Netflights

TRAVEL 2050:

THE FUTURE OF AIR TRAVEL

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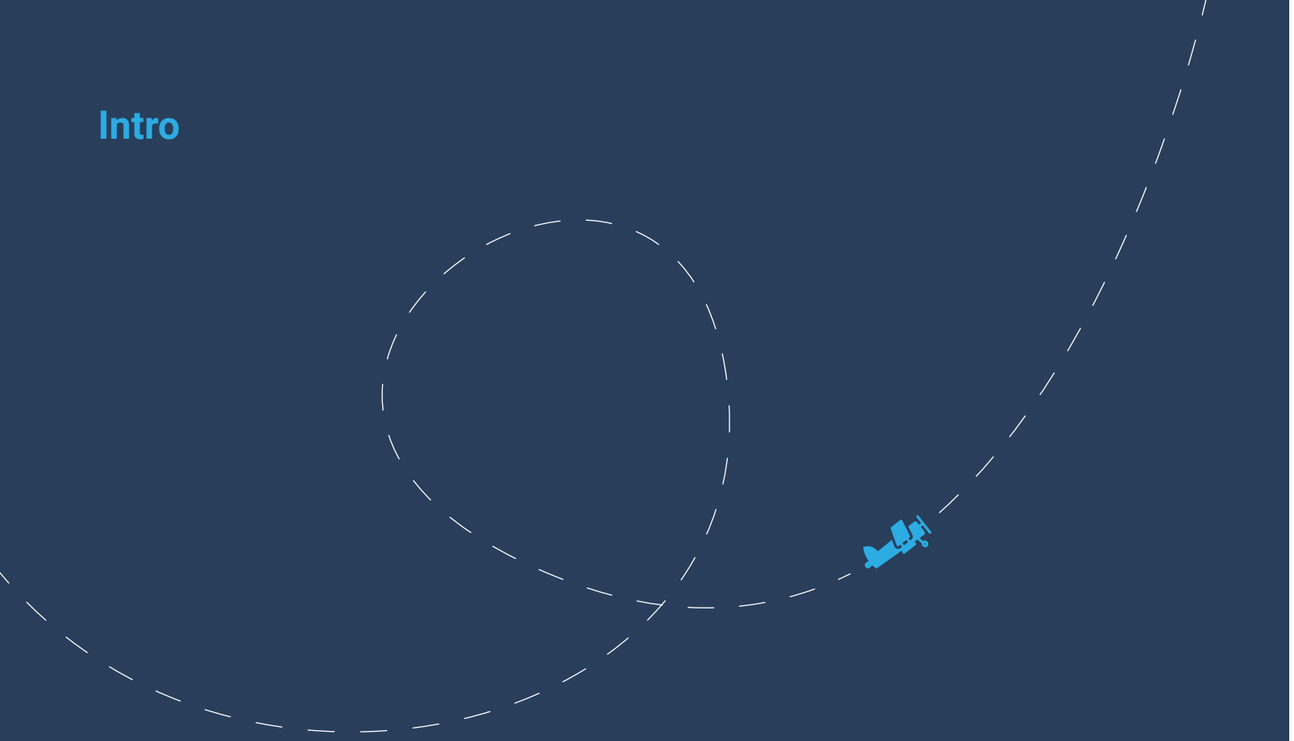


When the Wright brothers successfully piloted what is generally thought to be the first powered plane, suitably named the Wright Flyer, they unknowingly fast-tracked humanity into the future. It was December 17th, 1903.

Up until then, despite many extraordinary leaps forward in aviation, from hot air balloons to airships, unlocking the true potential of the skies remained a dream. Not anymore. Aviation and powered flight would be a game-changer, a landmark moment in what would be one of the most progressive and transformative centuries in human history.

Fast-forward to the 21st century and not only is aviation technology beyond the wildest fantasies of those early pioneers, but the whole flying experience – from searching and booking flights to checking in at the airport and enjoying in-flight entertainment – continues to flourish. And, of course, more people than ever before are now travelling by air, with the International Air Transport Association (IATA) **reporting in 2018** that "worldwide annual air passenger numbers [had] exceeded four billion for the first time".

And the foreseeable future? That's what we're here to discuss. Our new report, Travel 2050: The Future of Air Travel, is an informed forecast on how the airport and flying experience will evolve over the next 30 years. All we'll say for now is that if it advances in the many ways we expect it will, it'll be all at once familiar and futuristic. No shiny suits and glass floor planes, mind.

To begin with, in ***Section One***, we take a look back at the developments made in air travel over the past 20 years, from the growth of self-service kiosks in airports to the notable shift away from jumbo planes to smaller, more fuel-efficient alternatives. In ***Section Two*** we look ahead to the next 30 years. Here you'll find the main trends we've identified, from automation to personalisation. Finally, in ***Section Three***, we shift our focus to what travellers today think about airports and flying in the future. And, without giving too much away, there's a clear appetite for sustainable air travel.

In putting this report together, we've come out of the experience feeling optimistic and excited by what the future holds. We hope you do too.

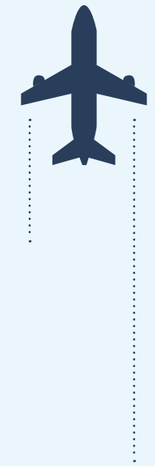
Enjoy.

METHODOLOGY

The research was commissioned by Netflights. It was conducted and overseen by a third party agency between December 2019 and January 2020, and is comprised of original desk-based research and a consumer survey.

Over 2,000 respondents who have travelled in the last 12 months, aged 16 and over and representing all the main regions of the UK, took part in the consumer survey.

SECTION ONE



Travel in the new millennium: 20 years of innovation

At the start of the Noughties, booking a holiday online was still a relatively rare occurrence, queuing times at the airport were uncomfortably long, and in-flight entertainment was often limited to a few small TV screens that dropped down from the ceiling of the cabin. It was still largely an era of holiday brochures and bricks-and-mortar travel agents.

Twenty years on, it's an entirely different story. Need inspiration? **Head to Instagram.** Looking for a last-minute deal? Search from thousands of flights, compare hundreds of airlines and book online with **just a few clicks.** Keen on watching what you want, when you want? No problem: everyone's got their own 'entertainment system' (doubly so if you factor in phones and tablets). Some airlines even allow you to preselect your viewing options before you board (your food, too).

The last two decades have seen new technologies and new thinking drastically disrupt air travel, so much so that 2020 feels positively futuristic compared to 2000. Here are five key developments that have ushered in a new era.

COMING OF AGE: AIR TRAVEL GOES DIGITAL

The idea of being able to search quickly and effectively for a top-notch holiday on a mobile phone was almost fanciful at the start of the 21st century. Likewise, being able to book flights on your home computer while making a cup of tea – well, that felt a little like a scene from a sci-fi movie. And let's not even mention doing it with just your voice and the help of a virtual assistant.

Yet, thanks to a 'digital makeover', most, if not all, aspects of air travel can now be accessed, organised and processed in a far more user-friendly and time-efficient way – without ever having to interact with another human being.

That's particularly true of checking-in and getting your boarding pass, which were once extremely stressful and protracted experiences. In 2020, though, you don't even have to check-in at the airport or have a physical copy of a boarding pass. You can now easily do the former online and in advance, while the latter can be downloaded directly onto your phone while on the go. Meaning you don't really need to have any direct contact with your airline until you reach the gate.

The take-up of a digital-first approach to travel has been incredible. A case in point: when ABTA **asked respondents in 2013** how they had booked a recent holiday, just under half (49%) said that they had done so online. In **2018**, a whopping 81% said the same.

> ***It's madness. There is nothing convenient about using the mobile device as either a credit card, driver's licence, virtual ticket, or boarding pass. It's a misuse of technology and just plain dumb.***

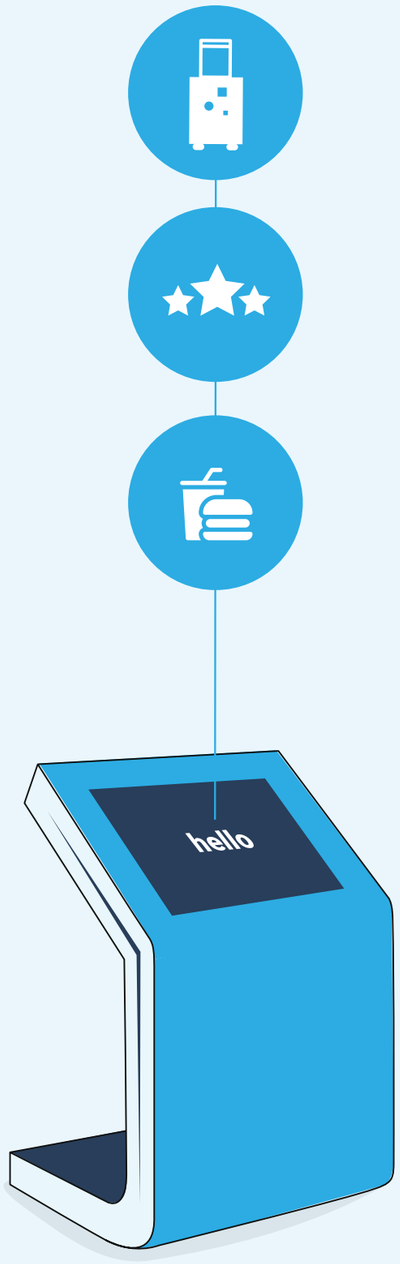
John C. Dvorak, Tech and Computing Columnist, gets it wrong in a PCMag.com column in 2014

1999: Air Alaska introduces online check-in for the first time

In 1999, while Google was just a few months old and Facebook was half a decade away from being launched, Amazon's Jeff Bezos was named Time Magazine's Person of the Year. The magazine's managing editor, Walter Isaacson, said at the time that he was "a person who not only changed the way we do things but helped pave the way for the future".

The same could be said of Air Alaska, which became the first airline in the world to introduce online check-ins that very year. While this significant development didn't garner much attention at the time, it was a noteworthy milestone in aviation history.

Kathy Bloom, who worked for a company that was trialling the service, was the first person to check-in online. Speaking at the time, she said: "I found the process easy and quick, and I'm for anything that will save time at the airport… Now I'm ready to go right to the gate and board before I leave the office."



TAKING THE LEAD: THE RISE IN SELF-SERVICE KIOSKS

Head into many banks and supermarkets today, as well as an increasing number of hotels, fast food joints, bars and restaurants, and you'll find self-service kiosks set up in key locations. The same is also true at most airports, whether you're travelling to and from London Heathrow or Delhi Airport. In the 21st century, kiosks abound.

The adoption of self-service kiosks at airports has been extraordinary. Clunky and limited at first, if not a little alien – they lack a personal touch, after all – they've become more sophisticated and intuitive as the years have gone by. Today they are **widely embraced by travellers** who appreciate the convenience and autonomy they confer.

For example, in 1995, when Continental Airlines first introduced self-service kiosks at Newark Liberty International Airport in the US, passengers could only use them to check-in – which very few did. However, in less than a decade, **things had moved on considerably**. By 2004, the airline's kiosks were available in all domestic airports in the US and the services on offer were more varied – they now included, for instance, the ability to change your seat allocation and print baggage tags. Consequently, passengers opting to check-in themselves increased markedly throughout the US.

Self-service kiosks have provided passengers with greater control of their travel and helped improve the in-terminal experience enormously. Take queues, for instance. While still an issue, there's now less things to queue up for. Airports and airlines have also benefited in other ways, with kiosks delivering substantial cost savings. Today, in 2020, the technology is seen as a fundamental feature of a modern airport, with the IATA describing them as absolutely **essential for future travel.**

HELLO AUTO: THE WELCOME INTRODUCTION OF ePASSPORT GATES

While the UK was rather slow to adopt electronic passports (ePassports) – introducing them in 2006, a full eight years after Malaysia became the first country to do so – it has nevertheless been quick to respond to and exploit the technology.

Less than three years after the UK first issued electronic passports, it signed off on the installation of ePassport Gates at key airports and, in 2019, **widened access to ePassport gates** to travellers from outside Europe. It is, to quote the government, now a "world leader in automated passenger clearance, allowing more nationalities to use ePassport gates than anywhere else". The rest of the world has followed suit, with more and more countries in the Noughties investing in similar technology to help passengers pass through border control more swiftly.

> ***Increasing the use of digital technology is part of our ambitious programme to improve the passenger experience and meet the challenge of increased passenger numbers.***
>
> Caroline Oakes, Immigration Minister, speaking in 2018

With passport control queues being one of the most perennially frustrating aspects of air travel, ePassport gates have been a welcome development. In the early years of the new millennium, they have helped, in the main, returning citizens and so-called low-risk nationals pass through the airport more speedily. Passengers not eligible to use ePassport gates have also, in turn, benefited from this rerouting of fellow flyers.

THE eGATE PROCESS

1. OPEN AT THE PHOTO PAGE
2. HOLD THE PHOTO PAGE FACE DOWN FOR 5-10 SEC
3. LOOK AT THE SCREEN UNTIL IT TURNS GREEN
4. GO THROUGH THE GATE

THE NUMBER OF ePASSPORT GATES IN THE UK

264

IN FOR THE LONG RUN: NEW 'ULTRA' NON-STOPS

Towards the end of 2019, Australian carrier Qantas **set a new world record**, successfully completing the longest non-stop flight by a commercial airline in history. It took just over 19 hours for the plane to cover an impressive 10,000 miles from New York to Sydney. While it was just a test-run (Qantas has yet to decide where to operate the route), it was the latest milestone in ultra-long-haul travel, which has slowly bounced back after effectively being put on the backburner following 2008's global financial crisis.

Singapore Airlines' **announcement in late 2018** that it was relaunching what remains, for now, the world's longest commercial flight is illustrative of this. Only six years earlier it **had discontinued the same route** from Singapore to New York, as well as the Singapore to Los Angeles route. In the intervening years, new technologies, more efficient planes – more on this below – and relatively stable oil prices (which remains a challenge long-term) have helped turn this around.

While it's still early days, all signs point in the right direction. Other recently established ultra-long-haul routes include Auckland to Doha, which Qatar Airways **launched in 2016**, and Perth to London, **launched by Qantas** in 2018. Currently aimed at business travellers, the premium price point is likely to decrease in the coming years, particularly if we see the return of supersonic commercial planes – which is, incidentally, one of the future trends we've identified.

> ***This is a really significant first for aviation. Hopefully, it's a preview of a regular service that will speed up how people travel from one side of the globe to the other.***
>
> Alan Joyce, Qantas Group CEO, speaking in 2019

DOWNSIZING: SMALLER, LIGHTER, FASTER, CLEANER PLANES

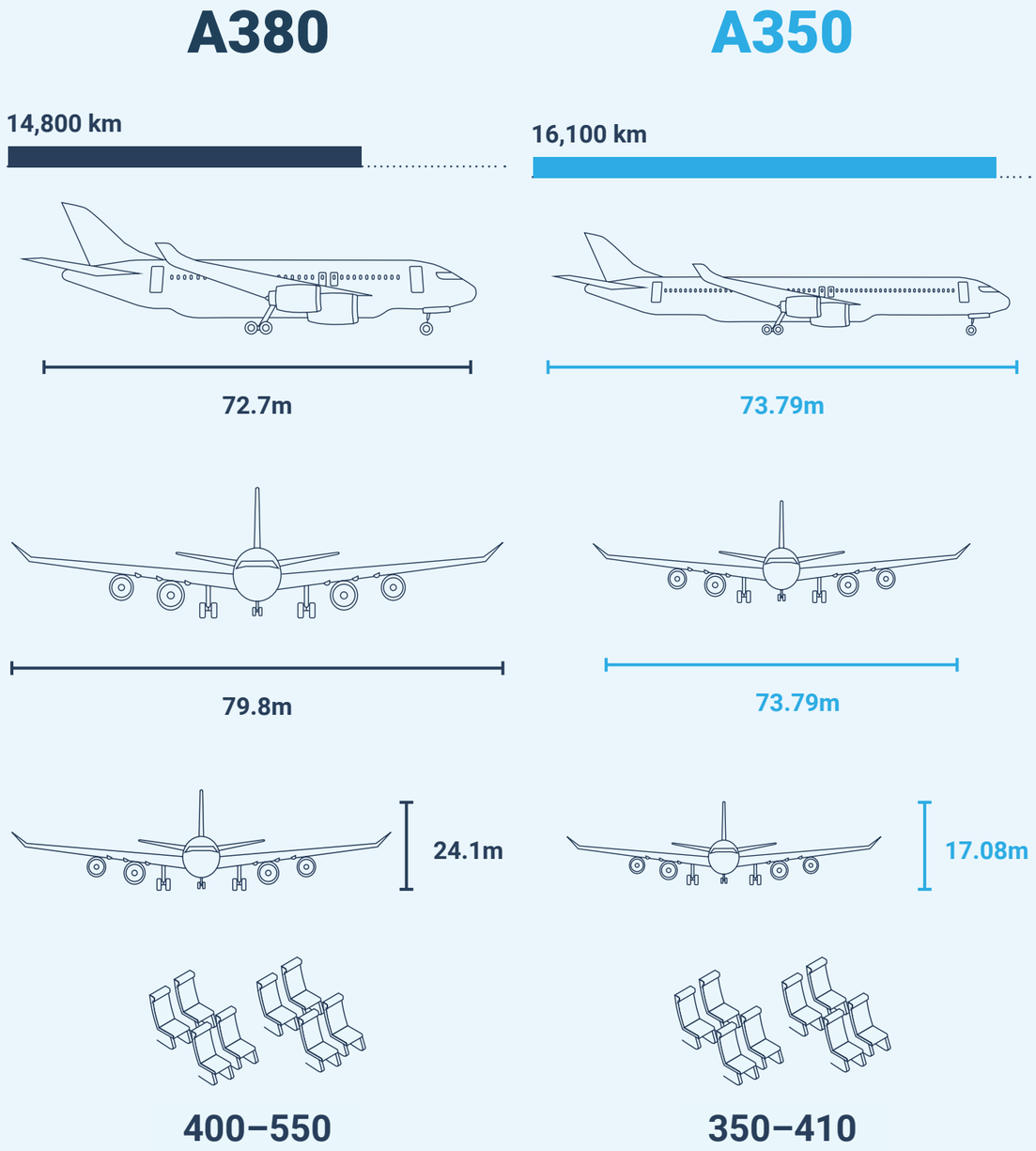
As noted above, the 'new era' of ultra-long-haul travel owes a debt of gratitude to a host of innovative individuals who have revolutionised the design of planes over the last 20 years. And, contrary to expectations held at the start of the 21st century, these next generation planes are not the jumbo-sized giants of the sky that the Airbus A380 was supposed to herald.

Instead, the planes of today – and the foreseeable future – are smaller, lighter, faster and stronger than their predecessors, and strikingly more fuel-efficient too. They're also easier to fill, cheaper to operate and brilliantly versatile.

Indicative of this trend is **Airbus' state-of-the-art A350**, which has struck so much of a chord with airlines that it's seen some of the biggest names in aviation consciously **move away from the costly and inefficient giants of the sky**. Qatar Airways, for one, **has a lot of love for the A350**.

While supersize planes still have their place in aviation, they're unlikely to be a feature of commercial flying in the foreseeable future – the **gradual phasing out** of the Boeing 747, the 'original jumbo', marks a symbolic end to these 'queens of the sky'. That crown has now passed to the likes of the A350 and, what many see as a direct competitor, the Boeing 777X (one of the two variants, the Boeing 777-9, has **recently completed its maiden flight**). Size, it seems, isn't everything.

> ***What we're seeing here is the end of the large four-engine aircraft and that is what it is.***
>
> Tom Enders, Airbus CEO, speaking in 2019



A380	
Range	14,800km
Length	72.7m
Wingspan	79.8m
Height	24.1m
Seating capacity	400–550

A350	
Range	16,100km
Length	73.79m
Wingspan	64.75m
Height	17.08m
Seating capacity	350–410

SECTION TWO

2050:
Future of airports

In the future, with the Internet of Things finally delivering on all of its **early, turn-of-the-millennium promises**, everything will be connected. And for airports, that convergence of technology – that greater sense of connection – will fundamentally change the entire pre-flight experience. Here's a taste of what to expect.

BIOMETRICS: FASTER, FLUID TRAVEL

Sign of the times

> 2017: Dubai **reveals borderless future** concept with virtual fishes capturing biometric data as travellers make their way through an 'aquarium tunnel'

> 2019: Iberia **trials app-based facial recognition technology** that uses a pre-registered biometric profile to get passengers through security quicker

Picture the scene. It's 2048. You turn up to the airport and find yourself breezing through check-in, baggage drop and security, from the departure gate to the seat of the plane, and, finally, through border control. There are no queues and you don't even have to present your passport or boarding pass (not that you have them on you: everything is digital, embedded even). All that time 'lost' at airports – having to arrive early, waiting in line – is a thing of the past.

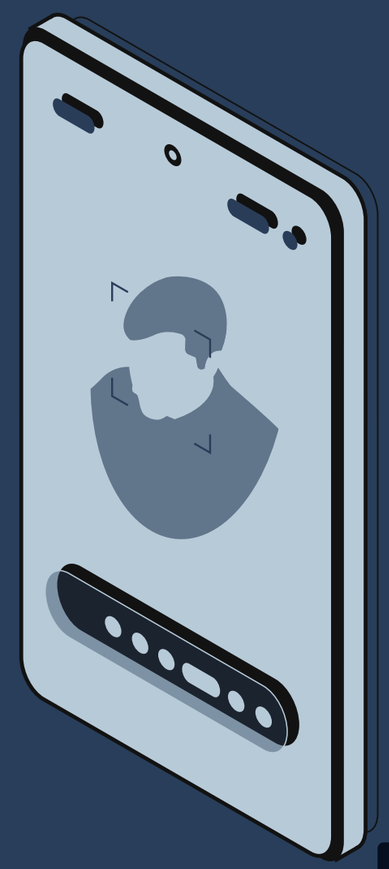
Thanks to the widespread adoption of biometric technologies, this is the future of airports – and it's amazingly streamlined. At first, airports will expand on emerging systems, setting up self-service stations at all the key stages of the airport journey. And, at each touch point, facial, iris and/or fingerprint recognition technology will verify and process travellers with the kind of speed consumers have got used to, thanks to expectations set by super-fast internet connectivity.

Then airports will add behavioural biometric signals into the mix, further speeding up the pre-flight experience (and doubling up as a further layer of security). So, instead of having to stop at a security gate for your details to be checked, you'll be able to pass through 'access points' – think walkways embedded with biometric tech – that do not require you to stop. Seamless.

Quick explainer:

Biometrics

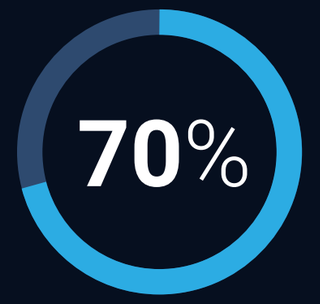
Biometrics refers to the process of identifying an individual based on characteristics that are unique to them, whether it's physical (such as face, iris/retina, fingerprint) or behavioural (including the way you write, type and walk).



Biometric identification at airports needs to evolve faster to deliver on its promises for more travel convenience while also addressing growing privacy concerns.

Innovative concepts are gaining traction, for example 'mobile passports' propose to keep sensitive data secure on a traveller's own mobile device, while certified 'biometric identity services' go even further by removing biometric data from the subsequent verification process altogether.

Tom Knierim, Industry Advisor at Westlands Advisory, on protecting data in the future



Number of travellers happy to share biometric data in return for a swifter airport experience

SOURCE IATA 2019 Global Passenger Survey

AUTOMATION: MORE CONTROL, MORE TIME

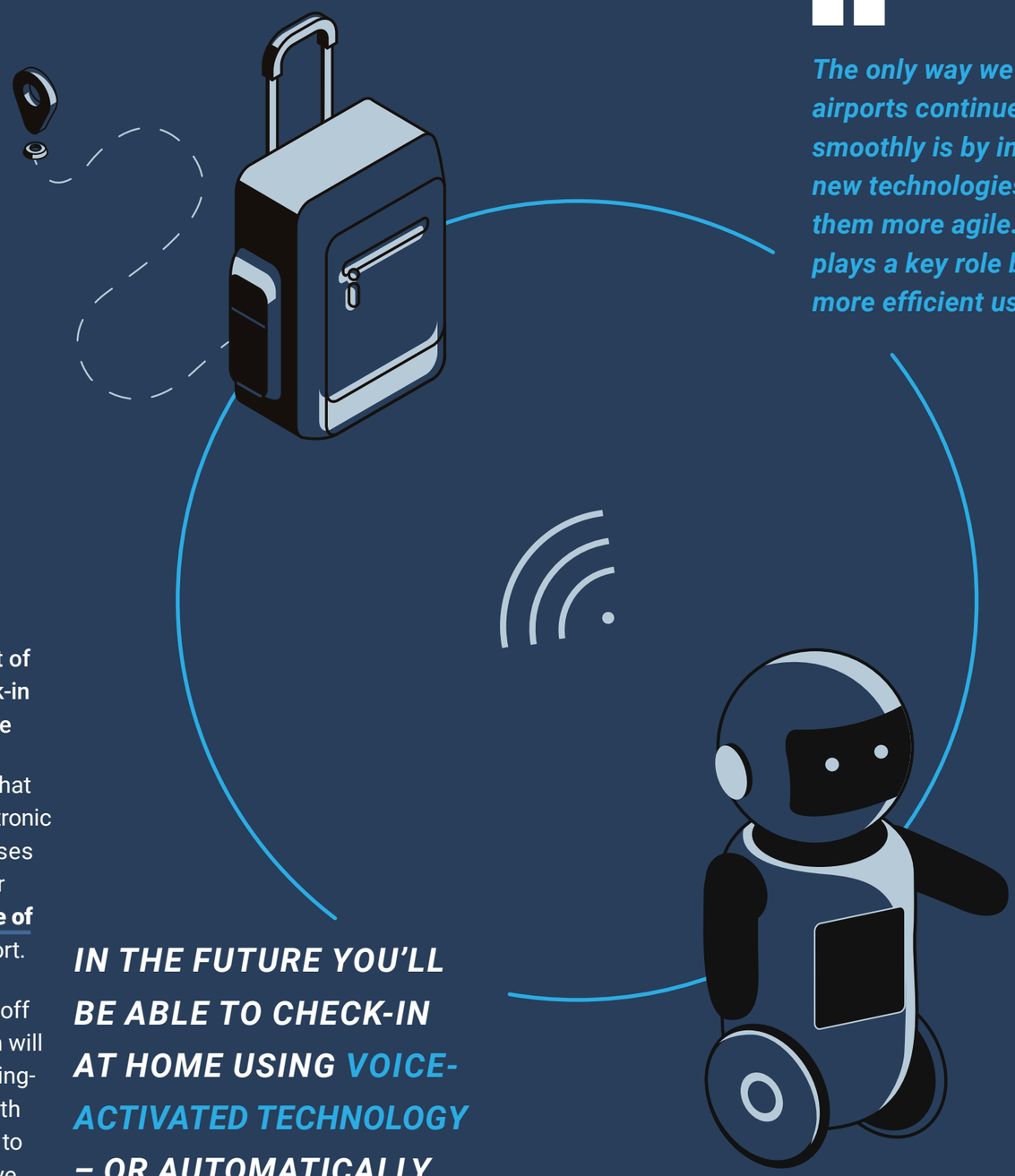
Sign of the times

> 2016: Glasgow Airport **unveils GLAdys**, the UK's first 'humanoid robot airport ambassador'. In addition to helping travellers with directions, it sings and dances, too

> **2019: Queenstown Airport announces the start of efforts to offer an 'end-to-end self-service check-in solution', as part of its Project Pathway initiative**

By 2050, airport automation will be so advanced that travellers will be able to check-in, update their electronic baggage tags and download their boarding passes either 'manually' through voice-activated tech or automatically courtesy of the '**artificial intelligence of things**' – all before they've even arrived at the airport.

That'll leave them with little to do other than drop off their bags and head straight for departures, which will be doubly quick thanks to biometrics. Even checking-in hold baggage at the airport will be optional, with passengers able to organise autonomous couriers to transport their luggage in advance – and even have it automatically delivered to their desired destination ahead of their arrival.



IN THE FUTURE YOU'LL BE ABLE TO CHECK-IN AT HOME USING VOICE-ACTIVATED TECHNOLOGY – OR AUTOMATICALLY THANKS TO AIoT.

> ***The only way we can ensure airports continue to run smoothly is by implementing new technologies that make them more agile. Automation plays a key role by enabling more efficient use of assets.***

> ***We are convinced that the future of airports lies in connected, automated and highly intelligent processes and operations that offer passengers pain-free and frictionless travel and rich, personalised experiences.***
>
> Benoit Verbaere, Business Development Director at SITA, on the importance of automation

Meanwhile, at airports, there will be noticeably fewer staff. Instead, passengers will primarily interact with an even greater number of stationary, multifunctional self-service machines that let them check-in, drop off baggage and place in-flight food and drink orders, as well as sort out their 'entertainment itinerary', among other things.

But that's not all. Complementing these self-service kiosks will be smart robotic assistants, which will provide travellers with a range of generic and bespoke services, such as personally chauffeuring them to their desired destination within the airport. These mobile assistants will range from **next generation 'Bills'** to real time, AI-powered holograms that are a world away from the **unresponsive 'cardboard cut-outs' of the past**.

The benefits of automation will not just centre on greater convenience – with travellers enjoying a smoother end-to-end airport experience – they'll also spill out into other areas, such as retail, entertainment and dining. This, in turn, will further enhance the airport experience.

SMARTPHONES: SMART, REAL-TIME CONNECTIONS

Sign of the times

> 2019: Tanzania develops an award-winning ePassport, which provides travellers with an **'emergency passport' feature on their smartphones**

> 2019: Heathrow Airport **partners with Boingo** to deliver free, super-fast WiFi (100 Mbps) to all passengers – with no time limit on usage

In 2047, 40 years on from the launch of the iconic, epoch-defining iPhone, mobile devices have so rooted themselves in every aspect of our personal and professional lives that we intuitively reach for them, whatever it is we're doing. In the future, everything will start and finish with these powerful tools – more so, if you can believe, than they do in 2020.

That will be especially true at airports. Phones, which will effectively replace the need for passports or boarding passes – although, thanks to biometrics and automation, they'll rarely be used in that capacity – will now connect travellers to every aspect of their pre-flight journey. And in real-time.

So, as soon as you arrive at the terminal, you'll receive a notification on your phone with the latest flight info. Ask your virtual assistant how far your gate is and, based on your exact location, you'll get a personalised estimate that also factors in your average walking speed – which your device already knows. It'll even offer you directions, made all the easier by AR. Hungry or thirsty? Order a meal or a drink and have it delivered directly to you (only if you have time, though – your phone might suggest that your desired coffee break is a little ambitious).

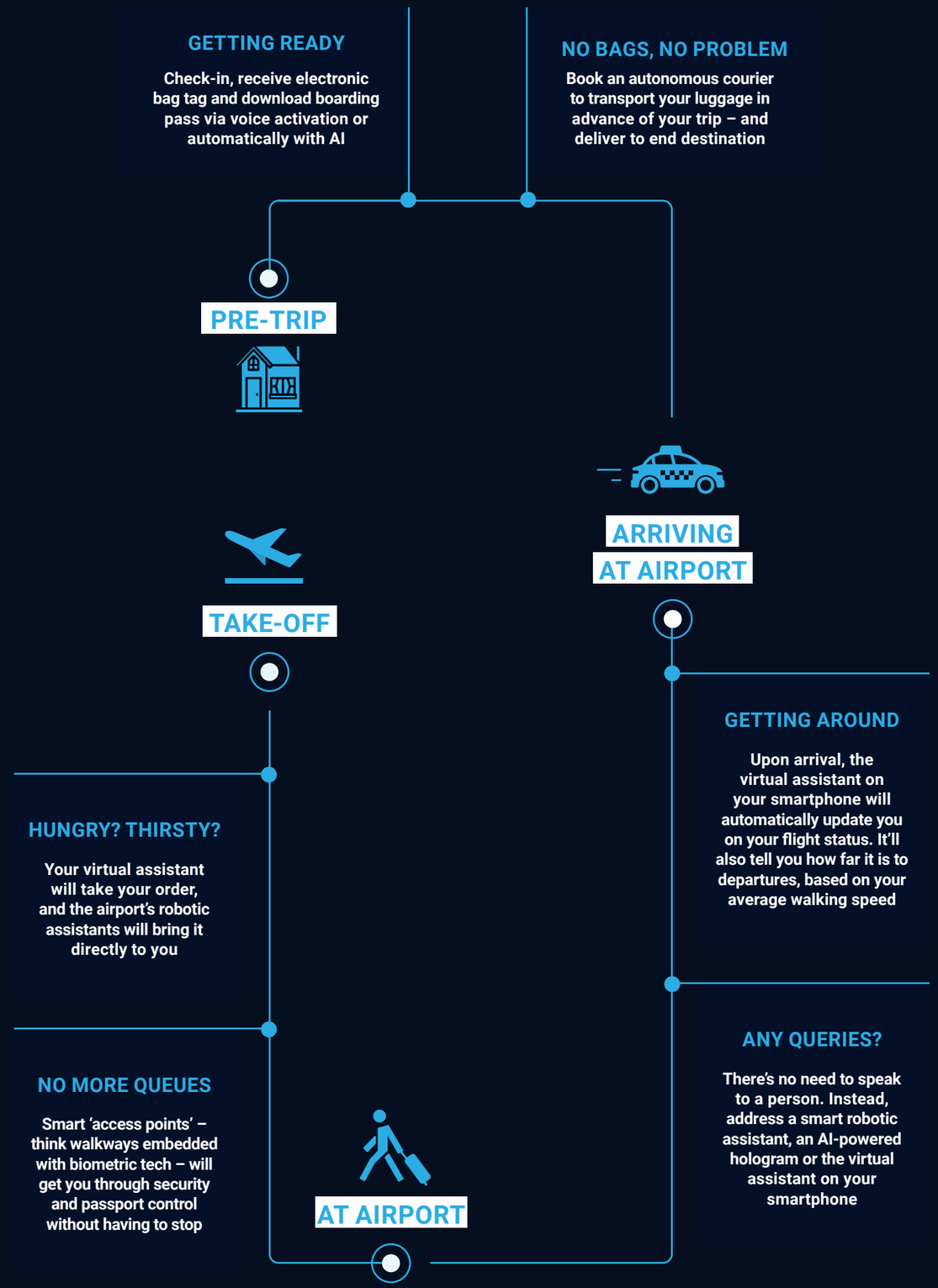
Smart (phone) airports

Seven things your phone will let you do in the future:

1. ALLOW YOU TO VERIFY YOUR IDENTITY AND GET PROCESSED SWIFTLY
2. ACT AS A ONE-STOP-SHOP FOR ALL YOUR DOCUMENTS AND IDS (PASSPORT, BOARDING PASS, ETC)
3. BE YOUR PRINCIPAL METHOD OF PAYMENT
4. ALLOW YOU TO ACCESS REAL-TIME FLIGHT INFO
5. LET YOU MONITOR AND TRACK YOUR BAGGAGE IN REAL TIME
6. OFFER YOU PRACTICAL SUPPORT THANKS TO AI-POWERED VIRTUAL ASSISTANTS
7. DELIVER A MORE PERSONALISED SHOPPING EXPERIENCE WITH AUTOMATIC NOTIFICATIONS

> ***By the year 2050 the smartphone in its current format will have all but vanished.***

Matthew Griffin, Futurist and Founder and CEO of 311 Institute, on the smartphone's evolution



EXPERIENCES:
THE DESTINATION BEFORE THE HOLIDAY

Sign of the times

> 2019: Singapore Changi Airport **launches Jewel Changi Airport**, home to the world's 'largest indoor waterfall'

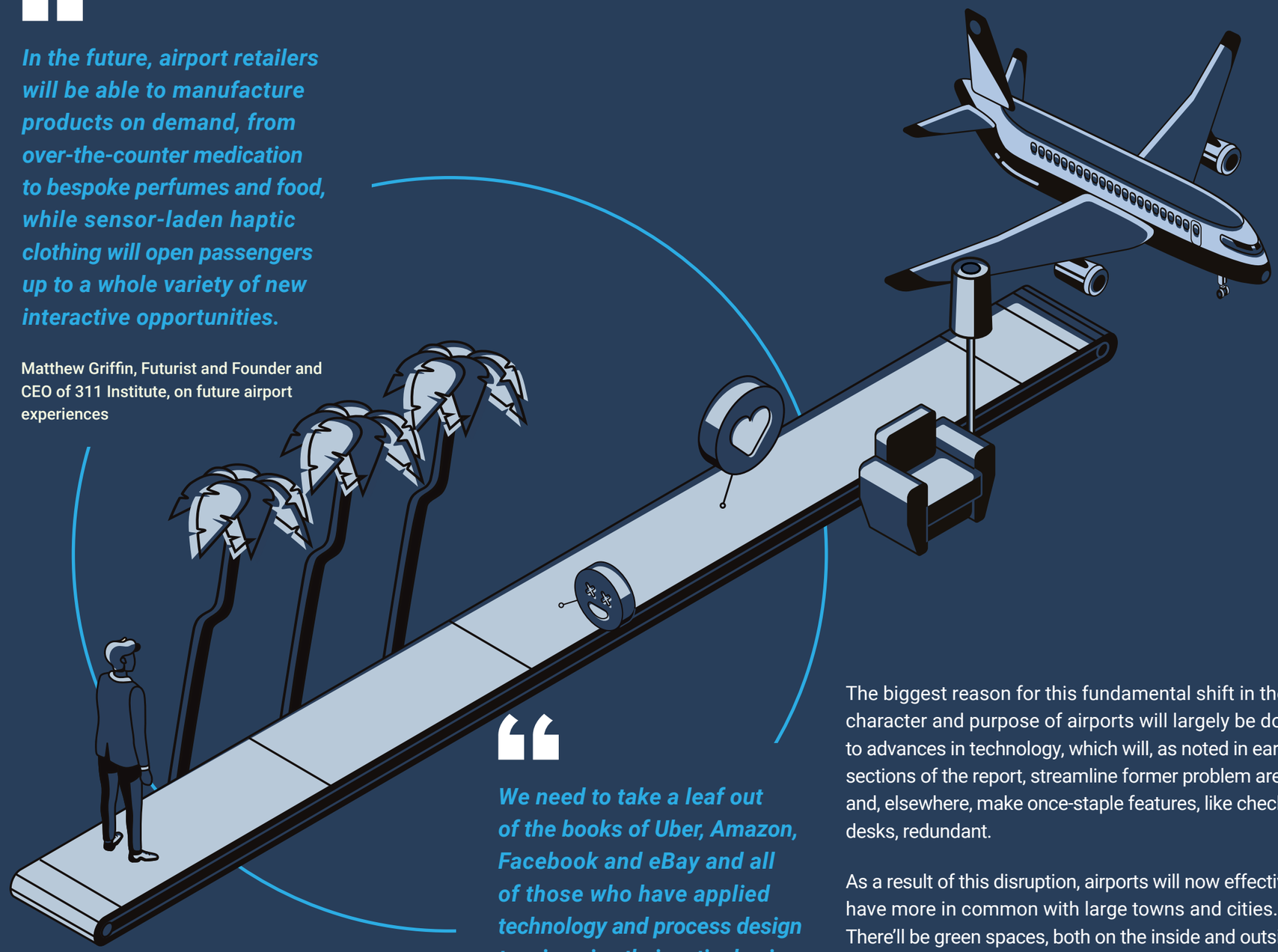
> 2019: Eco-friendly, Phoenix-shaped Beijing Daxing International Airport **opens for business** – passengers waiting for flights can now relax in one of five Chinese gardens

The airport experience in 2020 is, it's fair to say, one a lot of us would rather not have to endure. After all, airports can be noisy, overcrowded, stressful and exhausting – and there's always a queue, wherever you are. Fast-forward to 2039, 130 years after the oldest airport in the world first opened its doors – Maryland's still-operational College Park Airport – and airports will be almost unrecognisable.

The world will have long moved on from the idea that airports are, by and large, the most effective way of connecting people to planes. The likes of Singapore Changi Airport will have changed all that. With the utility aspect of airports almost imperceptibly light-touch, airports will become destinations in their own right. For travellers, that'll mean more of an enriched experience, while for operators and owners – **as well as investors** – it'll mean more opportunities to better monetise airport space.

> ***In the future, airport retailers will be able to manufacture products on demand, from over-the-counter medication to bespoke perfumes and food, while sensor-laden haptic clothing will open passengers up to a whole variety of new interactive opportunities.***

Matthew Griffin, Futurist and Founder and CEO of 311 Institute, on future airport experiences



> ***We need to take a leaf out of the books of Uber, Amazon, Facebook and eBay and all of those who have applied technology and process design to reimagine their entire business around customer convenience... this would trigger a dramatic redesign of airports.***

Paul Griffiths, Dubai Airports CEO, speaking in 2017

The biggest reason for this fundamental shift in the character and purpose of airports will largely be down to advances in technology, which will, as noted in earlier sections of the report, streamline former problem areas and, elsewhere, make once-staple features, like check-in desks, redundant.

As a result of this disruption, airports will now effectively have more in common with large towns and cities. There'll be green spaces, both on the inside and outside. Art galleries and museums. Retail outlets that range from small pop-up shops to full-size malls. Spaces for play, wellness and socialising. And top-quality entertainment options, from cinemas and theatres to music venues. Travellers will now actively choose to spend time at an airport, with some even considering it to be an enjoyable part of the holiday experience.

SECTION
TWO

Future of flying

More personalised and more entertaining. Radically greener and brilliantly supersonic. And a lot smaller and convenient than ever before in aviation history. That's the future of flying in a nutshell. Below we flesh out the key trends we expect to redefine the flying experience in the years to come.

THE UNIQUENESS OF HYPER-INDIVIDUAL PERSONALISATION

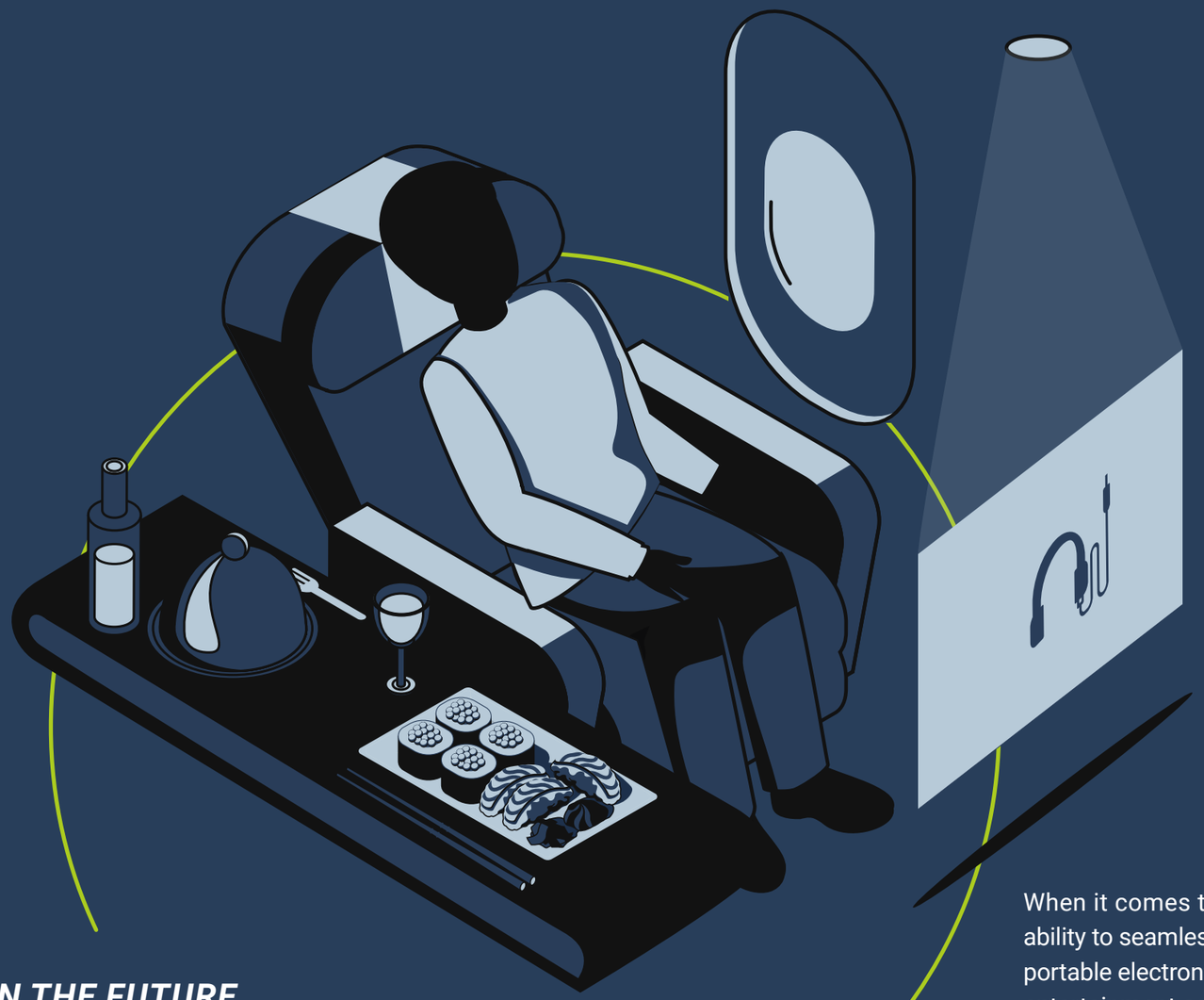
Sign of the times

> 2015: Delta **equips flight attendants with 'phablets'**, allowing them to address passengers by name and identify 'high-value' travellers

> 2018: Singapore Airlines and Panasonic Avionics **scoop Best Personalization Innovation award** at APEX for myKrisWorld platform

By the time we reach the mid-century mark, personalisation will be an integral part of flying. As fireworks are set off across the globe to mark 2050, every single passenger – whether they're flying economy or first class, short-haul or long-haul – will enjoy an in-flight experience as unique as themselves.

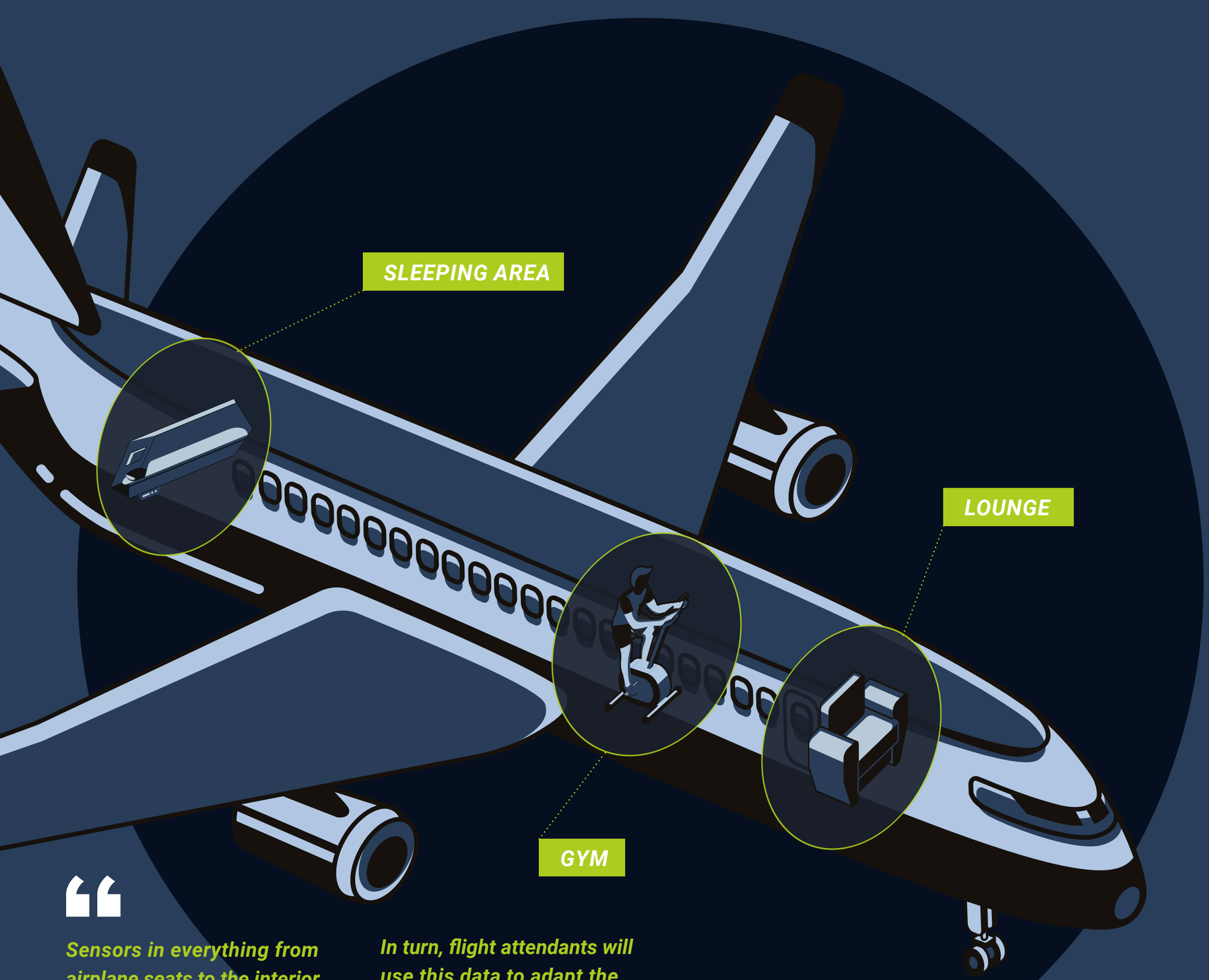
Food will be tailored to each passenger's exact needs, with onboard 3D printers able to cater for all sorts of requests. Wearable tech, like smartwatches, will send real-time data to flight attendants, who will know whether a particular individual is in need of an energy boost or something to help them sleep. Thirsty? There'll be a glass of water by your side before you've even asked.



IN THE FUTURE, 3D PRINTERS WILL BE ABLE TO DEAL WITH ALL SORTS OF REQUESTS … WHILE VR HEADSETS WILL TRANSFORM SEAT-BACK SCREENS INTO MINI-CINEMAS.

When it comes to entertainment, you'll have the ability to seamlessly connect your phone or any other portable electronic device to onboard systems – think entertainment screens, lighting and heating – or find hyper-relevant recommendations ready and waiting to be consumed (with the option to pay for extra content/media thanks to near-perfect Wi-Fi connectivity).

VR headsets will also be commonplace, transforming seat-back screens into mini-cinemas. They'll also provide you with a 'preview experience' of your upcoming destination, as well as the opportunity to socialise with friends, organise meetings with colleagues, and, of course, play video games. In the future, no two trips will ever be the same.



Sensors in everything from airplane seats to the interior of the cabin will be able to monitor passenger behaviour, moods and wellness.

In turn, flight attendants will use this data to adapt the in-flight experience, and in a very personalised way help to create calming spaces.

Matthew Griffin, Futurist and Founder and CEO of 311 Institute, on future plane experiences

THE IN-FLIGHT EXPERIENCE REIMAGINED

Sign of the times

> 2019: Layer **develops new, app-based concept** for economy seats for Airbus, with passengers able to modify their seating experience via a smartphone

> 2020: Swiss **reveals overhaul of the cabin design and experience** of its entire Airbus A340 fleet, with passengers on long-haul flights now able to connect to the internet

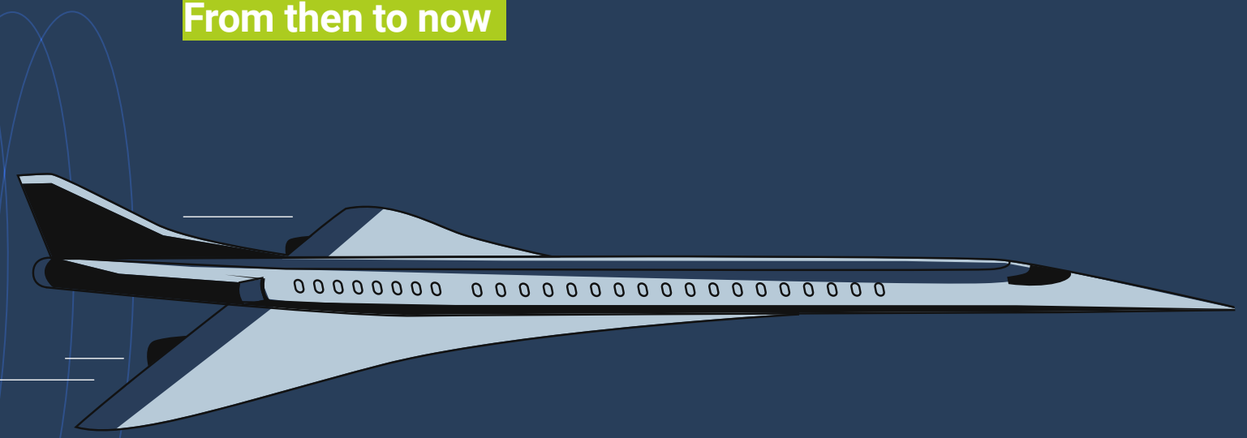
In much the same way that driverless cars will change how we spend time on the road – and, consequently, **upend the in-transit experience** – new technologies will also reimagine how passengers spend time in the air, 30 years on from 2020. And the biggest change? A different kind of cabin.

In 2045, that will mean greater mobility, an enhanced sense of space and a better use of flight time. Travellers will no longer be limited to the compact confines of their seat, which, incidentally, can now be reconfigured to create more room and different seating arrangements. In the future, travellers will be able to freely make their way to specialist areas in a different part of the cabin. You no longer need to be a passive passenger.

Fancy a run? Head to the onboard gym. Need to catch up on work? The business area has you covered. Not satisfied with catching 20 winks in your seat? Book a **full-size bed** via your phone and enjoy a proper night's sleep. There'll even be a designated play area for kids on some planes, much to the relief of mums, dads and, it goes without saying, youngsters themselves.

IN THE FUTURE, THE BIG APPLE WILL BE JUST AS ACCESSIBLE AS PARIS OR MADRID – PERFECT FOR BRITS SEEKING A FAR-AWAY WEEKEND CITY BREAK.

Supersonic dreams: From then to now



THEN — NOW

CONCORDE

Max speed	Mach 2.02 (1,334mph)
Capacity	100 seats
Flight range	3,900 nautical miles
Altitude	60,000 feet
Length	62 metres

SPIKE S-512 (SPIKE AEROSPACE)

Max speed	Mach 1.6 (1,110mph)
Capacity	12–18 seats
Flight range	6,200 nautical miles
Altitude	50,000 feet
Length	37 metres

OVERTURE (BOOM SUPERSONIC)

Max speed	Mach 2.2 (1,451mph)
Capacity	55 seats
Flight range	4,500 nautical miles
Altitude	60,000 feet
Length	46 metres

> *Today, the time and cost of long-distance travel prevent us from connecting with far-off people and places. Fares [for the supersonic aircraft Overture] will be similar to today's business class – widening horizons for tens of millions of travellers. Ultimately, our goal is to make high-speed flight affordable to all.*

Blake Scholl, Boom Supersonic Founder and CEO, in 2019

THE RETURN OF SUPERSONIC TRAVEL

Sign of the times

2017: Boom Supersonic **raises $33 million (approximately £25 million) in venture capital.** Part of the funding is earmarked for 'sonic boom testing'

2019: Aerion Supersonic **partners with Boeing** to leverage, in part, the aviation giant's engineering and flight test resources

It will start, unsurprisingly, with start-ups: small, more focused and ambitious enterprises like Boom Supersonic, Aerion Supersonic and Spike Aerospace making significant inroads in the early 2020s. But the breakthrough will happen somewhere between 2030 and 2035, when the first of a new generation of commercial supersonic jets finally taking to the air. These companies will prove that supersonic travel can be done, and done well. Which is to say minus the noise, the pollution and the unsustainable costs that prevented Concorde from being within reach of anyone but the wealthiest of travellers.

By 2050, with the likes of Boeing and Airbus now onboard, supersonic travel will finally be accessible to the masses – over water and land. Not only will it transform the aviation industry, it will change the way people live and work. You'll now be able to travel from Los Angeles to Sydney in just under seven hours (on an ultra-long-haul flight in 2020, it takes around 15 hours), and London to New York in just under three hours. In the future, the Big Apple will be just as accessible as Paris or Madrid – perfect for Brits seeking a far-away weekend city break.

A drastic reduction in travel time won't be the only benefit that comes with supersonic travel. Fewer people will now get jet lag, far-flung destinations will be easy to get to, and flying, on the whole, will be more pleasurable and convenient, whether you're jetting off for a business meeting or heading off on holiday. Fifty years into the 21st century, the planet will be a lot smaller and more connected.

THE GREENER, CLEANER AGE OF AIR TRAVEL

Sign of the times

> 2019: Time Magazine lists the all-electric Eviation Alice plane – which is yet to undergo a flight test – as **one of the best inventions of the year**

> 2019: magniX and Harbour Air **successfully test** the world's first all-electric commercial plane

By 2037, **passenger numbers will be at an all-time high**, with a record-breaking eight billion plus travellers taking to the skies that year. The carbon footprint of that, left unchecked, would have been significant and hugely damaging to the planet. Fortunately, governments, airlines and manufacturers will have come to their senses –and consumers too. And flying will never have been greener.

While regular planes will be more environmentally friendly than their early 20th century counterparts, it'll be the growing number of electric planes, biofuel planes and hybrid planes – which use a mix of jet fuel and electric power – that will contribute significantly to a remarkable reduction in aviation-related emissions.

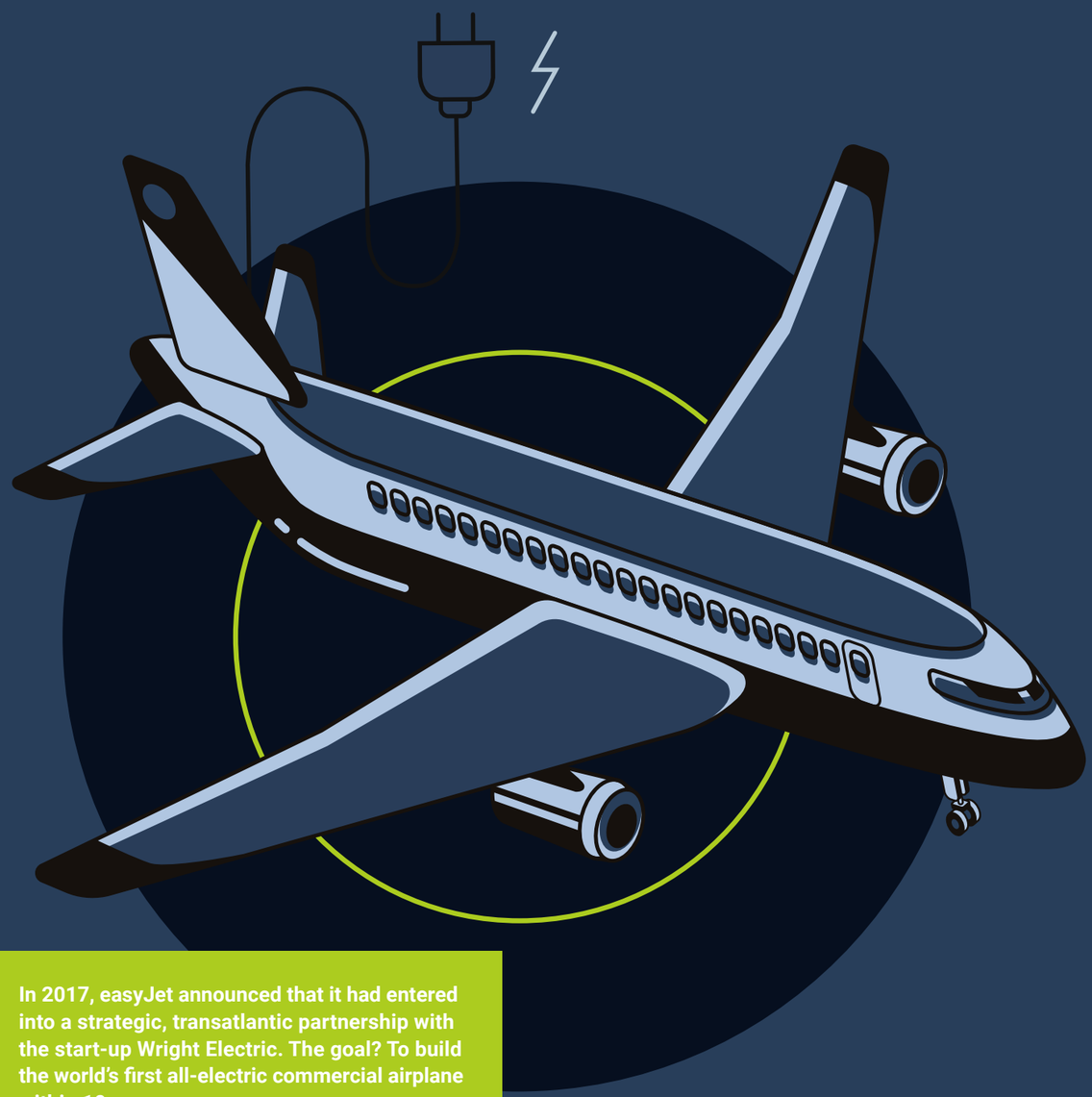
The move towards eco-friendly planes will start with domestic flights, with a combination of **smaller aviation-based companies** and traditional, 'regular-sized' airlines – **like easyJet** – leading the charge. As technology catches up – with **solar-powered aircraft** also in operation at a regional level – zero- and low-emission planes will eventually be introduced on short-haul trips and, finally, long-haul trips.

The collective impact of this will be huge: getting around on an electric plane will become an accessible option for passengers; airlines will enjoy their own savings, especially as a result of being less reliant on oil; bigger airports will become less congested with, for example, smaller hubs catering to smaller electric planes; and, more importantly, IATA will welcome net aviation CO_2 emission reductions of 40% – **10% off its 2050 target.**

THE GROWING NUMBER OF ELECTRIC PLANES, BIOFUEL PLANES AND HYBRID PLANES WILL CONTRIBUTE SIGNIFICANTLY TO A REMARKABLE REDUCTION IN AVIATION-RELATED EMISSIONS.

From 2020 to 2030:

easyJet sets itself a 10-year electric challenge



In 2017, easyJet announced that it had entered into a strategic, transatlantic partnership with the start-up Wright Electric. The goal? To build the world's first all-electric commercial airplane within 10 years.

Three years later, the UK airline revealed that work on the engine development programme for the all-electric 186-seat plane, dubbed Wright 1, was now underway.

Flight tests are scheduled for 2023, with the plane expected to enter into service proper in 2030.

COMMERCIAL FLYING GETS SMALLER

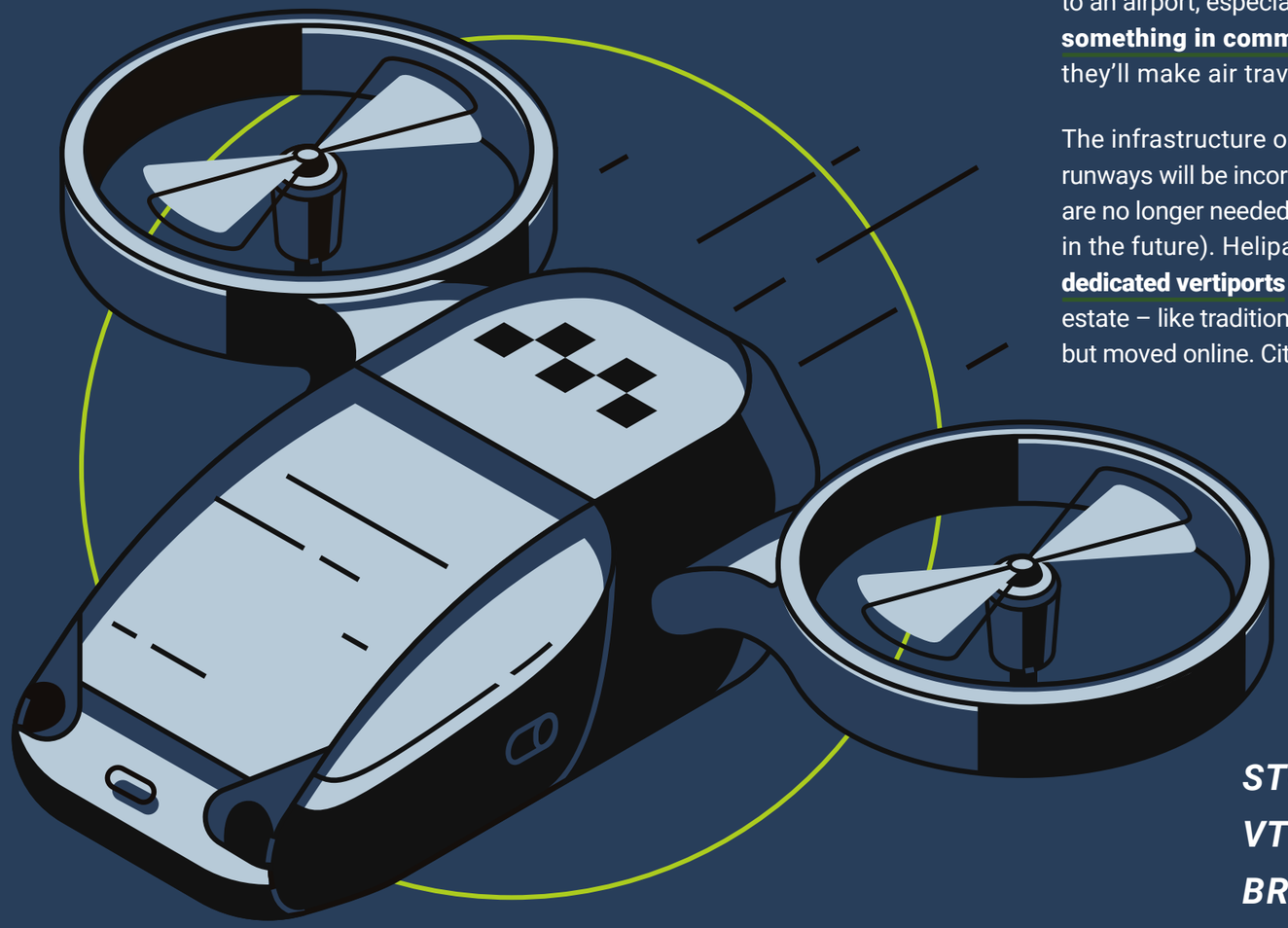
Sign of the times

> 2018: UK-based start-up Samad Aerospace sets **out its vision for VTOLs**: the single-pilot electric Starling Jet will carry up to five people and travel as far as 1,500 miles

> 2018: Opener **lifts the lid on Blackfly,** the 'world's first ultralight all-electric fixed-wing' VTOL, which, it claims, can be operated with very little training

Even as late as the closing months of 2050, flying cars will remain more conceptual than real. That world, popularised by sci-fi classic like Blade Runner and Back to the Future II, will still be 50–100 years away (2100–2150). Nevertheless, glance skywards in the 2050s and you're likely see a new generation of zero-emission short take-off and landing (STOL) aircraft and vertical take-off and landing (VTOL) aircraft gliding by.

The development and success of these more compact planes – those that require either a short runway (STOL) or none at all (VTOL) – will act as a natural complement to the conventional, albeit upgraded and futuristic, commercial flying experience. It'll make more sense, for instance, for travellers to opt to fly via a STOL/VTOL aircraft for shorter, regional flights, instead of travelling on a regular plane. In turn, the burden placed on airports and airlines by the ever increasing numbers of people wanting to take to the skies will lessen, with more people flying on smaller planes that can operate outside of airports.



Accordingly, one of the main draws of STOL/VTOL aircraft, particularly for travellers, will be the fact that these planes will bring flying to the urban masses. Travellers will no longer need to 'head out of town' to an airport, especially for domestic flights. **Sharing something in common with on-demand travel,** they'll make air travel more flexible and quicker.

The infrastructure of cities will also change. Short runways will be incorporated into sections of road that are no longer needed (there'll be a decided lack of cars in the future). Helipads will be more prevalent. And **dedicated vertiports** will exist, making better use of real estate – like traditional high street shops – that has all but moved online. Cities will feel more dynamic than ever.

STOL AIRCRAFT AND VTOL AIRCRAFT WILL BRING FLYING TO THE URBAN MASSES … CHANGING THE INFRASTRUCTURE OF CITIES ALONG THE WAY.

SECTION THREE

Traveller expectations on the future of travel

Now that we've covered what we consider to be a faithful projection of air travel in the future, the focus of the report shifts to the people who are set to benefit from all this expected innovation. Just what do they think about the future of air travel?

It's important to ask because their views matter. Airports and airlines need to provide a service that goes beyond the perfunctory – and to do that they can't rely on their own assumptions. They also need to understand what their customers want and need today, tomorrow and in years to come.

The key takeaways below are based on our consumer survey of over 2,000 respondents from across the UK.

AIR TRAVELLERS WANT A GREENER FUTURE

With the momentum of the Extinction Rebellion movement, flygskram ('flight shame'), and daily news reports of climate-related crises around the world, it's an understatement to say that sustainability is currently front and centre in travellers' minds when it comes to air travel.

For instance, when asked how important sustainable air travel is in the future, the majority of respondents to our research (72%) said it was important (36% referred to it as 'very important', 36% as 'somewhat important').

While there was a general consensus across all generations that sustainable air travel is important – from 16-year-olds to those aged 55 and over – the issue resonated more with younger travellers (especially 16–24- and 25–34-year-olds). Interestingly, more men than women considered future sustainability to be very important (37% compared to 35% of women).

THE MAIN THING RESPONDENTS WANT AIRPORTS TO DO IN THE FUTURE IS MAKE 'MORE OF AN EFFORT' TO REDUCE THEIR CARBON FOOTPRINT.

Today's travellers also said that the main thing they want airports to do in the future is make 'more of an effort' to reduce their carbon footprint (30%). This was more important to them than improving ePassport and biometric technology (23.5%) or introducing better public transit links (23%).

Futuristic elements, on the whole, appear to be less important. For instance, only 5% of Brits ranked robotic-based customer service solutions as an important feature of future airports. Only 9% considered passport chip implants to be important.

The focus on sustainable flying was also evidenced when respondents were asked what new features are most important to them regarding the future of flying. For example, a third replied zero-emission planes (33%) – only good quality free Wi-Fi scored higher (36%).

And while more people are interested in better quality food and drink in the future (30%), as well as shorter flight times by way of supersonic travel (22%), some respondents also have a desire to see more electric and solar-power planes in the skies (14%).

How important sustainable air travel advances are to UK cities in the future

	WHERE	%
1	Liverpool	83%
2	Belfast	81%
3	Cardiff	80%
4	Brighton	79%
5	Glasgow	77%
6	Newcastle	76%
7	Birmingham	76%
8	London	73%
9	Nothingham	76%
10	Leeds	69%
11	Sheffield	68%
12	Plymouth	68%
13	Manchester	67%
14	Norwich	65%
15	Bristol	64%
16	Edinburgh	64%
17	Southampton	63%

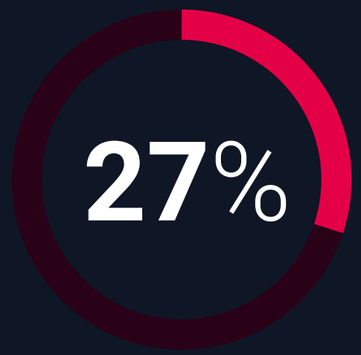
FUTURE AIRPORTS: CONVENIENCE IS KING

The dream for passengers in the future is for airports to invest in the kind of technology that makes the pre-flight experience more seamless than it is today. It's a simple want, but a transformative one, nonetheless. And, for almost half of respondents, that means tackling the nuisance of queueing, from check-in and **security** to the boarding gate.

Poor communication about delays and/or cancellations also ranked highly as an airport bugbear, with 37% keen to see information about flight disruptions better communicated in the future. Elsewhere, respondents showed support for solutions that help them carry their baggage around a terminal (26%), as well as solutions that improve airport navigation(18.5%).

ALMOST HALF OF RESPONDENTS WANT AIRPORTS TO HAVE TACKLED THE NUISANCE OF QUEUEING IN THE FUTURE, FROM CHECK-IN AND SECURITY TO THE BOARDING GATE.

LAYOVER SLEEP



Want in-airport sleeping options for long layovers

Generally, the survey results suggest that, in the future, travellers want an airport experience that allows them to either catch their flight as efficiently as possible, or one that enables them to spend more time within the airport doing things they enjoy, such as eating a leisurely meal or getting in some last-minute shopping.

The more 'out there' solutions were less popular than more practical and helpful alternatives, suggesting that Brits are somewhat grounded in their airport aspirations. Accordingly, 18% were in favour of something to tackle jet lag, 13% liked the idea of a pill/contraption to combat exhaustion and 11% hankered after some sort of device to eliminate post-flight stiffness.

How much time people spend, on average, looking for their passport before each trip

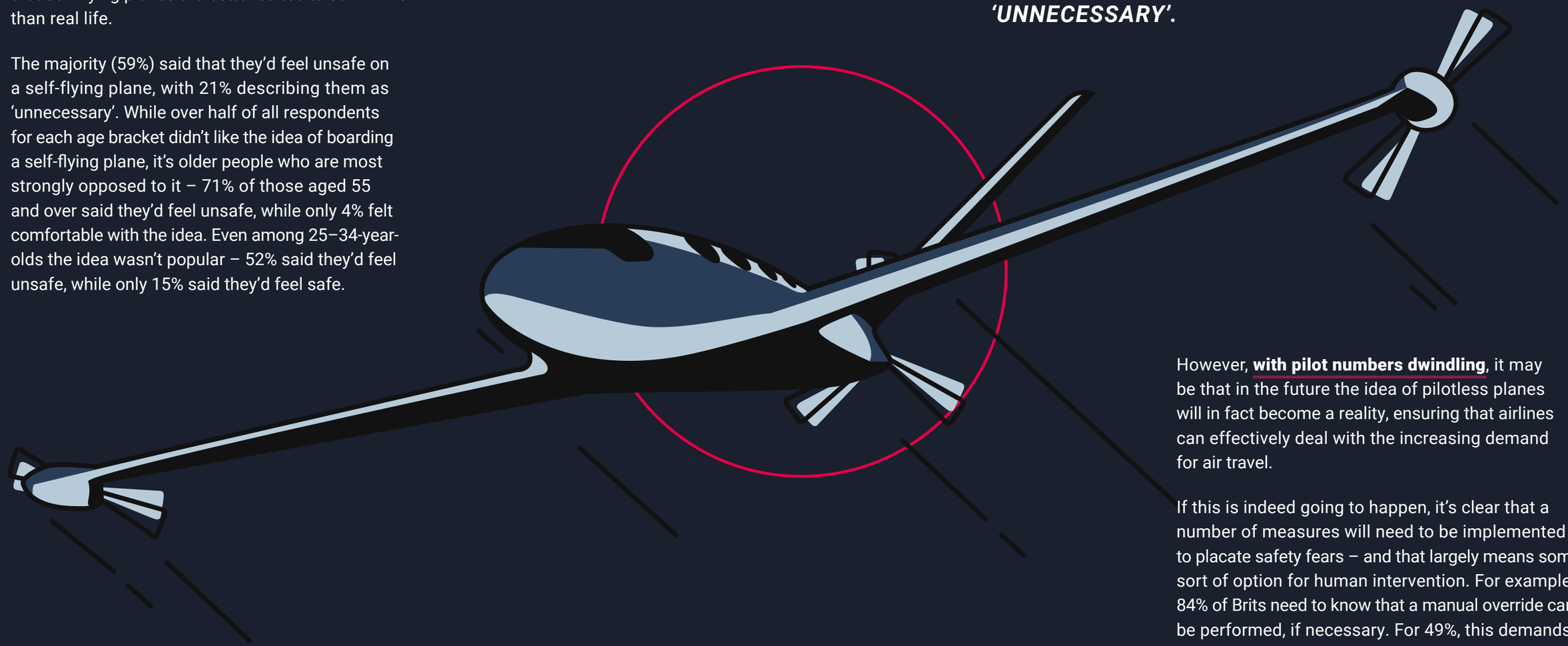
(IN MINUTES)	TOTAL			16-24	25-44	35-44	45-54	55+
Know where it is	54%	49%	56%	39%	46%	52%	61%	74%
less than 1	8%	8%	7%	8%	8%	7%	9%	6%
1-5	15%	17%	14%	23%	14%	16%	13%	11%
6-10	8%	8%	7%	10%	9%	6%	6%	5%
11-15	5%	7%	4%	6%	7%	5%	4%	1%
16-20	3%	3%	3%	4%	4%	3%	2%	1%
21-25	1%	2%	1%	2%	2%	1%	1%	<1%
26-30	2%	1%	2%	4%	2%	1%	1%	<1%
31-35	1%	1%	1%	1%	1%	2%	<1%	–

SELF-FLYING PLANES? NO THANKS

Given the many challenges in developing and bringing driverless cars to our roads – and the fact that true autonomy **is probably still a long way off** – it's understandable that most Brits are of the opinion that self-flying planes are better suited to sci-fi films than real life.

The majority (59%) said that they'd feel unsafe on a self-flying plane, with 21% describing them as 'unnecessary'. While over half of all respondents for each age bracket didn't like the idea of boarding a self-flying plane, it's older people who are most strongly opposed to it – 71% of those aged 55 and over said they'd feel unsafe, while only 4% felt comfortable with the idea. Even among 25–34-year-olds the idea wasn't popular – 52% said they'd feel unsafe, while only 15% said they'd feel safe.

59% OF RESPONDENTS SAID THAT THEY'D FEEL UNSAFE ON A SELF-FLYING PLANE, WITH 21% DESCRIBING THEM AS 'UNNECESSARY'.



However, **with pilot numbers dwindling**, it may be that in the future the idea of pilotless planes will in fact become a reality, ensuring that airlines can effectively deal with the increasing demand for air travel.

If this is indeed going to happen, it's clear that a number of measures will need to be implemented to placate safety fears – and that largely means some sort of option for human intervention. For example, 84% of Brits need to know that a manual override can be performed, if necessary. For 49%, this demands that there always be a pilot onboard. For others, being able to access the cockpit in an emergency to take over the controls is essential (35%), as are concrete assurances that the plane could not be hijacked by cybercriminals (35%).

FUTURE FLYING: LESS ABOUT TECH, MORE ABOUT THE EXPERIENCE

See-through floors and ceilings, VR headsets for entertainment and embedded wellness facilities in your seat – it certainly sounds like the future. Except, for most Brits, these adventurous developments aren't a priority for future air travel.

What travellers actually want is more modest in many respects, whether it's better food and drink (30%), bunk beds for long-haul flights (13%), self-serving dining options (10%), silent planes (9%) or spaces to stretch out properly (7%).

BRITS ARE LOOKING FOR AN EVOLUTION OF THEIR CURRENT FLYING EXPERIENCE, NOT A REVOLUTION.

In short, it seems Brits are looking for an evolution of their current flying experience, not a revolution. Good quality Wi-Fi is an example of this. Not only did 36% of respondents describe it as the most important feature to them when flying in the future, 57% said that it's one of the developments they expect to see materialise over the coming years.

People simply want to eat better, feel better and sleep better on planes. Anything else, like showers for all (6%) and robotic flight attendants (4%), carry less weight (for now).

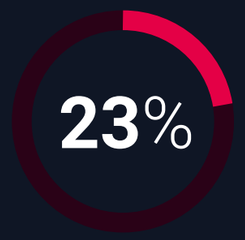
SPACE ODYSSEYS: A YOUNG PERSON'S GAME

Travelling into space is a common childhood dream – and it remains so for some adults. According to our survey, while 31% of Brits wouldn't consider any type of space travel to be synonymous with a holiday experience, a similar number (32%) would happily book a trip to the moon if it was possible. There's a clear gender divide though, with more women reluctant to leave planet Earth than men (36% of women said no, compared to 23% of men).

Safety, understandably, remains a stumbling block, with 14% of respondents explaining that they 'might consider' heading into space, but only after years and years of testing had proved it to be safe.

32% OF RESPONDENTS WOULD BOOK A TRIP TO THE MOON IF IT WAS POSSIBLE, WITH 23% PREFERRING TO HEAD TO MARS.

TRAVELING TO MARS



Brits who would book a holiday to the 'Red Planet'

OF WHICH

Mars, meanwhile, has definitely piqued the interest of Brits – 23% would book a holiday to the 'Red Planet', with men a lot keener (31% compared to 18% of women). That enthusiasm for interplanetary travel will be music to the ears of entrepreneurs like Elon Musk, who recently revealed that he's **looking at setting up a colony on the planet by 2050.**

Overall all, even though they've grown up in an age where humans haven't ventured further than the Earth's orbit – the last moon landing was back in 1972 with the crew of Apollo 17 – young people are more up for space travel. For instance, 41% of 16-24-year-olds would visit the moon, while only 17% wouldn't bother with space travel at all. For people aged 55 and over, that's 14% and 53% respectively.

However, while the 'near orbit' flights of Virgin Galactic are seemingly on the horizon – the company hopes to start them in 2020 – at a reported £250,000 per ticket, it may be some time before the aspirations of the next generation to explore the inky blackness of space can actually be realised.

OVERALL SPACE TRAVEL
16–24-YEAR-OLDS

Would visit moon

Would space travel

If we've learnt anything about predicting the future, it's that we have a tendency to come up with often farfetched, bizarre and outlandish ideas that will probably never come to fruition. Examples of getting it very wrong include the celebrated futurist Ray Kurzweil stating in 1999 that computers would be, in effect, invisible by 2020. And, much further back, in a 1964 paper, the RAND Corporation announcing that we'd be mining on the moon in the early years of the 21st century.

While it's good to let the imagination run wild – make it up and then make it happen – we've tried to keep our feet on the ground, so to speak, with our predictions. Moreover, as the key takeaways from our research demonstrate, air travellers also share this view. Instead of flying cars and gimmicks, what people today want are subtle changes that still have a big impact – like fully automated baggage drop-offs at airports and really good Wi-Fi on planes.

This report has revealed a future that's far from being out of reach. In fact, it's about a future that's already beginning to make itself known with, for example, advances in biometrics, automation and plane designs since 2000 setting us up for an exciting time in air travel. Accordingly, the ambitious trends we've identified – like supersonic travel making a comeback and the emergence of hyper-individual personalisation – are realistic and attainable, as well as ground-breaking and transformative.

ABOUT NETFLIGHTS

Netflights has been comparing flights online since 1995, searching thousands of routes and hundreds of airlines to find the cheapest flights and holidays for more than 200,000 travellers every year.

In 2019 Netflights was named as a 'Recommended Provider' by the consumer champions at Which? and rated as the 'Best Comparison Site for Booking Flights'. Netflights belongs to the dnata Travel Group, part of the Emirates Group.

Netflights

TRAVEL 2050:
THE FUTURE OF AIR TRAVEL