



**skyscanner** presents

# *the future of travel 2024*



Travel Journeys

*the future of travel:  
travel journeys*

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# 1. The airport of the future: landside and seamless departures

A Google cab is waiting for TOM (Traveller of the Millennium) outside his home. But it bears little resemblance to its taxi counterpart back in 2014.

*It will feature gesture and voice-controlled internet access via a 3D screen, allowing him to Skype family and friends on the move. The 4pm trip to the airport will never have been so hassle-free.*

*At the airport, major technological advances have eliminated the check-in queues, and indeed the check-in desks themselves. TOM can drop his bag at automated points all over the terminal complex, and check-in with a voice command to his wearable AI (Artificial Intelligence) device.*





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Many leading air industry insiders see this as a scenario that is entirely possible. 'By 2025, automated self-service technologies, operated by smartphone, will let a traveller drop his bag at McDonald's, or check-in as he buys a coffee at Starbucks,' says Patrick Yeung, CEO of Dragonair.

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In fact, the harbingers of this technology to come are being introduced in airports today. British Airways and Microsoft are collaborating on tests of personalised, smartphone- activated digital bag tags that will eliminate paper tags, tickets and boarding cards entirely.

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The digital tag can be pre-set with information about flight details and luggage destination information. Contactless wireless technology, known as Near Field Communications technology, allows it to be swiftly scanned and shipped.

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The same technology will also enable TOM to track his own bags, pinpointing them on the luggage carousel, or offer him a bird's eye view of his suitcase on its journey from one part of the airport to the other.



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Smart tagging is only the beginning of the journey, however. Smart tablets are already in use by All Nippon Airways' Fast Travel initiative, which provides travellers with tablets to check-in in seconds before guiding them through security and on to their departure gate.

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**'But this is just the tip of a very fascinating technological iceberg,'** says The Future Laboratory Co-founder Martin Raymond. 'We are witnessing the birth of something that has been dubbed the Internet of Things, where more and more products over the coming decade – 50bn devices, according to Cisco – will be connected to the internet and to each other. By this I mean products such as clothes, accessories, fridges, even toothbrushes and suitcases.'

All of this, says Raymond, means tagging systems will link your phone, hotel, home or suitcase to the same device so that your hotel will know if you need more toiletries and your fridge will know if you need basic foodstuffs to be ordered in. Meanwhile, your washing machine will adjust its eco-load settings to account for the unusual number of sun-cream stained clothes you're bringing home.

**At Heathrow and Frankfurt airports,** iQueue, a Bluetooth-based product, has been installed to understand passenger behaviour and reduce bottlenecks. It monitors queues, dwell time, access controls and associated services.

In the future, say our experts, once systems like this have been tested, passengers will be able to access this data stored via an app and use the insights gleaned to speed up their own journeys.

At Incheon airport in Seoul, South Korea, a self-service kiosk allows a three-minute check-in with eight major airlines.

Departures will soon operate a biometric immigration system using facial recognition, and boarding passes will be scrapped in favour of machine-readable passports.

For many industry experts, these developments are simply the first steps in the process that will lead to the seamlessly automated airport infrastructure that will be enjoyed by TOM.

As Greg Fordham, Managing Director of Airbiz, says: 'In five years' time, there will be no need for a single human agent in the terminal.'

'An entirely automated airport journey will see the passenger take complete control, while an optimised team of multi-lingual and multi-skilled airport staff will concentrate on assisting those who need it.'

'Automated and self-service processes will virtually eliminate queues too, and with every traveller processing himself in one common-use area, the airport journey will take less time.'

Security gates will be where TOM will get back much of this precious time. The long queues and X-ray machines of 2014 will be part of a vanished and unlamented past.

Many of these technologies are already being slated for use in Singapore Changi Airport's T4, which is due to open in 2017. Biometric scanning, self-service check-ins and digital boarding via mobile are just a few of the standard innovations planned, along with virtual concierges and stores that showroom products that you scan to buy and have delivered to your home without having to carry them onto the plane.



**‘Biometric data cards will replace passports,** identifying travellers as bona fide low security risks and allowing them to pass quickly through security and saving so much time in transit and boarding,’ says Dr Ian Yeoman.

Similarly, facial recognition software will be used to flag up facial expressions or body movements that suggest passengers with children under extreme stress (for fast tracking), travellers who may be carrying contraband (for further questioning), or those likely to cause a security risk at the airport or on the plane.



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Luggage will no longer need to be laboriously X-rayed. Instead, a new generation of laser molecular scanners will check both passengers and their bags in a fraction of a second as they pass unhindered through the security area.

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**Laser molecular body scanners from Genia Photonics,** now being introduced by the US Department of Homeland Security, are 10 million times faster than conventional scanners and are capable of operating from a distance of 50 metres to scan all passengers, not just a selected sample.



## 2. The airport of the future: airside and the creation of Aerovilles

LAX

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After strolling through the stress-free 2024 version of check-in and security, TOM can luxuriate in departure hall surroundings that are intelligently designed to make transit a key and pleasurable part of the holiday experience.

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As **Melissa Weigel**, Senior Multimedia Director at Moment Factory, the multimedia environment design studio that recently revamped the international terminal at Los Angeles Airport, says: 'At the moment, airports feel like the price we pay to travel, somewhere we are trapped and long to escape from.'

'In the near future, airports will be an intrinsic part of the holiday experience, a place that we enjoy spending time in. Airports will be about giving people a better sense of wellbeing during travel. They will be uplifting and beautiful with intelligent architecture that influences the mood of the space.'

Moment Factory, best known for producing the video displays for Madonna's 2012 World Tour and Super Bowl show, provided multimedia and interactive content for seven giant LED screens built at strategic locations around the L.A. terminal.

The central feature is the four-sided, 72-foot Time Tower, wrapped around one of the terminal's main lifts. The trompe l'oeil feature slides slowly between videos inspired by old Hollywood films, among other things. 'We tried to think of it as telling the Los Angeles story,' says Weigel.



**These billboards feature no ads.** Rather than exciting consumers, the installations are deliberately soothing and peaceful.

Long seen as nondescript transitional zones, airports have become some of the best places in the world to find art. Singapore's Changi Airport has the world's largest moving sculpture, Kinetic Rain.

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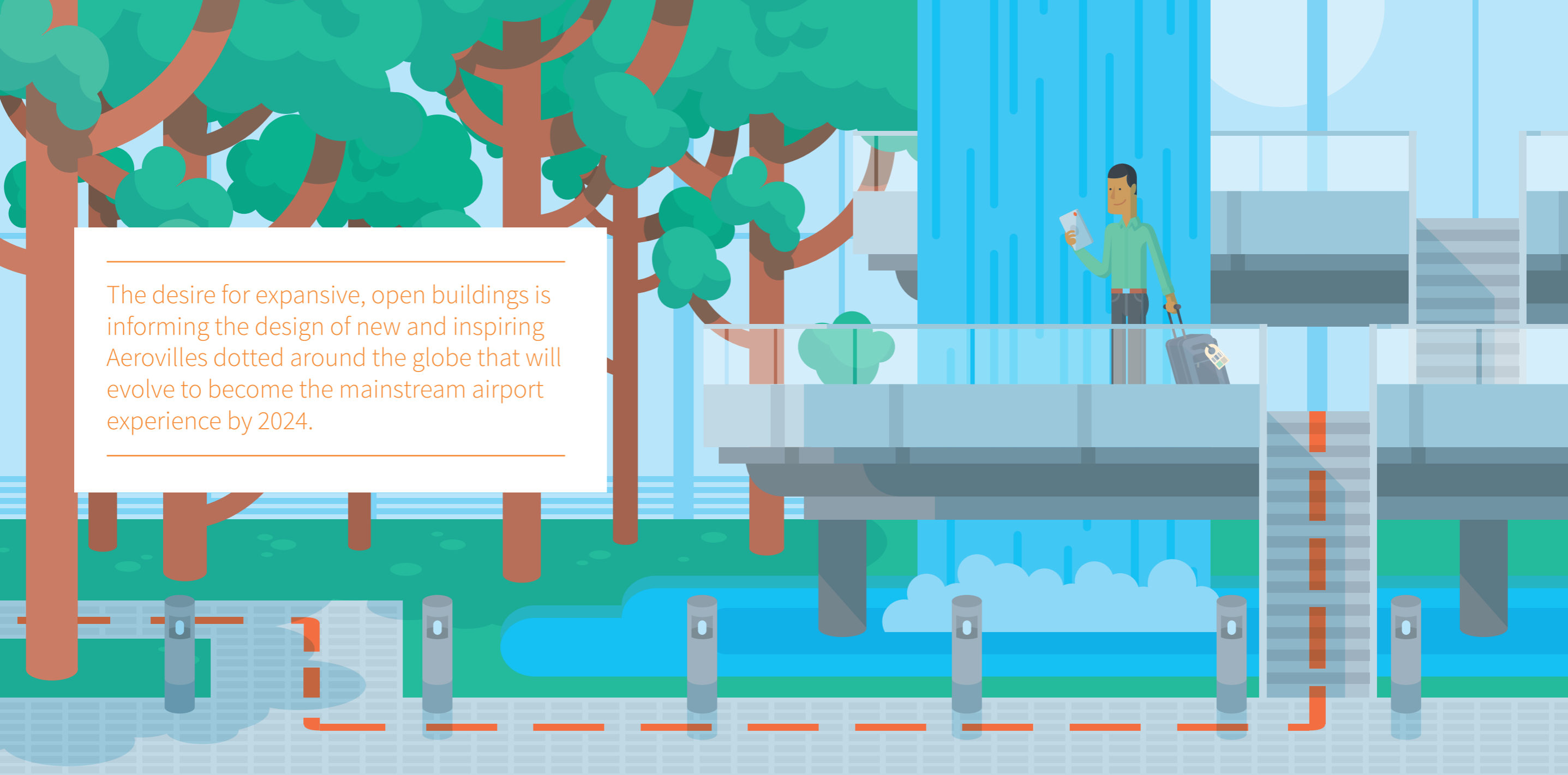
Amsterdam's Schiphol Airport features Dutch masterpieces borrowed from the Rijksmuseum.

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For Marion Witthøfft, Head of Commercial Excellence at Copenhagen Airports, the artistic turn by many airports is an inevitable consequence of passengers' rising expectations. 'They expect an airport to be efficient, but they want an airport to be more than efficient,' she says.

Witthøfft wants her airport to deliver 'magic moments' when passengers 'see something and enjoy something they didn't expect'. She speaks admiringly of Moment Factory's achievement at Los Angeles Airport. 'That's what I call a magic moment.'





The desire for expansive, open buildings is informing the design of new and inspiring Aerovilles dotted around the globe that will evolve to become the mainstream airport experience by 2024.

**Singapore's Changi Airport** has a butterfly roof, a five-storey vertical garden, waterfalls, four cinemas and a rooftop swimming pool. More airports are now installing ventilation systems and outdoor terraces that allow travellers access to the open or fresh air, as a growing body of research indicates that this is a key focus of concern for our global traveller. A recent survey by Skyscanner suggests that 43% of passengers would love to see an open-air park or a beach as part of the airport experience.

**The new Kuwait International Airport** – due to open in 2016 – will be the world's first Leadership in Energy and Environmental Design (LEED) gold certified passenger terminal, complete with cooling internal waterfalls and surrounded by landscaped oasis-style gardens.

'In our future airport,' says The Future Laboratory's Martin Raymond, 'interactive displays, immersive environments, the use of wayfinding projection systems or virtual reality

overlays that allow each passenger to carve out their route through an airport terminal will become part of what experts are already calling 'experiums'. These are zones such as retail parks, public spaces and shopping malls where infographics, wayfinding technology, and geo-tagging are used collaboratively to turn mundane journeys or transit areas into imaginative, immersive and interactive narratives.'

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Shopping and eating experiences will be transformed by 2024 by the convergence of Transtailing – a new format of Transit Retail – and a mixture of physical and digital retail techniques called Phygital.

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**Recent window displays** by sports retailer Adidas and US fashion retailer Forever 21 that enable customers to buy items simply by pointing their smartphones at them show the shape of things to come for airport food and retail. But imagine displaying these objects virtually, or adding haptic interfaces or haptic gloves to such displays like those researchers are now using to improve tactility in the world of gaming. Now add technology that releases individual smells

from the exact places within a product you would expect to find them, such as smell of leather from the in-step of a shoe, or the inside of a duty-free handbag, and you will begin to understand why obscure experiments into virtual scents at Tokyo's University of Agriculture and Technology are of interest to researchers looking to make tomorrow's virtual shopping experience more exciting and mind-blowing.

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The team's Smelling Screen, which was presented at the IEEE Virtual Reality 2013 conference in Orlando, Florida, can produce odours that appear to emanate from specific areas of the screen. But in future, say researchers, this could work for a shop window or a digital shopping wall.

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**British supermarket Tesco's virtual grocery walls** were first tested in subway stations and bus stations in South Korea before being introduced at Gatwick airport, and have inspired retailers at India's New Delhi airport to follow suit. Here, shoppers can scan QR codes on their smartphones to buy luxury goods, including perfume, jewellery, cameras and smartphones. Similar initiatives are being tested in Frankfurt, and in domestic departure lounges in many of China's second-tier city airports and terminals.

Multi-disciplinary studios such as Think Big Factory are proposing that in the near future entire large spaces, such as the walls and floors of an airport departure lounge, can also become entirely interactive.





**TOM will move through an environment** in which interactive software will allow him to order food or goods with a wave of his hand or by a simple verbal command, confident that it will be quickly delivered to him wherever he is in the terminal building.

‘Every second of the airport journey will be valuable. Without spending their time in queues, passengers will truly be able to embrace ever-more enticing food and beverage and retail offers,’ says Greg Fordham of Airbiz.

‘Passenger spend will soar, and airport commercial areas will evolve to deliver experiences unmatched anywhere else.’

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*Relaxed after a short yoga workout in a virtual pavilion, and a swim in an infinity pool surrounded by his island view of choice, TOM instructs his wearable AI to order his usual groceries from a nearby virtual shopping wall. His order will be waiting for him when he gets home.*

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*He tells his **Digital Travel Buddy** that he’s feeling a little thirsty. The intelligent device orders his favourite smoothie to be delivered as our traveller lays back into a seat that moulds to his exact body shape. He is lulled by the sounds of a waterfall and birdsong in the midst of the terminal’s atrium forest.*

*Now it’s simply a matter of chilling out until the airport’s software informs him that his flight is ready for boarding.*

# 3. Flights of the future



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*TOM awakes from a refreshing doze to find a 3D hologram of a member of the airport's staff, projected by the terminal's embedded software, has appeared at his side to tell him that his flight is waiting for him.*

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**Other holograms** – individually keyed in to his travel plans through his wearable device – guide him from his seat in the forest, through the terminal and to his boarding gate.

It's a scenario for travel in 2024 that is firmly embedded in today's emerging airport technologies. Holographic security experts have been installed to guide people through real-time security restrictions in order to avoid the queues and delays caused by frequent stops and searches.

Personal guidance systems are already being introduced. At Copenhagen Airport, a wayfinder smartphone app guides each user on the fastest and easiest route from anywhere in the airport to their departure gate.

*With the need for a boarding card and passport check eradicated by the airport's digital and biometric check-in software, TOM strolls on to his aircraft.*

*The cabin and seating that he finds waiting for him have changed beyond recognition over the past decade. His seat moulds memory foam-style to fit his body shape and cabin smart lighting is designed to eliminate the effects of jetlag, using lights that produce the sleep hormone melatonin, in the same way that the latest Withings Aura bedside device does.*

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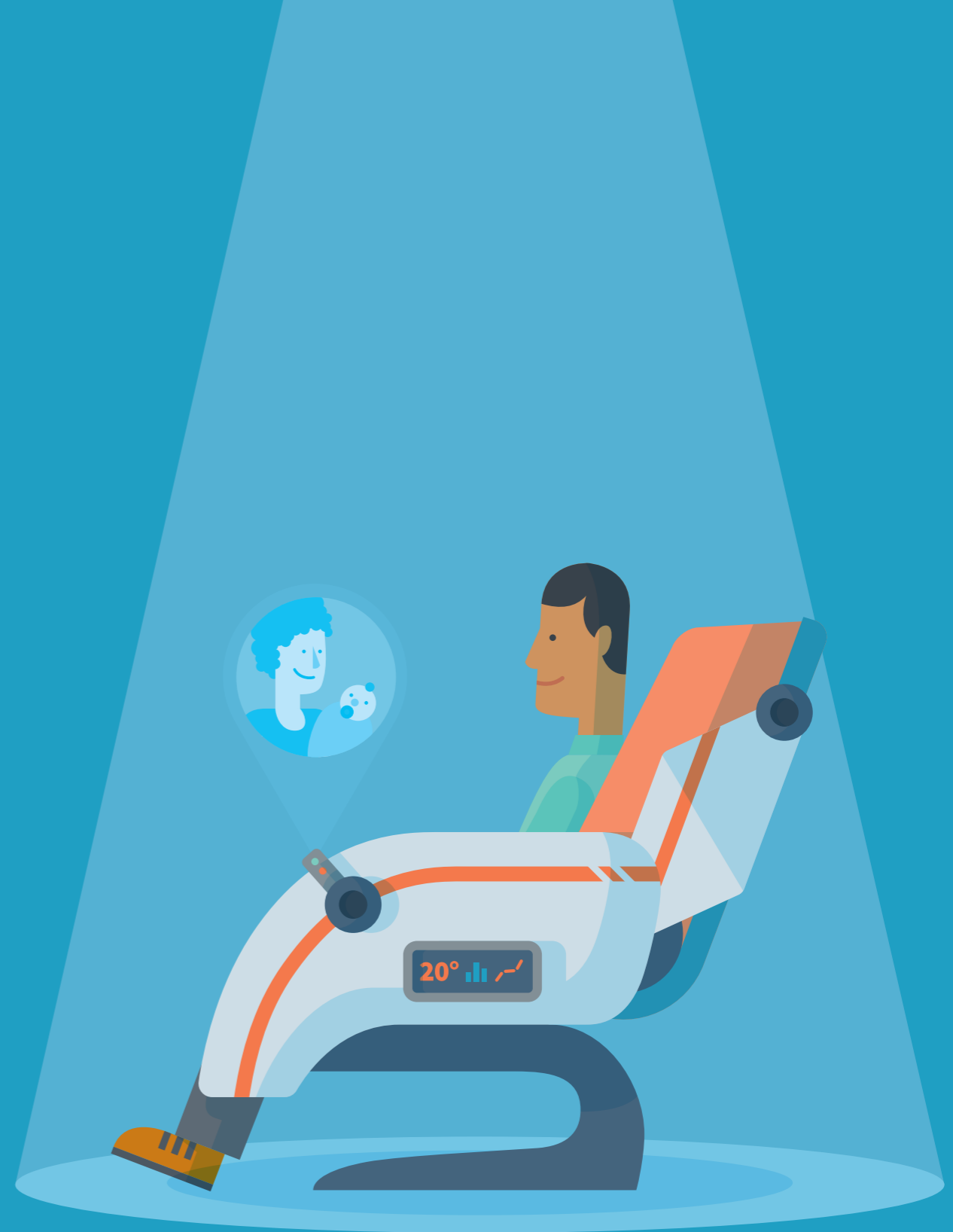
*Built in to the seat is an individual climate control, and a holographic communications and entertainment hub that lets TOM hold 3D conversations with his friends and family at home and play the films and music of his choice.*

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***Sonic disrupters embedded in his seat** rest will prevent other passengers from hearing his conversation, while haptic gloves – in Business Class initially – will allow him to stroke his children, hug his wife or shake hands with a business colleague, feeling the pressure of the touch or the grip as it happens.*

*'Technology like this is already with us,' says Martin Raymond, 'and at events such as the Consumer Electronics Show 2014 in Las Vegas, you are seeing second- and third-generation versions of these devices – hugely expensive now, but expected to fall in price as they hit the mass market.'*

*So within a decade, as more and more passengers provide their own in-flight entertainment, airlines will have to woo with even more novel and immersive 'distraction' technologies.*





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Similarly, cabins will be divided into different zones to cater for those who want to relax, mingle with other passengers, or eat food ordered from flight attendants equipped with intelligent mobile devices that are aware of travellers' particular preferences.

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It is a **startling transformation** that has its roots in aircraft technology advances, and passenger desires that are evident today. Skyscanner consumer research reveals that capsule-style aircraft bedrooms are high on a passenger's wishlist, indicating huge demand for a radical rethink of aircraft design that makes getting a good night's sleep a part of the standard package.

It was this perceived demand that drove Airbus to design a Concept Cabin in which First, Business and Economy class had been eliminated in favour of different zones that allow travellers to relax, play games, interact with fellow passengers, and chat to friends, family and colleagues on the ground.

Stepping away from a one size fits all approach, morphing seats offer different levels of comfort and cater for an increasingly obese population, while German research organisation Fraunhofer has developed a seat with in-built climate control that can be regulated by the individual passenger.

Aeronautical design consultant Catherine Barber predicts that in-cabin smart lighting will make jetlag a thing of the past in the 2020s. Plus, Airbus believes that furnishings and fixtures will take care of their own cleaning and repairs in the future, thanks to innovations inspired by nature, like dirt repellent coatings and self-healing covers.



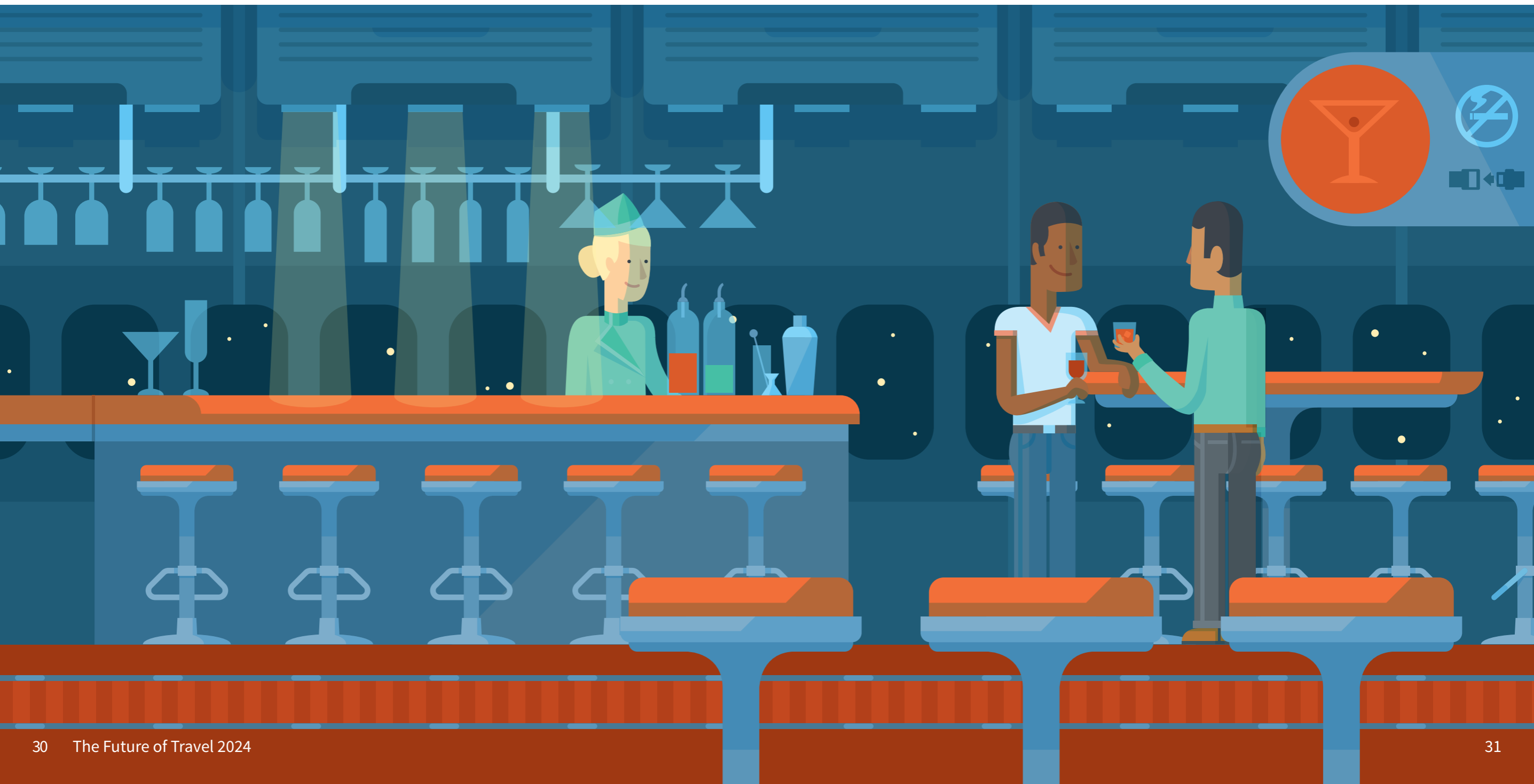
**On-board communications** will change radically for passengers by the end of this decade. Next-generation 5G connectivity will become available on aircraft in the future, making 100Mb/s downloads via advanced satellite broadband part of the standard package, according to the World Economic Forum's 2013 report *Connected World Transforming Travel, Transportation and Supply Chains*.

Consequently, each seat will become a combination of a mobile living room and virtual office, pre-loaded with personalised multimedia films, music and data. A Skype-style hologram system will allow real-time chats with TOM's nearest and dearest.

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Cocooned in his hyper-connected, climate-controlled seat or strolling freely through the aircraft cabin's different zones, TOM will hardly notice the hours flying by as he travels towards one of the exciting and inspiring new destinations of 2024.

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# Conclusion

By the middle of the next decade, the travel journey from home to aircraft seat will be almost unrecognisable from the often time-consuming and stressful experience of 2014.

**The trip to the airport** will be positively pleasurable as our traveller spends his time surfing the web or chatting to friends and family in a taxi equipped with virtual reality and cyber-connected technology.

He will eagerly anticipate his arrival at an airport that has been transformed from the transit holding station of today into a luxury Aeroville, with body-morphing seats, shoppable virtual walls, 3D cinemas, rooftop swimming pools and yoga centres set amid atrium forests.

Molecular scanners, digital bag tags, and facial and retinal recognition technology will have eliminated queues at security and check-in. Holographic staff members will guide our traveller seamlessly to his seat that moulds to his body shape and comes with 3D multimedia and internet connection as standard.









## Contact us

For further information regarding this report please contact:

**Mary Porter** – [mary.porter@skyscanner.net](mailto:mary.porter@skyscanner.net) / 0131 252 5353

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