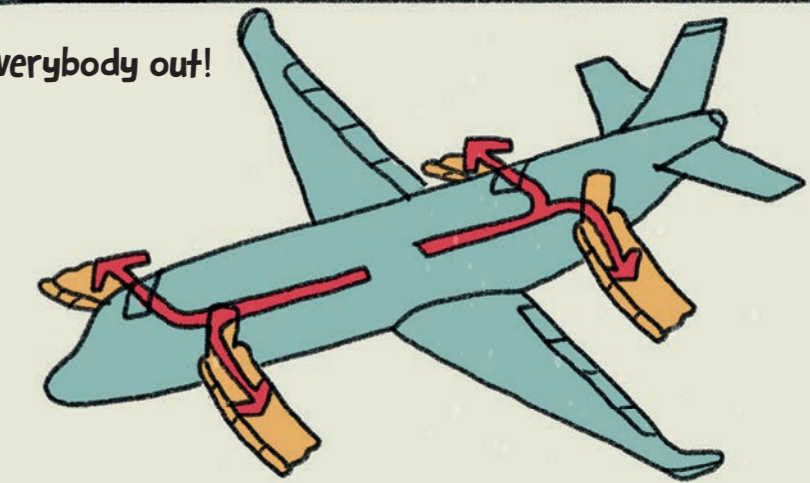
Toilets

An airliner's toilet works in a different way to your loo at home. Instead of using large amounts of water to flush away waste, plane toilets use suction and less than half a litre (0.1 gallons) of water mixed with disinfectant to draw waste away. It is held in a large tank which is emptied when the plane is back on the ground.

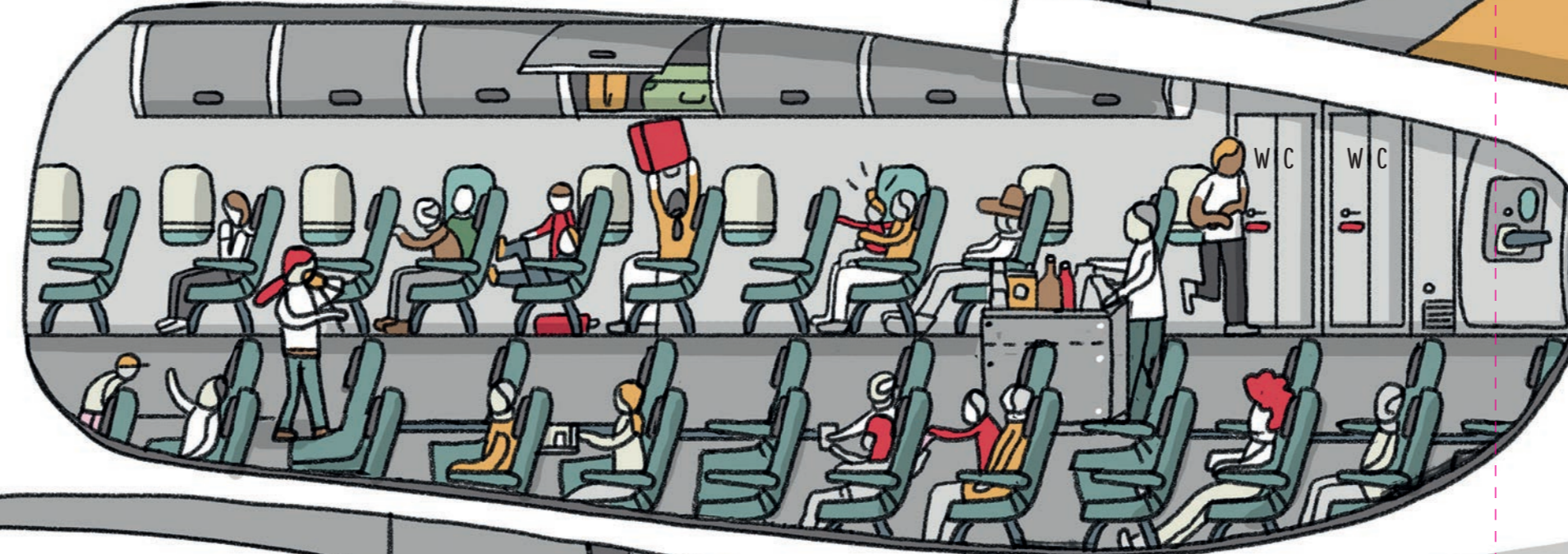
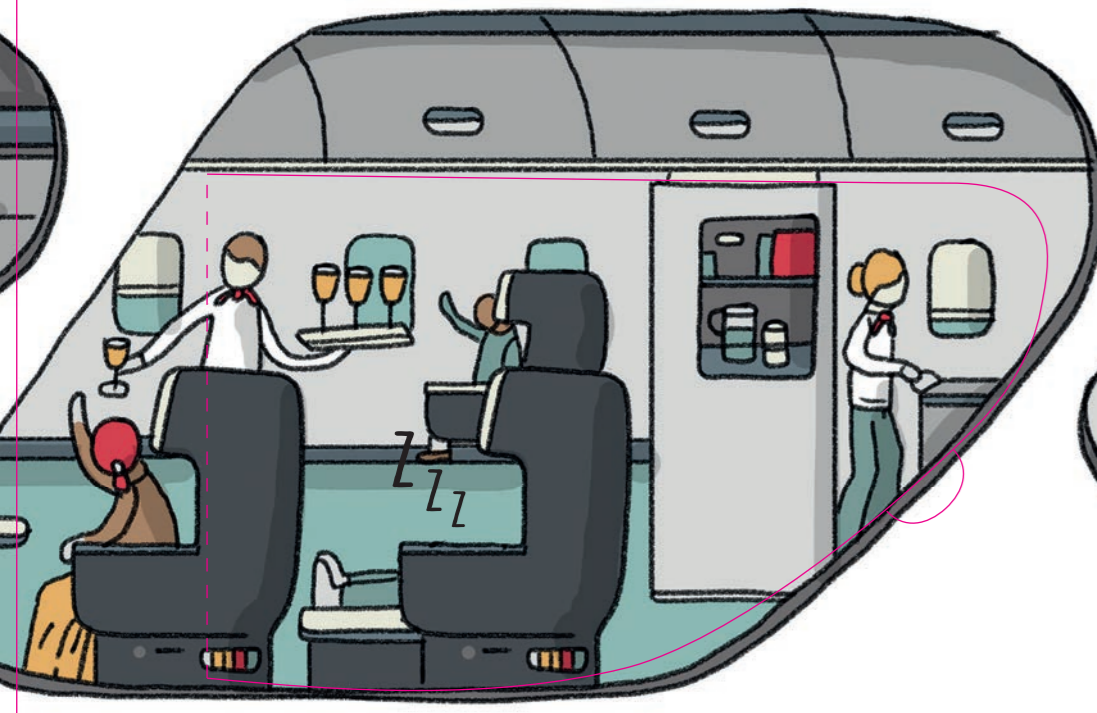


The heavier an airliner is, the more fuel it has to carry. So, the latest airliners replace some metal in the tail with lighter materials. In a Boeing 777, the weight saving allows the plane to carry a further 13 passenger.

Everybody out!



If there is an emergency and the plane has to land away from an airport, passengers and crew need a way to get out quickly. Emergency slides are stored in the bottom of plane doors. They can take as little as six seconds to unroll and fully inflate, allowing people to slide down to the ground safely. An Airbus A380 airliner has 16 of these slides.



Economy class

The seats in economy class are much smaller, more packed together and less comfortable than in the plane's other areas. They are also cheaper, which is why the majority of passengers travel here. Most airlines contain rows of four, six or eight seats. On some Air New Zealand flights, three economy seats convert into a skycoach – a bed that can sleep two passengers.

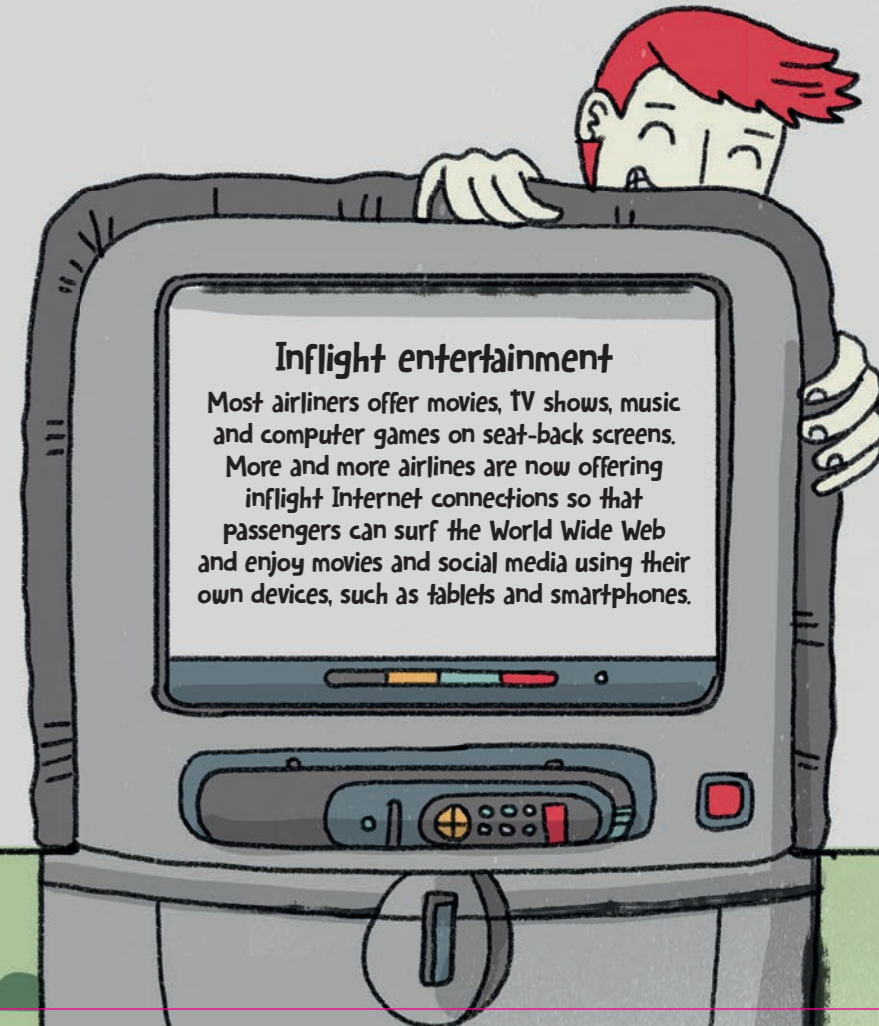
Some overhead lockers are used for storing blankets, which flight attendants can hand out to any passengers feeling chilly.

Extra engine

Airliners have a secret extra engine, often found in the tail of the plane, called the auxiliary power unit (APU). Instead of thrusting the airliner forward through the sky, the engine's power is used to run a generator to create electricity, particularly when the aircraft is on the ground. Generators on a Boeing 787 Dreamliner produce 1.45 megawatts of electricity – that's enough to power hundreds of homes.

Inflight entertainment

Most airliners offer movies, TV shows, music and computer games on seat-back screens. More and more airlines are now offering inflight Internet connections so that passengers can surf the World Wide Web and enjoy movies and social media using their own devices, such as tablets and smartphones.



Currently, the most expensive ticket available anywhere in the world is a first-class return from New York, USA, to Mumbai in India, which costs around \$76,000!