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## **From chaos to collaboration**

*How transformative technologies will herald a new era in travel*



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## Foreword

### Supporting a new era in travel

Travel for so many of us is about discovering new horizons, exploring different experiences and being inspired. There are few things that can match the pleasure and anticipation that travel to either a new or favourite place offers us.

However, the onset of mass tourism has seen the pain of delays, lost luggage and seemingly ever-increasing queues confront many travellers. At Amadeus, we believe that technological innovation can be deployed to overcome these challenges.

These challenges are not our sole focus, however. We are also committed to improving the experience of travel, making it richer, through the application of technology and new innovations.

Across many other sectors, such as retail and entertainment, we have in recent years seen much greater collaboration between companies and their customers. And importantly, we have seen greater collaboration between customers too.

We expect that this type of collaboration will reshape travel in the next decade and beyond. It has the potential to significantly improve the travel experience for the traveller – reducing the stress of travel and making the experience more fulfilling.

At the same time, this new era of collaborative travel will herald greater opportunities for travel providers and sellers. By moving away from focusing solely on the transaction, travel providers will be able to build longer-term, higher value and more profitable relationships with travellers.

At Amadeus, we are excited about the future. By working together with travel providers and sellers, we can support the development of a travel industry that is intrinsically focused on the traveller but to the benefit of everyone.

As always, this report is not a definitive view of the future. Instead it is intended to stimulate discussion about the trends most likely to shape travel to 2020 and beyond.

I hope you enjoy reading this report and look forward to continuing the conversation in the months ahead.

**Eberhard Haag**

Executive Vice President, Global Operations, Amadeus IT Group



## Executive summary

### Towards collaborative travel

The next decade and beyond will see a qualitative shift in the travel experience. The future of travel is likely to be shaped by technological innovations which reduce stress, uncertainty and chaos. It will allow the traveller to harness the experiences of friends, family and fellow travellers more intelligently. And it will herald a new eco-system whereby information is freely exchanged and the idea of one-way transactions becomes obsolete.

The key thread running through this report is that travel will become more collaborative over the next decade, both in terms of how people travel, and how the travel industry interacts with travellers. The world of collaboration is about service users becoming partners rather than customers, in which the context becomes as important as the transaction.

For the 21st century travel business, it means moving from a model of service provision and selling to being an aggregator of information and facilitator of relationships. The paradox is that by reducing the emphasis on selling, travel industry providers will have a deeper and more profitable relationship with travellers. The future traveller will find their journey enriched by the shared experiences of many others, whether checking on the easiest way to reach the city centre from the airport, or finding the unexpected side to a familiar destination.

At every step of the journey, travel will be enhanced by greater and more fluid interaction with other travellers and travel providers. But all this is only possible by new technologies and innovations which will underpin and enable this greater fluidity and interaction to become a reality.

### Getting there and getting away

The stress, uncertainty and chaos of transit will be made less severe by smarter and more efficient identity management systems that could make checking-in the exception rather than the norm. Furthermore, a more responsive approach to health and wellbeing from the travel industry will mean there is greater emphasis on technologies that help to make travel a less stressful experience. Solutions to the underlying causes of anxiety will make the biggest difference: technologies that reduce the stress of baggage reclaim or make travel plans easier to re-arrange have the greatest potential value for passengers.

### The experience of being elsewhere

Our experience of a place will increasingly be seen through the lens of other people who are simultaneously there with us or have been there previously. Travel will become more about depth rather than breadth of experience, as we come to realise that all places are layered according to their history and culture of who is there and who else has been there previously. Furthermore, as the boundary between travel for leisure and travel for work will blur, this collaborative experience of travel will impact on business travel as well. Continued emphasis on work-life balance and wellbeing at work may mean employers increasingly allow people to take time off either side of a business trip. The business traveller could, in other words, become the business tourist.

### Information exchange

Peer groups, the internet and experts will form an information eco-system which will be more collaborative than the one-to-one transactional relationships that predominate today. As technologies make it easier for people to tag and review all aspects of travel experience, travellers will be influenced by peer groups much more. Moreover, as data on payments is shared and integrated, it will leave a trail of digital breadcrumbs, tracing where we've been and what we've done.

Travellers will be able to browse and learn from this layer of information, and for the travel provider, digital breadcrumbs are likely to become an important customer-profiling tool. There will also be an opportunity for travel providers to participate in the wider information eco-system. Helping users navigate their way through this will be one of the main ways travel providers; particularly travel agents can add value.

Travel providers will have a big role to play in this new age of collaborative travel. However, they will need to shift focus from satisfying the needs and wants of the traveller as an individual, to providing the environment for networks and flows of travellers as a group to move and flourish.



Our findings are divided into six sections, each of which covers a subject which is essential to the future development of a collaborative travel industry including:

1. **The next generation of experience:** The world of the traveller is, in some ways, contracting; travel is increasingly about depth rather than breadth of experience.
2. **Automatic transit:** For the first time ever, checking-in could become the exception rather than the norm, as manual check-in security will be replaced by faster and more efficient systems that track flows of people.
3. **Payment with memory:** All data on payments made before and during a trip will be integrated, acting as a digital memory of expenditure and activity for individuals, groups and travel industry operators.
4. **Intelligent recommendation:** As technologies make it easier for people to tag and review all aspects of travel experiences, travellers will be influenced by peer groups more.
5. **Taking the stress out of travel:** The rise of the wellbeing agenda and changing demographics will place greater emphasis on technologies that help to make travel a less stressful experience.
6. **The business 'tourist':** Continued emphasis on work-life balance and wellbeing at work may mean employers encourage people to take time off on either side of a business trip.



## Background and methodology

### Project question

“What are the technologies and broader social values and trends that will shape the future of the travel industry to 2020, and what impact will they have to 2020 and beyond?”

### The building blocks of our approach

Eighteen expert interviews with technologists, leading-edge travel industry representatives, social trends experts and futurists, as well as Amadeus’s own leading technologists. Contributors are listed in full at the back of this report.

Quantitative research with travellers in seven different markets to explore latent consumer needs and the barriers to the use and spread of technologies.

An online qualitative forum, with a representative sample of 200 travellers from seven markets (total 1,437 travellers), to explore in more depth the reaction from travellers to potentially transformative innovations. Markets included Brazil, China, Russia, Spain, UAE, UK, US.

Workshop with six external contributors – round table working session to prioritise social and technology trends.

The Futures Company’s own proprietary knowledge base of the social, technological, environmental, economic and organisational drivers of change, as well as our knowledge of emerging technologies.

Futures techniques and processes to analyse relationships between social and technological trends, and to frame narratives about the potential of technology (for example, the Technology Axis Model, discussed in detail overleaf).



## Further details on methodology

### Quantitative survey

The quantitative research in this report was drawn from a study of consumer behaviours and attitudes in relation to technology in leisure and business travel, conducted in July 2011 across seven markets: Brazil, China, Russia, Spain, the UAE, the UK and the US.

Using this study, we built a picture of leisure and business travellers in terms of their:

- > Attitudes towards technology and social networking
- > General travel behaviour
- > Reasons for and against travelling – barriers and triggers
- > Attitudes towards shopping and booking travel, transit, experiences whilst travelling and sharing experiences with others
- > General lifestyle attitudes
- > Responses to future innovations in travel technologies

As well as examining the data by country, we looked at:

- > Age cohorts: people aged 16-29, 30-49 and 50+
- > Traveller type: leisure and business
- > Traveller frequency: often and occasional

#### Definitions

- > Business traveller - those who have travelled for business only or for both business and leisure over the past 12 months
- > Leisure traveller – those who have travelled for leisure only over the past 12 months
- > Frequent – those who travel for business or leisure at least once a month
- > Occasional – those who travel less than once a month

### Sample Structure

<b>Total</b>	<b>1,437</b>
<b>Country</b>	
<b>Developed</b>	<b>617</b>
Spain	203
UK	208
USA	206
<b>Emerging</b>	<b>820</b>
Brazil	207
China	210
Russia	202
UAE	201
<b>Age</b>	
16-29	383
30-49	569
50+	485
<b>Traveller type</b>	
Leisure	590
Business	847
<b>Frequency</b>	
Frequent	278
Occasional	1,159

### Online qualitative forum

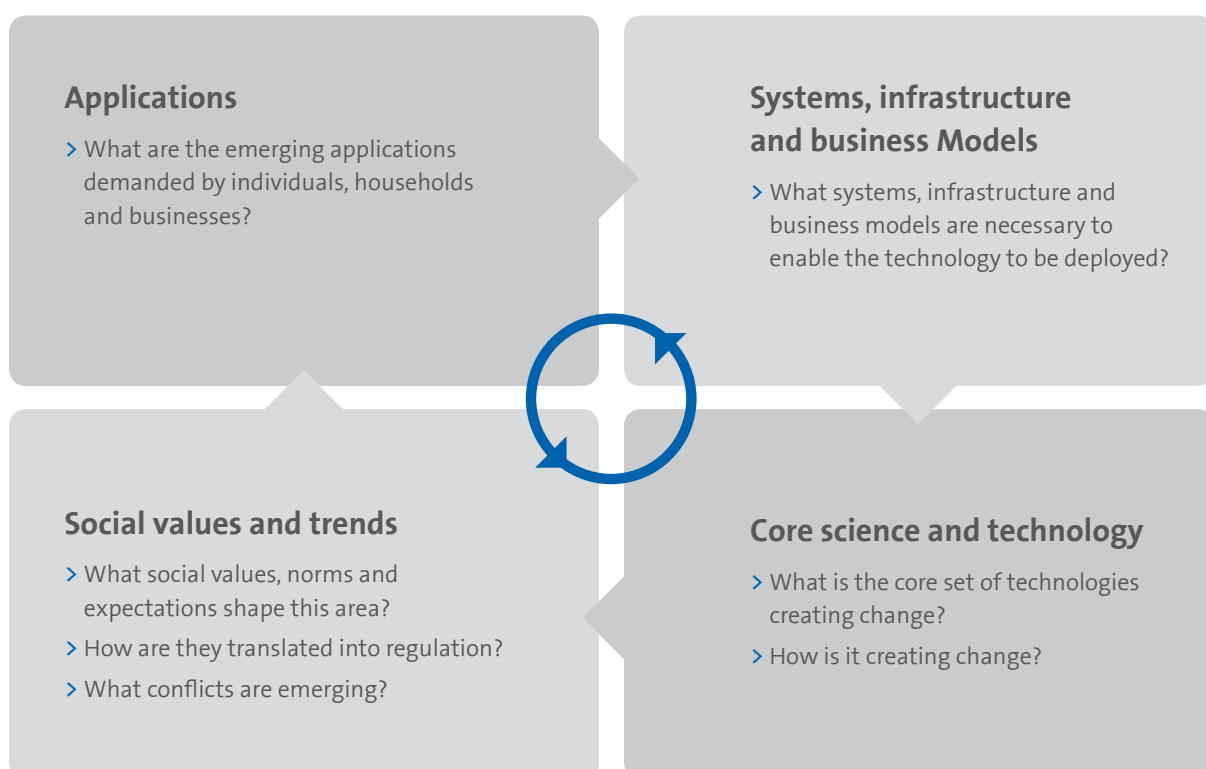
- > An online qualitative forum was conducted with a representative group of travellers across six countries, which were UK, US, Russia, Italy, China and UAE.
- > A series of innovation concepts was presented to travellers, and their reactions explored and discussed with the group.

## The Technological Axis Model

Visions of the future from the past consistently overestimate or misconstrue the impact of technology in the long-term, and consistently underestimate the impact of social change. In this report, we wanted to avoid making techno-centric assumptions about the future of travel – and painting a picture of flying cars and intelligent robots in a world that is otherwise unchanged from today. You can't make an intelligent or realistic prediction about the effect of technology without considering infrastructure, systems and business models, as well as social values and trends.

For this reason, we used a Technology Axis Model when analysing the impact and uptake of emerging technologies in the research for this report with technology experts and futurists. The model allows us to take a broader and less techno-centric approach, exploring the enabling technologies and infrastructure needed for a core set of technologies to evolve into applications, and the social values that may accelerate or impede its growth<sup>1</sup>.

The model is designed to consider the impact of each quadrant in both a clockwise and counter-clockwise direction, and there is no set starting point. We can use it to help clarify the enabling conditions for particular technologies or groups of technologies (what systems, infrastructure and business models, or what social conditions are required). Equally, the model allows participants to consider the impact on the spread of certain technologies of a particular set of changing social norms or social needs, demand for an application or changing infrastructure. We used this model to test and develop the stories we tell in this report about the effect of technology on travel. For most of the report, however, we have not felt it necessary to “show our working”; we refer to the model only – when we feel it helps illustrate or clarify enabling conditions.



<sup>1</sup> The model was originally developed by Bill Sharpe, previously Research Director of HP Labs in the UK.





## Introduction: travel in tomorrow's world

Behind the success of any shiny new product or application of technology is a multitude of enabling factors – social trends and needs, previous technological platforms and systems, and business and organisational models. It is therefore an over-simplification to identify the top five technologies that will change the world in any given area.

In this report, we have tried not to separate technologies from the context in which they're developed, marketed and used. Our focus has not been technology itself – but where it can and will make most difference.

### We look at six key aspects of the future of travel:

- > The next generation of experience
- > Automatic transit
- > Payment with memory
- > Intelligent recommendation
- > Taking the stress out of travel
- > The business tourist

Technology, for the purpose of the report, is defined principally as digital and information & communications technology (ICT).

### The traveller experience

Inspire and Share

Shop and personalise

Transit

Experience



#### Data

- > Data processing power
- > Data mining and analytics

#### Devices

- > Smart mobile devices
- > Enhanced mobile connectivity

#### Screens

- > New forms of display
- > New interfaces

#### Sensors

- > Pervasive sensor networks / "ubiquitous computing"



*“We have done research which suggests the underlying needs for travel haven’t changed at all, although as markets evolve over time people become more sophisticated.”*

**Suzanne Cook**

U.S Travel Industry Association

### The starting point: basic human needs

Human beings have travelled for leisure, to experience new cultures and see different parts of the world, since the time of the Babylonian and Egyptian empires, and for business – in the broadest sense of co-operating with others for shared gain – for thousands of years before that. The fundamental need for travel does not change – but the way it’s served, expressed or encouraged does.

### The traveller’s experience

Where ICT makes the most difference is in the individual’s (or group’s) experience of travel. Breaking travel down into component parts – labelled in the associated diagram (on page 11) as the inspire and share or research phase, the shop and personalise phase, transit, and the experience itself – makes this clearer.

Technology is likely to play a role in re-ordering these phases over the next decade, allowing, for example, people to experience a destination virtually before transit, or to seek inspiration and share information live, while they are travelling and experiencing a place.

The same fundamental technologies are likely to enable applications at different points in the travel experience. These can be summarised as:

- > **data** – large amounts of information on all aspects of behaviour, which can be stored, shared and analysed to gain a better understanding of human behaviour;
- > **devices** – portable hardware such as mobile phones, tablets or computers capable of accessing, communicating and sharing information;
- > **screens** – flexible and immersive ways of displaying information beyond the traditional 2D computer or television screen;
- > **sensors** – wireless enabled technologies embedded in everyday objects that can send and receive information about how people interact with the world around them.

This set of fundamental technologies has a transformational impact at every phase and they feature (albeit sometimes in the background) in all the stories of change we discuss in this report. Chief among the set, arguably, are devices, as they lie at the interface between people and a much more data-rich, sensor embedded world.

### The traveller’s higher level needs

People’s primary (or fundamental) need for travel has inevitably created other needs – for example, at the most basic level, the need for transport, rest and shelter (accommodation). Driven by continuing social change and earlier technological progress, these secondary needs are becoming ever more subtle and more complex.

A priority for many travellers, particularly those over 50, for example, is reducing risks and uncertainties. Meanwhile, younger people continually seek ways to optimise the travel experience – by, for example, informal research online and social networking – and business travellers, tired of working away from home, now want to do more than live out of a suitcase in a clinical, fit for purpose hotel.

The following sections of the report discuss the ways technologies can help meet these kinds of higher level needs – while painting a picture of travel in tomorrow’s world.



# 1. The next generation of experience

Travel will increasingly be about depth rather than breadth of experience, as we experience places collaboratively, according to who is there and what else has been there previously. Technology will enhance travel by layering information about history and culture over physical locations, enriching the subjective experience of travel.

<b>Social trends and factors that will shape demand</b>	<ul style="list-style-type: none"> <li>&gt; Desire for different experiences</li> <li>&gt; Focus on mass, live social events</li> </ul>
<b>Main applications of technology</b>	<ul style="list-style-type: none"> <li>&gt; Augmented reality</li> <li>&gt; Gamification mechanisms</li> <li>&gt; Smart mobile devices</li> </ul>

## The mobile 'tour rep'

*"I think we're just starting to realise – the industry is starting to realise – the impact that mobile will have on the trip experience. The fact that literally everyone within three to five years will have the rough equivalent of an iPhone or a lightweight smart device will profoundly change the way your trip actually takes place. You know you don't need to worry any more about... where you're going to have dinner tonight... You can just pull out your mobile and, pretty much wherever you are in the world – including some of the most remote places- you will be able to check out nearby restaurants. Wherever you are, you will always have access to the information you want - always, always, always. And that is a huge change."*

**Denis Lacroix**

VP, Product Development, Sales and e-Commerce Platforms, Amadeus



## Technology will shape our experience in two important ways.

### Familiarisation

At a very functional level, it will help people make the most of an unfamiliar place. Intelligent translation services and augmented reality applications that overlay information about the physical world around us are currently available in only a small number of areas and used by only a small number of people. Over the next decade, however, improvements to both the technologies – for example, natural language processing – and the enabling infrastructure should significantly expand their use.

Our findings suggest a strong market for mobile devices as travel reconnaissance tools. In our quantitative survey, the technologies rated mostly highly were those that tell you more in real-time about the world around you (including translation services) and help improve efficiency in transit.

Eventually, we may also see more use of technology to preview a location.

*“When I travel, there are so many details that I like to have sorted out before I arrive, so that I may make the most of my time there. [The chance to go] to the site, and see the layout of the airport (so I don’t have to waste time figuring out the fastest way to taxi or bus stand, or where my bank’s ATM may be located in the terminal) would help me bypass the boring logistical stuff, and let me get into my experience at the destination faster!”*

American traveller online forum

### Additional experience

As well as a familiarisation tool, technology will be able to offer an alternative experience of a place. Augmented reality and game-based applications could make a qualitative difference to travel. Through the camera lens of a mobile device, locations could be seen from a completely different perspective: their physical appearance could be augmented with photos, videos or sounds from the past – or from an alternative, simulated reality.

#### Top five rated product concepts<sup>2</sup>

Thinking about the new products and services that appealed to you, how much do they appeal to you?

##### Extremely / Very appealing



<sup>2</sup> Amadeus Future of Technology in Travel survey; base: All, n=1,437.





**Layar augmented reality brings the Berlin Wall back<sup>3</sup>**

The Berliner Mauer layer allows anyone to see exactly where the wall once stood 21 years ago using the Layar app. An average of 175 unique users per week take a look at The Berlin Wall via Layar.

Technology has the power both to edify and to entertain. Imagine being able to play Shakespeare's London, take a tour through Beijing at the time of the Ming Dynasty, relive Harry Potter across film locations in Oxford and Edinburgh, or explore the cultural history of cotton across different parts of Asia. In this way, 'gamification' could be used to offer people the ability to time travel while travelling.

These kinds of opportunities created a lot of excitement in our online forum.

*“An interesting use of it, especially where I live (in Rome), would be to fully make use of an alternative reality in an interesting way, perhaps simulating Rome in the past (ancient Rome, medieval Rome, Renaissance Rome)... giving people a full opportunity to enjoy a historically accurate simulation of a certain place, say, ancient Rome – buying stuff at the market, talking to people, and so on. That would be cool, and I'd be ready to pay money for it... After all, if people pay for massive online multiplayer games, why not a well done simulation?”*

**Italian traveller** online forum

<sup>3</sup> Image: <http://www.layar.com/>; View in Layar: <http://m.layar.com/open/berlinwall>; Developers: Hoppala and Superimpose;

*“Chinese and Indian audiences currently do want the ‘greatest hits’ of travel; they want to go to Disneyland and visit the classic sights.”*

**Michael Chadwick**

Head of Planning, JWT Singapore

### The three generations of experience

Over 200 years ago, the French soldier and writer Xavier de Maistre wrote a detailed account of a six week journey around his bedroom.

*“How glorious it is to blaze a new trail, and suddenly to appear in learned society, a book of discoveries in one’s hand, like an unforeseen comet flashing through space!”*

**A Voyage Around My Room, Xavier de Maistre, 1790**

The piece was, of course, satire – a parody of the grand travel narrative fashionable at the time.

These days, however, it’s increasingly possible to write a travelogue on a single postcode, a single street – or even a single house – and be taken seriously. (We’ve seen similar developments in the field of social history: in 2006, for example, author Gillian Tindall gave us *The House by the River Thames and the People Who Lived There*, an account of London from the 1700s, based on generations of residents at just one address.)

The world of the traveller is, in some ways, contracting; travel is increasingly about depth rather than breadth of experience. Technology has made it possible for us to know, almost instantly and at any time, as much as we want to about the physical world around us. Social media and rolling news networks can tell us what is going on in any given location. Google Maps and satellite images can tell us what a place looks like before we get there; internet-enabled mobile devices increasingly allow us to search for information in real-time when we do. In this context, the most exclusive and sought after experiences are those that feel hidden from general view, and the most valued itineraries serendipitous rather than pre-arranged. The mobile in our pocket gives us more flexibility and more freedom – because it’s able to tell us so much.

In travel, we can broadly sketch three stages of experience-seeking. In the first stage, what we could call “the first generation of experience”, there was glamour and intrigue in travelling further, to the places that were out of reach of the majority. With the arrival of cheaper flights, further afield destinations became more accessible to the majority of Western travellers – and therefore felt less special and exclusive. This led to what we could call “the second generation of experience”, where travellers would seek out more obscure or unknown destinations, visiting Puglia rather than just Italy, and Laos rather than Thailand.

In the ‘third generation of experience’, we may see greater emphasis on rediscovering and making the most of familiar places. Put simply, travellers may come back – or come home.

The change is likely to be accelerated and, to a large extent, driven, by economic factors. Slow or even stagnant growth may force the Western traveller to be less adventurous – particularly if airfares are pushed up by higher energy costs and carbon duties.

Increasingly, people may travel to things rather than to places and countries. Events and festivals that transform the setting and mood of a familiar place may be increasingly valued – and increasingly common and popular. Travellers may look to new technologies that help them rediscover sites, experience a festival or event more fully, or make the most of their own local area.

In the East, the picture is different – but the potential market for technologies that enhance experience is broadly the same.

Although domestic travel represents a larger portion of the market in India and China (meaning that they have some characteristics common to the ‘third generation of travel’), mass-market travel is still maturing. Unlike their counterparts in the West, Asian travellers continue to want the big attractions and the big sights.

## Asian travellers will account for one third of travel spending by 2020 – up from 21% today.

Our survey data below supports this. It shows the Chinese are the most likely to choose a destination based on its sightseeing potential.

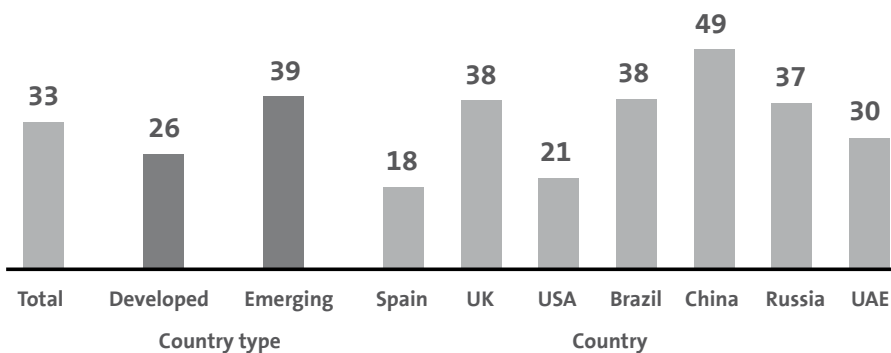
It is likely Asian tourists will be very receptive to a different, more functional and less individually-tailored type of application that enhances their sightseeing experience while they are travelling. Overwhelmingly, the most popular concept among Chinese travellers in our survey was “an application that overlays visual information about the physical world around you through your mobile device” (80% found it very or extremely appealing).

It’s hard to underestimate the potential of the Asian market. According to previous forecasts by Amadeus and Oxford Economics, Asian travellers will account for one third of travel spending by 2020 – up from 21% today<sup>5</sup>.

The key technologies that will enable this move to the ‘third generation of experience’ will be the same fundamental ones mentioned earlier in the report of data, devices, screens and sensors. In particular, the shift to 4G networks will have a dramatic impact.

### Sight seeing<sup>4</sup>

(Still thinking about your last trip for leisure purposes, why did you choose to visit that destination?)



<sup>4</sup> Amadeus Future of Technology in Travel survey; base: Have travelled for leisure in last 12 months, n=1,419

<sup>5</sup> “The Travel Gold Rush 2020”, Oxford Economics and Amadeus, 2010

## The 4G moment

Around the middle of the decade, 4G networks will have been adopted by a significant proportion of the population, bringing mobile services to more travellers – more quickly and more easily.

There has been much discussion of the revolutionary impact that smart phones will have on all aspects of living, and the role of the smart phone as interface between the individual and the world recurs as a theme throughout this report.

The real key to the revolution, however, will be the adoption of 4G networks. Forecasts vary, but it is likely that by 2016 we'll see mainstream adoption of 4G across many Western countries, with a significant proportion of the population using 4G mobile networks, and the remainder largely using 3G multi-touch devices. Definitions of 4G vary slightly, but, in summary, 4G offers faster transfer speeds, more robust service (especially, transfer between network cells), more security, and better multimedia support.

Practically, what that means is that travellers will have internet access on their phone that is as fast as high speed broadband internet is on a desktop computer today. Tasks that are currently often slow to perform on the mobile internet will become dramatically faster and easier to accomplish, and there will be a whole new range of tools available to us as a result. In particular, once there is a sufficient critical mass of 4G users, there will be many more opportunities to offer location-specific information and services based on mobile phones.



## 2. Automatic transit

For the first time ever, checking-in could become the exception rather than the norm, as manual check-in security for individuals will be replaced by faster and more efficient automated identity management systems that track flows of people. However, privacy and security concerns are likely to restrict the use of these technologies. The passport is a long way from obsolescence. Automated identity management systems are more likely to be adopted to confirm and manage boarding of vehicles (trains, planes and buses) than for cross-border transfers.

<b>Social trends and factors that will shape demand</b>	<ul style="list-style-type: none"> <li>&gt; Privacy and security concerns</li> <li>&gt; Desire for simpler living, 'streamlined' travel</li> </ul>
<b>Main applications of technology</b>	<ul style="list-style-type: none"> <li>&gt; Automated surveillance (machine vision and facial recognition)</li> <li>&gt; Artificial intelligence and group behaviour analysis</li> <li>&gt; Biometrics and new ways of identifying individuals</li> </ul>

### Beyond passports and tickets

*“If you talk to a technologist they will tell you it’s perfectly possible to have a chip in your arm, or use facial recognition technology and walk on to a plane or vehicle [without checking in], but it seems as if the regulators or border control staff are intent on adding extra layers of security, rather than removing them. The technology is there, but because of regulation I think that using a mobile as a surrogate identity confirmation is much more likely for the 06:30 from Paddington to Heathrow, than for another country.”*

**Tim Jones**

Innovation, Growth and Futures expert

As the successor to the centuries-old letter of recommendation used to vouch for the integrity of travellers, the passport is still low-tech. And, over the next decade or so, we’ll see the evolution of alternatives, even with biometrics embedded.

Technology will be available that allows passengers to walk through an airport, board a plane and enter another country without ever having to physically go through a single security or border control checkpoint. Automated surveillance powered by sophisticated artificial intelligence systems, facial recognition and ubiquitous sensor technologies can already effectively monitor flows of people throughout an airport, tracking their movement and making time-consuming manual security checks the exception rather than the norm<sup>6</sup>. Prototype applications have been developed that allow for fingerprints to be scanned and recognised at a distance in the same way that facial recognition operates today<sup>7</sup>, and it has been possible for several years to use Near Field Communication (NFC) enabled mobile devices to check in at security desks, vehicles and hotels. These technologies exist already, but have yet to achieve the scale and familiarity among users required to go mainstream.



*“The thing that excites me the most is the outcome of contactless technology: being able to use my phone and just swipe it in front of a kiosk to go through security, through a border control, through the check-in counter at the hotel, and being instantaneously recognised, pleasantly greeted and treated as an individual.”*

**Denis Lacroix**

VP, Product Development, Sales and e-Commerce Platforms, Amadeus



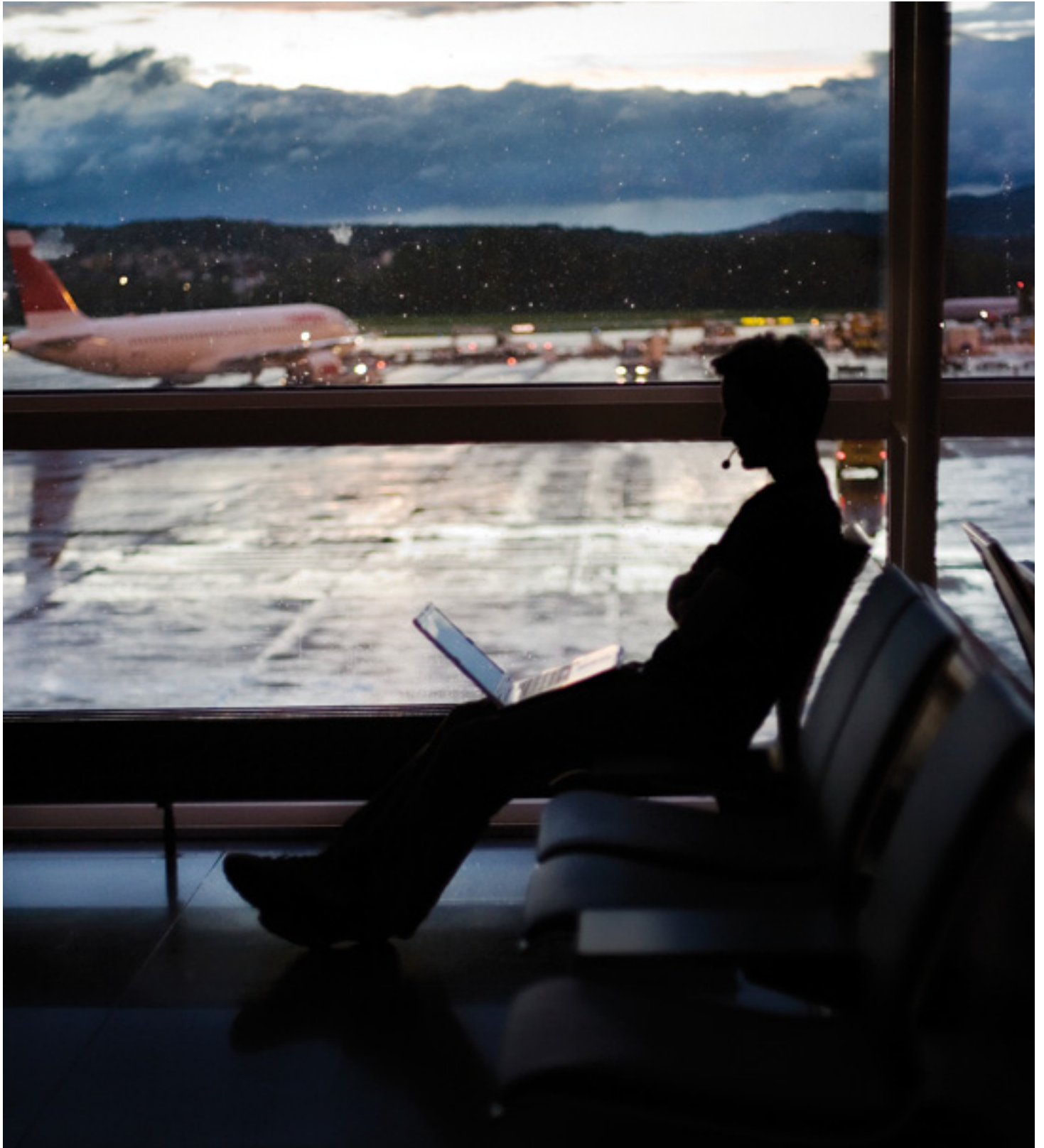
**Long-range fingerprint scanner<sup>6</sup>**

AIRprint™ is a concept developed by Advanced Optical Systems, Inc. (AOS) for rapid, long range collection of fingerprints. It has been designed for security and military personnel but could eventually have broader application. The device can capture fingerprints up to 6.5 feet away, in less than five seconds.

<sup>6</sup> This technology has already been launched and was referenced in a previous Amadeus report, *Navigating The Airport of Tomorrow* (2011)

<sup>7</sup> See <http://www.technologyreview.com/biomedicine/27052/>;

<sup>8</sup> © 2011 Advanced Optical Systems, Inc., <http://www.aos-inc.com/index.php/products/airprint> ;<http://www.technologyreview.com/biomedicine/27052/>



## Barriers to technological change

The passport, however, is a long way from obsolescence.

Automatic transit is a good example of where we must look beyond the pure potential of a technology to the wider context of the social conditions, systems, infrastructure and business models that will shape its adoption and development. When one applies the Technology Axis Model, explained in full at the beginning of this report, to automatic transit you uncover problems.

## Operators

We should not underestimate the difficulty and complexity of changing the way security and check-in is managed across the whole network of cross-border stakeholders involved in the transit process. It is one thing for a single check-in kiosk at an airport or hotel to install the technology to allow NFC-enabled touch-check-in via a mobile device, and quite another for the system to apply across multiple travel providers, multiple stations and airports, and multiple travellers, devices and countries.

### Factors affecting the technology uptake of automated security management in transit

#### Applications

- > Automated identity management
- > Automatic check-in
- > Monitoring systems
- > “Early warning systems”
- > Biometric scanning devices

#### Systems, infrastructure and business Models

- > Shift in operating model for airports: alignment required between stakeholders in transit process
- > Skilled operators required for security and monitoring systems

#### Social values and trends

- > Trade off between security concerns and ease of travel
- > Risk of invasion of privacy
- > Danger of abuse of technology
- > How can you manage security without making people feel like their security has been managed?

#### Core science and technology

- > Automated identity recognition technologies
- > Machine vision and facial recognition
- > AI and group behaviour analysis
- > Sensor networks
- > Encryption and data privacy technologies
- > NFC enabled mobile devices
- > Biometric identity management

The critical enabling technological factor is not the new technology itself, but the systems, infrastructure and business models that allow it to take root among a large enough group of people to create a positive network – or domino effect – and make it a standard part of the transit process. The network of operators and stakeholders involved in transit management (especially international transit management) is large and complex – and this inevitably slows the adoption of new technology. We heard from our interviewees that it will take around six to seven years for an airport to move to a system such as biometrics – the investment required, and the time taken to change proprietary systems and processes, and to train staff, mean there’s very unlikely to be a fast track.

## Regulators

Even if there is alignment between different operators to standardise and introduce the technologies, automatic transit will remain far from the default. Fears for national security, increased in recent years by new terrorist threats, are likely to make governments and regulators cautious about any interference with border controls.

For these reasons, we believe that automated identity management systems are more likely to be adopted to confirm and manage boarding of vehicles (trains, planes and buses) than for cross-border transfers.

## Travellers

Other potential barriers to automatic transit are the privacy and security concerns of travellers. For some, the idea of an automated monitoring system raises fears for the safety of personal data.

*“The idea that my details (identity) would be stored in a cloud somewhere, accessible to any major bank, government, corporation, or, in the worst case, hacker, does not make me rest easy at night. The money I earn and my passport are two of the most important external ‘things’ outside of my physical body. Without these things, my experience of ‘freedom’ as an adult, and individual is limited.”*

American traveller, online forum

*“I do believe that carrying your ID within your cell phone is a great convenience, provided that security is in place. Attaching it to a ‘cloud’ would be the most flexible and easy-to-use method. You don’t want to be stranded with no ID just because your phone has no more batteries.”*

Chinese traveller online forum

The problem, however, shouldn’t be exaggerated. Our research also tells us that many travellers would welcome technology that makes transit through airports quicker and easier. Additional security checks feel like an imposition, designed for the benefits of governments and airports rather than the public and passengers. This is particularly true for frequent business travellers: **60% say that they are happy to provide more personal information in return for more streamlined and efficient travel** (compared with 43% of leisure travellers).

*“London airports can particularly be a bit of a nightmare and anything that would make the process of getting through security more efficient would be most welcome. I don’t really share the concerns expressed about Big Brother style tracking, as I think this could be done just as much through my passport. It’s just progress, and if it makes my time in hellish queues at airports less, I don’t have a problem with it.”*

UK traveller online forum

Attitudes vary significantly by country. This is seen not only in the responses to our online forum (see, for example, the quote from the Russian traveller (overleaf) but also in the findings of our quantitative survey. **Chinese travellers are almost twice as likely (62%) as travellers from the U.S to say that they are happy to provide more personal information in return for more streamlined and efficient travel.**



## Meeting travellers' differing needs

There appears to be a split between travellers who have strong concerns about a change to a new system, and those who don't (business travellers over-index in this group).

### How can the travel industry please them both?

There are two main answers.

The first is to manage the introduction of any new system effectively. This will mean getting the language right: 'easy check-in' or 'rapid check-in' is likely to raise less fear than 'automatic check-in'. More fundamentally, though, it will also mean changing passengers' perceptions of what security is. It has the potential to make passengers feel that security staff are advisers, helping them get from one end to the other quickly and efficiently, rather than security guards who work in the interests of the airport and not the traveller.

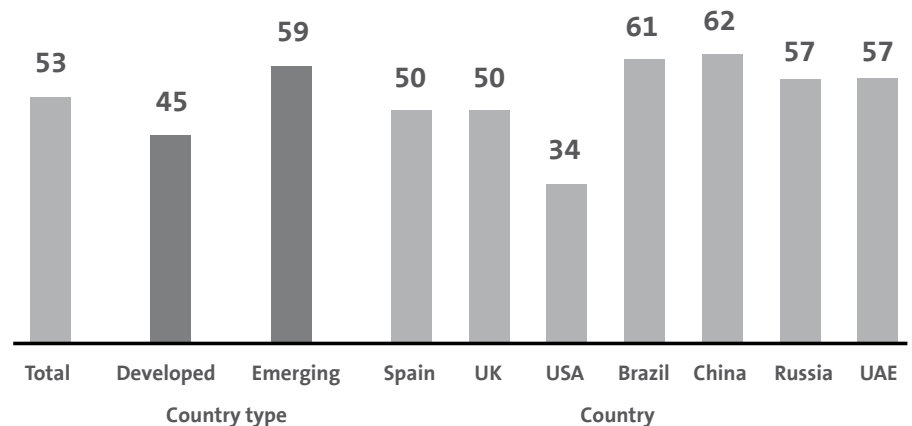
The second is to offer travellers different options. There could, for example, be different check-in queues for experienced or known travellers and those who want the reassurance of going through a more traditional check-in process. (This approach has been trialled in Orlando airport, where engineers designed a Fast Pass system based on the wait management systems used in Disney theme-parks)<sup>9</sup>. Some people will want visible confirmation that they have been checked in or moved from one part of the transit process to another – and this could be offered through mobile applications that provide a virtual passport or ticket stamp.

A one-size-fits all approach will not suffice. In particular, when designing their services, providers will need to bear in mind regional and cultural differences, for example, differences in attitudes to privacy and security.

### I am happy to provide more personal information in return for more streamlined and efficient travel<sup>10</sup>

(How much do you agree or disagree with the following statements?)

%  
agree



<sup>9</sup> See also <http://www.cnn.com/2011/TRAVEL/06/07/checkpoint.of.the.future/index.html>

<sup>10</sup> Amadeus Future of Technology in Travel survey; base: All, n=1,437



### 3. Payment with memory

All data on travel-related payments will be integrated, acting as a memory of expenditure and activity for individuals, groups and travel businesses. This will provide a rich layer of data on travel related activity, a trail of digital breadcrumbs, tracing where we've been and what we've done. Travellers will be able to browse and learn from this layer of information, and for the travel provider, digital breadcrumbs are likely to become an important customer profiling tool.

<b>Social trends and factors that will shape demand</b>	<ul style="list-style-type: none"> <li>&gt; Privacy and security concerns</li> <li>&gt; Group buying patterns</li> </ul>
<b>Main applications of technology</b>	<ul style="list-style-type: none"> <li>&gt; Mobile payments</li> <li>&gt; Remote access and storage of data via cloud computing</li> <li>&gt; Encryption and privacy technologies</li> </ul>

#### Intelligent passenger records

Why is it that the technology that tells a single online retailer such as Amazon what you've paid for and looked at previously hasn't been deployed across the travel industry? Once again, it's helpful to consider the Technology Axis Model, and separate the fundamental technology that enables the applications (in this case, relatively simple online identity records or "cookies" and intelligent management of large datasets or "big data") from the infrastructure, systems and business models required.

The travel industry has made great advances with Global Distribution Systems (GDS), which enable travel operators to easily access and makes changes to information on a traveller's itinerary which is stored via the Passenger Name Record (PNR). Originally created for the air travel business, PNRs are now also used for hotel bookings, rail and car rental, cruise and ferry, tours, event tickets and travel insurance. However, due to the fragmented nature of the industry, information on the traveller's needs and tastes is not shared as much as it could be, and it is certainly not an issue of technology. While an agreed protocol already exists for interfacing between identity records and sharing information between suppliers<sup>11</sup>, they are often not keen to share information, essentially because they want to keep control of contact with the customer (as well as the associated cross-selling opportunities).

The result is that travel providers often have a narrow understanding of the traveller – to the detriment of the traveller's experience. A hotel may know if Mr Doe asked for an extra hard bed based on his previous stay, but it will not necessarily know of the backache he complained of during the flight, much less the sort of food he likes based on the restaurants he went to on his last business trip.

Notwithstanding privacy and security concerns, it's clear that many travellers would benefit from the sort of system that allowed this information to be shared. However, given competing interests in the travel industry, for it to take off it will likely have to be a user-centric system that allows the traveller to dictate on what terms and with who they share their information. The alternative to this is for travellers to entrust agents to act on their behalf according to their needs and tastes (which is why travel agencies have developed such extensive CRM systems with the hope they can service their customers better).

<sup>11</sup> <http://opentravel.org>

## Digital breadcrumbs: the impact of mobile payments

Over the next decade, payment and identity will be linked more closely as digital currency replaces cash. Beyond this, the mainstream adoption of mobile devices as a payment mechanism will be radically transformational. Contactless mobile payment will make it possible to ‘touch and pay’ for items, beating debit and credit cards for convenience. In markets where the infrastructure is supported, by the middle of the decade, everything from a train ticket to a chocolate bar could be paid for with a mobile phone.

For travellers, this carries the obvious benefit of having to draw out less foreign currency while abroad. More importantly, though, it means that every payment comes with a record of “who, when, and where” and that an integrated memory of payments can be built up over time. To borrow from the story of Hansel and Gretel, we’ll leave a trail of ‘digital breadcrumbs’, tracing where we’ve been and what we’ve done.

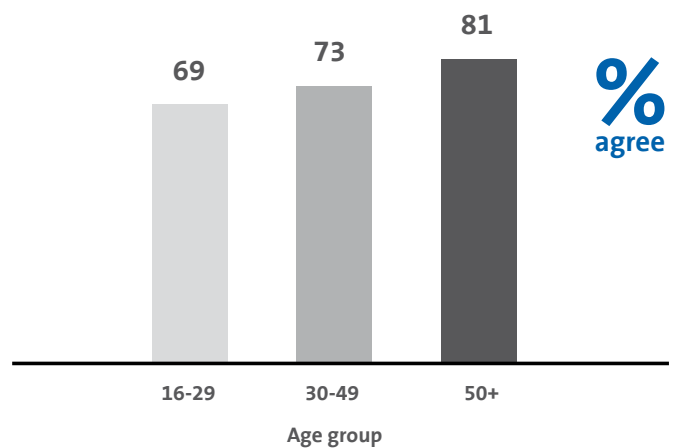
Payment with memory will make the process of submitting expenses easier for the business traveller. It will also create another way to record and recall places and activities. Travellers will, potentially, be able to browse the ‘digital breadcrumbs’ of payments as a layer of metadata attached to maps, photos, videos and social networking sites.

For the travel provider, digital breadcrumbs are likely to become an important CRM and customer-profiling tool. In the same way that supermarkets use loyalty cards to learn about the needs and wants of different customer groups, businesses could offer a better, more personalised experience based on information provided by mobile data, particularly payments. Opt-in applications on travellers’ mobile devices could, for example, allow expenditure data to be shared in return for loyalty points, making customised deals and cross-selling more possible.

### Barriers to and conditions for use

A note of caution should be sounded. Not all travellers will want to be Hansel. Our data suggests growing global concern that personal data will be misused or stolen – particularly among older people.

I am increasingly concerned about people or companies misusing my personal data<sup>12</sup>  
(such as for credit card fraud or identity theft)  
(How much do you agree or disagree with the following statements?)



<sup>12</sup> Amadeus Future of Technology in Travel survey; base: All, n=1,437

Kim Cameron's seminal study on the laws of digital identity<sup>13</sup> suggests that systems that do not put the user in control will eventually be rejected (the law of 'User Control and Consent'), and that information should only be shared between parties that have a 'necessary and justifiable' role to play (the law of 'Justifiable Parties'). In other words, according to Cameron's study, user-centric privacy and control are a necessary condition for the adoption of mobile payments across all user groups.

Many travellers and travel industry providers will want to keep a record of payment 'off-grid'. This will particularly be the case in countries where a large proportion of the travel industry operates in the black or underground economy.

It's logical, therefore, to conclude that mobile payments will supplement rather than replace coins and notes to 2020 and beyond.

*"The infrastructure is already set up for the Western business traveller; it's just a case of turning it on. The mass-market use of mobile as the default payment mechanism is something that is going to happen. However, not everyone is going to want to have their expenditure recorded. Certain types of things you will want to keep 'off grid'; and even from a tourist perspective, you probably don't want to be reminded of the cost of everything you spent."*

**Tim Jones**

Innovation, Growth and Futures expert

#### Square mobile credit card reader

Square is a plug-in device and software application that allows anyone with a mobile device to accept credit cards, anywhere. The interface makes it easy for consumers to make payments and save receipts, and for merchants to perform analytics on their sales data.

## Contactless cards and group buying

Another cause of disruption will be the use of handsets at POS (Point Of Sale) terminals. NFC (Near Field Communication) enabled phones can read contactless cards, as well as other NFC enabled phones, meaning that almost anyone can become a merchant as well as a payer. Applications such as Square<sup>14</sup>, which allows anyone with a smartphone to read and process credit card payments, already market this. NFC technology could make the ability to pay by touching phones between people, or 'bump and pay', as easy as handing over tangible currency.

'Bump and pay' holds huge potential for group buying and sharing of payment in the travel business. It could facilitate ad-hoc group buying by people who are relative strangers but decide to club together to share a trip or activity, and negotiate a discount in the process. We have had anecdotal reports on our online forum of enterprising travellers who will share a taxi with other travellers or take advantage of a group discount at a tourist attraction. Mobile payment technology may bring this behaviour into the mainstream.

We've found little reason to think 'tapping' (touching a mobile screen to send information, e.g. payment details) won't catch on.



<sup>13</sup> Kim Cameron, "The Laws of Identity", MSDN May 2005

<sup>14</sup> Image: <https://squareup.com/square>

*“Group travel booking is a great idea that someone should really develop. Group buying has been proven to be extremely effective. Combining group buying with travel is a concept that I can see as extremely effective, especially since travel is something that can form strong ties and friendships.”*

Chinese traveller online forum

### Digital collectives

Businesses such as America’s Groupon have brought group-buying and ‘collective consumption’<sup>15</sup> into the public eye, but the phenomenon (“tuan gou” in Mandarin Chinese) arguably started in more collectivist Asian societies.

*“The point is that tapping is so much simpler, so much quicker, so much more convenient for consumers that it will make a difference to them. People will start looking for the phones that you can tap together to become Facebook friends... because that experience blows away bumping, or texting or QR codes or Bluetooth or anything else.”*

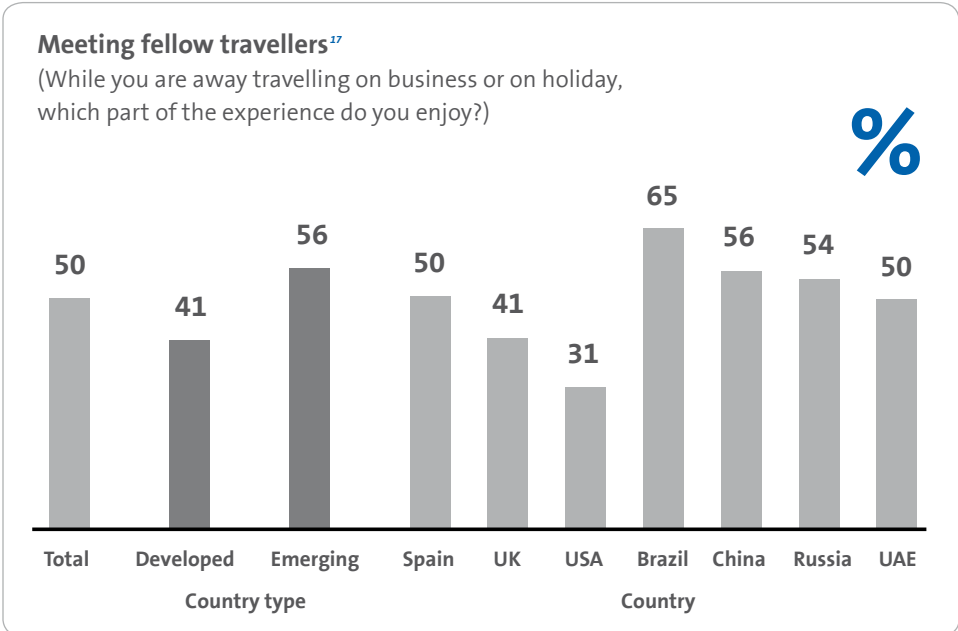
Dave Birch  
Director of Consult Hyperion, Electronic Payments Specialist<sup>16</sup>

The next generation of ad-hoc group buying for travel could develop fastest in Asian markets with the necessary social and technological conditions for it to flourish (i.e. high levels of smartphone penetration; NFC enabled devices). The fact that our survey data shows that travellers in China and the UAE enjoy the experience of meeting fellow travellers more than their Western counterparts supports this hypothesis.

This form of group buying would also be more traveller-driven: rather than buying a package deal negotiated in bulk by a travel agency, the ‘digital collective’ could post a holiday or package they want in a travel market, and await offers from travel providers to meet their requests.

*“Something like Groupon is so powerful here in Singapore because ‘digital collectives’ do inherently well. The package holidays of the future in Asia could be shaped by these digital collectives.”*

Michael Chadwick  
Head of Planning, JWT Singapore



<sup>15</sup> See for example a feature in Fast Company magazine in April 2011 on “The Sharing Economy” <http://www.fastcompany.com/magazine/155/the-sharing-economy.html>

<sup>16</sup> “In the long run, it’s all about identity”, <http://www.chyp.com/media/blog-entry/in-the-long-run-its-all-about-identity>

<sup>17</sup> Amadeus Future of Technology in Travel survey; base: All, n=1,437

## 4. Intelligent recommendation

Travel will become even more of a socially-driven activity than it is already. As technologies make it easier to tag and recommend all aspects of the travel experience, travellers will increasingly be influenced by their peers. However, internet search engines and expert advice will be equally important. The combination of the three will make the exploration of niche tastes or interests while travelling more accessible to a wider group of people. New and more comprehensive quality-control networks will create competitive pressures but, possibly, greater opportunities for smaller providers. The travel agent of the future will have a role as expert curator or editor of recommendations and reviews and as objective, ‘external’ specialists.

<b>Social trends and factors that will shape demand</b>	<ul style="list-style-type: none"> <li>&gt; Desire for experience</li> <li>&gt; Focus on mass, live, social events</li> <li>&gt; Niche travel</li> </ul>
<b>Main applications of technology</b>	<ul style="list-style-type: none"> <li>&gt; Wireless tagging technologies (e.g. RFID)</li> <li>&gt; Smart mobile devices of data via cloud computing</li> <li>&gt; Intelligent search and recommendation engines</li> </ul>

### More freedom, more transparency

*“I think it’s going to be a more open, more transparent, more fair industry and that small providers will get a stronger share of it, or at least they’ll get more opportunities to attract customers and consumers. Those who will lose are those who try to rip off their customers... or who will treat their customers badly. The smaller players will be more accessible, they will be better-described – there will be deals and pictures and plenty of reviews on them that will create the conditions for trust.”*

#### François Weissert

Vice President, Global Core Development, Amadeus

When was the last time you booked a hotel without checking out the reviews online first? Travel recommendation and review websites have transformed the way we plan our trips. In the space of a decade, TripAdvisor has become the largest network of travel sites on the internet, with more than 65 million unique visitors a month<sup>18</sup>.

<sup>18</sup> Source: [http://www.tripadvisor.co.uk/pages/about\\_us.html](http://www.tripadvisor.co.uk/pages/about_us.html)

<sup>19</sup> Amadeus Future of Technology in Travel survey; base: All, n=1,437



Over the next decade, recommendation services will become an even more embedded part of the travel experience, as they are integrated with smart mobile devices with the ability to tag and recommend everything from an item on a restaurant menu to a cycling tour in a city – and with intelligent search engines that edit choice and save the traveller time.

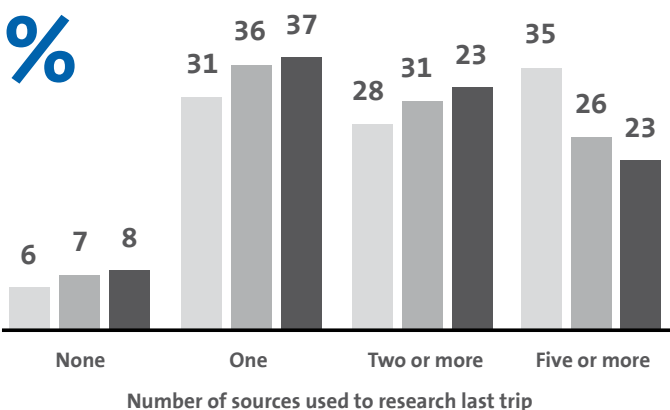
“If you want to know how people will use technology tomorrow”, a well-known saying goes, “look at what young people are doing today”. Our data shows that young people who have grown up with ICT pervading all aspects of their lives (so called digital natives) are more likely to use multiple sources to research and plan their holidays.

Although the internet has undoubtedly increased transparency in the travel business, comparing options and prices across multiple sites still remains a challenge. Even with the rise of flight search engines such as Skyscanner and aggregated recommendation websites such as TripAdvisor, consumers still have to do much of the research themselves. In fact, our survey data shows that one of the single biggest frustrations for those planning trips and holidays is not knowing whether they have got a good deal or not.

Young people, typically digital natives with time on their hands, compensate for this by piecing together or triangulating information between multiple sources.

**Number of source used to research last trip<sup>19</sup>**

■ Age group 16-29 ■ Age group 30-49 ■ Age group 50+



## Digital Natives and Millennials

Millennials will expect technology to play an important role in all aspects of their lives, including travel. However, the role that they are looking for technology to play will depend on what type of Millennial they are.

Digital Natives refer to people who have grown up in the digital world, are fluent in the language of digital technology and highly adept at interacting with it. However – even though the terms Millennials (meaning the cohort born from the early 1980s to mid 1990s) and Digital Natives are sometimes used interchangeably, they are not the same. Not all Digital Natives are Millennial – many so-called ‘Digital Immigrants’ from older age cohorts are at least if not more adept than their younger counterparts, and not all Millennials are Digital Natives.

However, research by The Futures Company shows that technology is a defining characteristic for Millennials. Our analysis, based on our global monitor survey data, shows that as a group Millennials are a fragmented cohort, refracted by technology.

Technology is central to the lives of all Millennials, but the role that it plays is one of the key dimensions which we can use to segment the cohort. At one end, technology is seen very much as a performance tool. This is a functional, individual, performance-related use of technology, used for a specific purpose in mind. At the opposite end, technology is seen as a creative facilitator by Millennials. This is the open, expressive use of technology, for creating and sharing. Millennials in this group believe in the power of technology to change the world, and to connect likeminded people around things they believe in. The opposite ends of this spectrum represent the difference between using Evernote to organise your holiday notes, emails and images, and using a creative community like Everycreative to share ideas and resources.

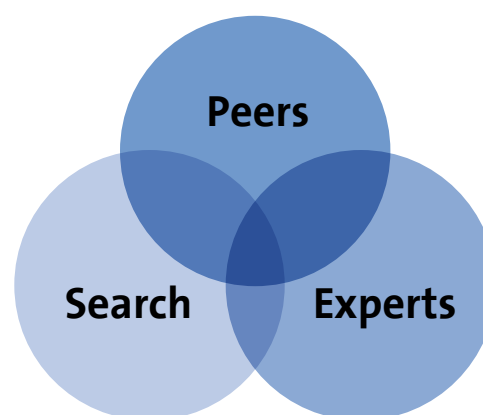
As the oldest members of the Millennial cohort hit their late 30s by 2020, they will play an increasing role in shaping the future of business and consumer society. The implication for travel is that Millennials will inevitably expect technology to play a role in enhancing their experience. However, it is likely there will continue to be a split between those who see technology as a functional resource purely to be used for their individual needs, and those who welcome it as a magnet for connecting like-minded travellers.

Over the next five years, we will see the development of more intelligent search engines that will do a much better job of finding, sharing and combining pieces of information across the internet. In large part, this will be driven by improvements in the speed of the core search data processing technology, and the development of internet infrastructure that makes it easier to share data and 'intelligence' across websites. Searches will feel more intuitive, become more user friendly, thanks also to advances in the way data is illustrated and displayed. In the near future, ask a search engine to "find a 7-10 day hiking holiday in Central or Eastern Europe, under a specific budget, including flights and accommodation, on XYZ dates", and it will generate options on possible itineraries and destinations for you in seconds. Each of these could come with photos, videos and real-time information about weather, local events and local news. Whilst this is available today, this is likely to spread to the mainstream market in the next five years.

Even with the most intelligent search engine in the world, it is, however, unlikely that people will abandon the learnt behaviour of triangulating information from their main sources of search engines, expert reviews and advice, and opinion from friends and peers in social networks.

Peers, search engines and experts will continue to be the main sources of information about travel. But the three will become more integrated. The extension of the social web from networking sites to websites in general will make it easier for people to cross-reference information anywhere on the internet with the opinion and advice of their friends and peers; more intelligent search engines will marry information from expert blogs and online guides with users and 'people like you'. Practically, this also makes the possibility of niche travel accessible to a wider group of people, as it will be easier for dispersed groups of people with a niche taste or interest to find and explore recommendations of other people with similar tastes. If you want to travel to Iran and spend a week immersed in Persian poetry, a social search engine should be able to direct you towards the relevant experts and recommendations from people with similar tastes.

#### The recommendation eco-system



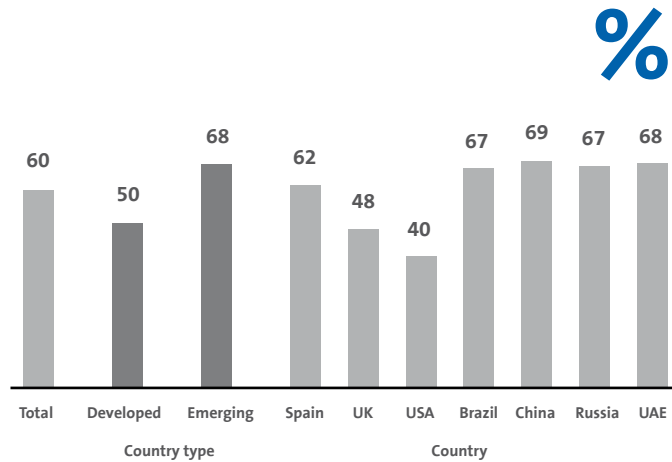
#### Intelligent travel guides

In the future, then, we'll be able to consult intelligent travel guides. What will they look like? One possibility is a core base of expertly written content, augmented by appropriate advice and information on local restaurants, bars and other places of interest. The intelligent guide will have thousands of contributors, and will be able to reassemble content in a thousand different ways. With enough scale, users will be given multiple options for 'fine searching'. They will, for example, be able to 'narrow' their searches to people like them (with similar interests, background, experience and income), consulting reviews from peers and friends – or, if they want something completely different, people not like them.

Preferences will vary by country and culture. Our data suggests, for example, that travellers in emerging countries are more likely to want to read or hear detailed stories about the experiences of fellow travellers when shopping for travel and holidays.



**Reading or hearing about travel stories<sup>20</sup>**  
(Thinking about shopping for holidays and travel, which of the following do you find satisfying?)



The development of fast, 4G wireless data connectivity across major travel destinations could take the intelligent guide into the mainstream by the middle of the decade: there have already been experiments with crowd-sourced travel guides – online compilations of reviews from communities.

<sup>20</sup> Amadeus Future of Technology in Travel survey; base: All, n=1,437

## Personalised travel guides

Our online forum suggested strong demand for the personalised travel guide that would allow users to filter and quality-check recommendations and reviews and limit the amount of confusing and contradictory information.

The advent of the personalised guide could be a quality check in itself, sounding the death knell for the tourist trap restaurant, hotel or bar that trades on its proximity to tourist areas and doesn't think too much about attracting repeat business. When consumers have access to quality information and reviews (i.e. from people they trust) about almost any establishment in any tourist area in the world, there will be much more pressure for high – or at least good-enough – standards.

The transparency of the mobile internet may level the playing field – with more opportunities for smaller operators.

## The travel agent of the future

We continue to see a role for the expert curator in this recommendation eco-system. The mass of reviews and recommendations is going to challenge and confuse many users – even when they're able to fine search by social graph. TripAdvisor hasn't replaced formal accreditation systems such as Michelin or AA stars – and the intelligent and personalised guide isn't going to replace the travel "professional" and specialist.

Expert curators can provide objectivity and a level of experience that crowd-sourced content will find difficult to match. They'll offer many consumers what they want most: credible and trustworthy advice. This will be particularly true in non-Western countries, where the role of the travel agent for booking and arranging trips is more firmly entrenched.



The travel agent of the future will profit by being able to help the customer navigate the huge amount of options available to them before they set off – and, crucially, by acting as a reference point during a trip, curating and advising on recommendations from other travellers. The mobile internet essentially creates another layer between the formal and accredited expert and "end user". In these circumstances, the agent's role becomes more complex: they're an intermediary not just between provider and traveller but also between traveller and reviewer. (An analogous change has, arguably, taken place in the publishing business. The journalist Steven Johnson suggested in 2009 that the press has moved from an industry that makes its money from providing information – "all the news that's fit to print" – to one that gathers and selects the best information – "all the news that's fit to link"<sup>21</sup>.)

Eventually, we may see an eco-system in which the most conscientious travellers are incentivised on the quality of their recommendations. Online knowledge markets such as Quora and expert question-answer communities such as the Stack Exchange network already offer reputation points or badges that are traded in for permissions on the community; sometimes, direct payment is made for high quality content or answers – for example, a monetary prize for the best honeymoon suggestions. It's only a small step to imagine an "Italy expert" traveller being awarded five cents (or 500 loyalty points) by the travel agent every time he tags using his phone a new or unusual attraction while abroad.

Again, the focus is likely to be on depth rather than breadth. For maximum trust and credibility, agents may need to concentrate on particular areas or subjects – e.g. the Balkans; wine-tasting holidays, or even a few interrelated niche travel areas like the aforementioned Persian poetry. Like intelligent reviews and personalised guides, this could level the playing field, creating more opportunities for smaller businesses.

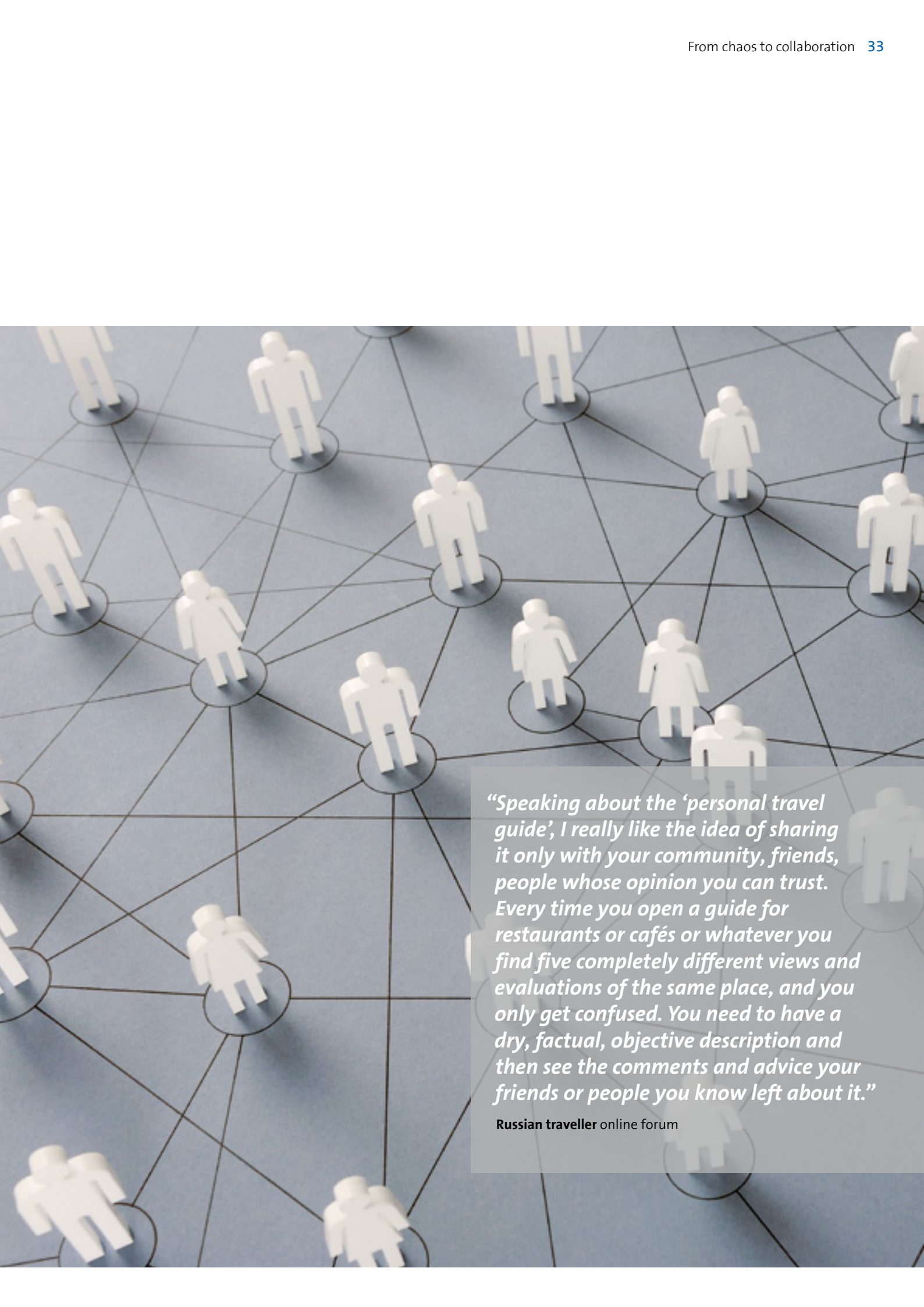
### Independent Film Channel/Foursquare crowd-sourced travel guide<sup>22</sup>

The IFC Foursquare travel guide allows users who opt-in to be notified when there is something going on in their local area that they might be interested in. The reviews and recommendations are crowd-sourced from the IFC community.

<sup>21</sup> <http://www.stevenberlinjohnson.com/2009/03/the-following-is-a-speech-i-gave-yesterday-at-the-south-by-southwest-interactive-festival-in-austin-if-you-happened-to-being.html>

<sup>22</sup> Source: <https://foursquare.com/iftv> ; <http://www.fastcompany.com/1668028/foursquare-launches-layers-annotated-collections-of-places-from-ifc-huffpo-and-more>





*“Speaking about the ‘personal travel guide’, I really like the idea of sharing it only with your community, friends, people whose opinion you can trust. Every time you open a guide for restaurants or cafés or whatever you find five completely different views and evaluations of the same place, and you only get confused. You need to have a dry, factual, objective description and then see the comments and advice your friends or people you know left about it.”*

**Russian traveller** online forum



## 5. Taking the stress out of travel

There will be increasing recognition of transit induced stress as a serious issue that impacts wellbeing and beauty, driven by the rise of the overall wellbeing agenda and an increase in the number of older travellers. The technologies that will make the most difference here will be those that address the causes of stress and anxiety rather than treating the symptoms. This will put the onus on travel providers to take a more collaborative approach to manage uncertainty and stress across the whole of the end-to-end travel journey.

<b>Social trends and factors that will shape demand</b>	<ul style="list-style-type: none"> <li>&gt; Changing demographics: ageing populations</li> <li>&gt; The rise of the wellbeing agenda</li> </ul>
<b>Main applications of technology</b>	<ul style="list-style-type: none"> <li>&gt; 'mhealth' mobile health monitoring and diagnostics</li> <li>&gt; Pervasive and embedded sensors</li> <li>&gt; Tools that reduce uncertainty</li> </ul>

### Greater focus on taking the stress out of travel

*“Embarkation and disembarkation are very stressful experiences. [The problem] has been exacerbated by what I would term the ‘massification’ of travel, in which airports and airline operators are not incentivised to make life any easier for passengers. We need to pay more [attention] to the detail of the customer journey to take care of the stressful element of travel. It’s not about technology; it’s about better management and understanding of people.”*

**James Woudhuysen**

Professor of Forecasting and Innovation, De Montfort University

Travel is a stressful and uncomfortable experience for many. While arguably the range and quality of experiences on offer has got better over the previous decade, much of our consumer research with travellers tells us that the experience of transit, particularly within airports, has got worse. Some of the quotes from international travellers in our online forum illustrate this.

*“I’m especially dissatisfied with how low-cost airlines seem to put all of their effort into making your ‘basic’ ticket the most hellish experience ever ... Because of policies such as that, combined with the often unbearable security procedures, I tend to choose train, or even bus whenever I can, because it’s so much better to just jump on the vehicle without stress ...”*

**Italian traveller** online forum

*“The stress that builds up when simple transactions/ queuing/security checks take for ever is [a] huge [problem] – [particularly for] pregnant women and people with hyper-tension who need to keep their stress levels down.”*

UAE traveller online forum



Frustrations are particularly marked among older travellers. Findings from our global quantitative traveller survey tell us that **51% of travellers over 50 find the experience of going through customs or passport control very or extremely frustrating** (compared with 40% of travellers aged 16-29).

Changing demographics mean the proportion of older travellers will increase over the next decade, further driving a need for better approaches to managing stress, frustration and anxiety.

Demand will also be created and driven by another social trend: the rise of what's been termed the wellbeing agenda. The past few years have seen growing acceptance of what might be termed a more holistic approach to human health.

The definition of wellbeing encompasses mental and emotional and physical health – and the relationship between them. The wellbeing agenda has been seen as part of corporate social responsibility in recent years, with wellbeing at work a popular subject in the business press – but it also places greater emphasis on an individual's ability to “adapt and self manage”<sup>23</sup> their health by taking better care of themselves. This is reflected in our research: **77% of travellers believe that looking after their health while travelling is entirely their own responsibility** (the attitude is more marked among the more health-conscious 50+, 82% of whom agree). We believe this trend is likely to accelerate over the next decade as debt-laden governments in the West do their best to defray the cost of total healthcare expenditure.

<sup>23</sup> “What is health?” *BMJ* August 2011 <http://www.bmj.com/content/343/bmj.d4817.full.pdf>



Under armour E39 compression shirt with embedded Zephyr Physiological Status Monitor<sup>26</sup>

Embedded or wearable technology that monitors and relays vital sign information has been initially pioneered in high stress environments, for instance in use by U.S. Special Forces or in the NFL Scouting Combine programme.

## The role for mHealth

A range of technological tools will help travellers manage their health.

One solution is the suite of mobile-device-based monitoring and diagnostic applications known as mHealth. There are already many applications available that could allow for remote diagnosis of an illness when in an unfamiliar country<sup>24</sup>, monitor heart rates or blood pressure, and help with sleep management.

Apart from mobile technology, with more sophisticated and smaller sensors that can be woven into our clothes or implanted into our bodies<sup>25</sup>, integrated with social networks that bring together patients' groups and healthcare providers in a more responsive way, the potential to track, share and manage your "wellbeing status" will be huge.

## The limitations of mHealth

However, for stress or anxiety in transit, the answer may not be conventional mHealth applications. Our research indicates that while transit-induced anxiety and stress is undoubtedly an issue for many, travellers are sceptical about the ability of mHealth applications to address their fundamental problems (and therefore also less willing to pay for them).

*“What actually could/would reduce my stress levels while travelling are all external factors like: a) is my flight on time, b) was I able to check in without a hassle, c) will I be able to get through the security line quickly, d) is my seat comfortable... am I sitting next to a weirdo... e) are they actually serving decent food in a timely manner, etc. Unless the devices were magically able to fix these things, I honestly would have no interest in it.”*

American traveller online forum

<sup>24</sup> For instance, the Sana telemedicine platform <http://www.sanamobile.org/>

<sup>25</sup> <http://www.caroltorgan.com/self-tracking-sensors-mhealth/>

<sup>26</sup> Image: <http://www.zephyr-technology.com/wp-content/uploads/2011/02/UNDER-ARMOUR-POWERS-NFL-COMBINE-WITH-ZEPHYR-TECHNOLOGY.pdf>

*“Perhaps I’d be happier with something more focused on solving stress sources, instead of stress itself: a service that makes your trip easier, possibly taking care of all the public transport changes would be a great example. When in an awful mood, I feel like the apps... would probably just make me even angrier!”*

Italian traveller online forum

## Addressing the causes of stress

We therefore believe that in the area of travel and particularly transit, the technologies that will make the most difference will be those that treat the causes of anxiety for the traveller, rather than the symptoms.

These sorts of tools would include:

- > sensor-enabled ‘intelligent luggage’ that can tell the traveller where it is, and take some of the stress out of airport baggage reclaim.
- > ‘intelligent tickets’ that can update the traveller on delays or changes, manage connections for them, or give them the flexibility to change their plans for a small amount of money if they miss their flight.

## Wellbeing and looking good

The broad definition of wellbeing closely links health and beauty – feeling fit, being happy, looking good, etc. This means taking care of yourself while travelling could increasingly include taking care of your physical appearance. Our research shows that almost two thirds of people think managing how they look and feel while travelling is important. The highest proportion (72%) is in developing economies, where the number of travellers is likely to increase.

This creates potential for technologies that help people manage the way they look – not just more sophisticated health and beauty applications, but also sleep reminders and sleep management tools.



*“Travelling and taking long-haul flights is something that is tiring to the body, and I think that we will start to have digital aids around us for things like sleep management that monitor how we’re doing, advise us, and even suggest opportunities for getting a bit of extra rest in the spa at an airport or taking advantage of the fitness centre in a nearby hotel.”*

**François Weissert**

Vice President, Global Core Development, Amadeus



## 6. The business ‘tourist’

The world of business travel will significantly change. Employees will increasingly expect a home away from home while they’re away; and employers may increasingly allow them to mix business with pleasure. Hotels will add value through technologies that make working away as easy and painless as possible – and help turn the business traveller into the business tourist. Virtual business meetings, enabled by increasingly sophisticated ICT, will supplement rather than supplant face-to-face contact.

<b>Social trends and factors that will shape demand</b>	<ul style="list-style-type: none"> <li>&gt; Work/life blur</li> <li>&gt; Greater stress on working families</li> <li>&gt; Slow or stagnant economic growth in the West</li> </ul>
<b>Main applications of technology</b>	<ul style="list-style-type: none"> <li>&gt; Videoconferencing and remote communication applications</li> <li>&gt; Smart mobile devices</li> </ul>

### Reinventing business travel

The future could, we believe, almost see a reinvention of business travel, particularly if we see a decline in net business travel. As things become less frequent, less routine, they often become more special, more valued. In the future, travelling for business will be a sign both of how important that business is and of the esteem in which a client/colleague/new contractor or supplier is held. Put simply, business travel will be perceived as more of an investment than a cost.

Parallel to this will be a change in the business traveller’s needs and wants.

Like travelling for leisure (see ‘the next generation of experience’), business travel has gone through several phases. In the 1970s, 1980s and even, perhaps, the 1990s, it was, arguably, a perk and a privilege: there was a cachet attached to flying on business. Over the past two or three decades, though, the “novelty” has worn off. Travelling to meetings and short stays in hotels have become prosaic and mundane for many. More importantly, they’re seen as duties and chores that encroach on domestic life.

The social changes that have put more women in the workforce and made more men take on equal parenting and family duties have led, it could be said, to creeping resentment towards business travel. Business travellers now have to work much harder to reconcile the demands of their personal and professional lives. Like long hours, trips away upset work-life balance.

This change has, we believe, important consequences. People will increasingly want to be compensated for spending time away from home – and this will manifest itself in two ways.



*“People want new experiences but they also want to be able to access their music, video and data from their hotel rooms. They want complete access to everything they can get in their home, seamlessly brought to them.”*

**Tim Jones**

Innovation, Growth and Futures expert

### Home away from home

In our survey, **59% of business travellers say that they want a “home away from home” when they are travelling**, compared to only 46% of people who travel for leisure only. Frequent travellers also show higher levels of agreement with this concept than occasional travellers. For both groups, travel is less of a novelty and more a part of everyday life.

#### What does this mean for technology?

The short answer is that it will become increasingly important.

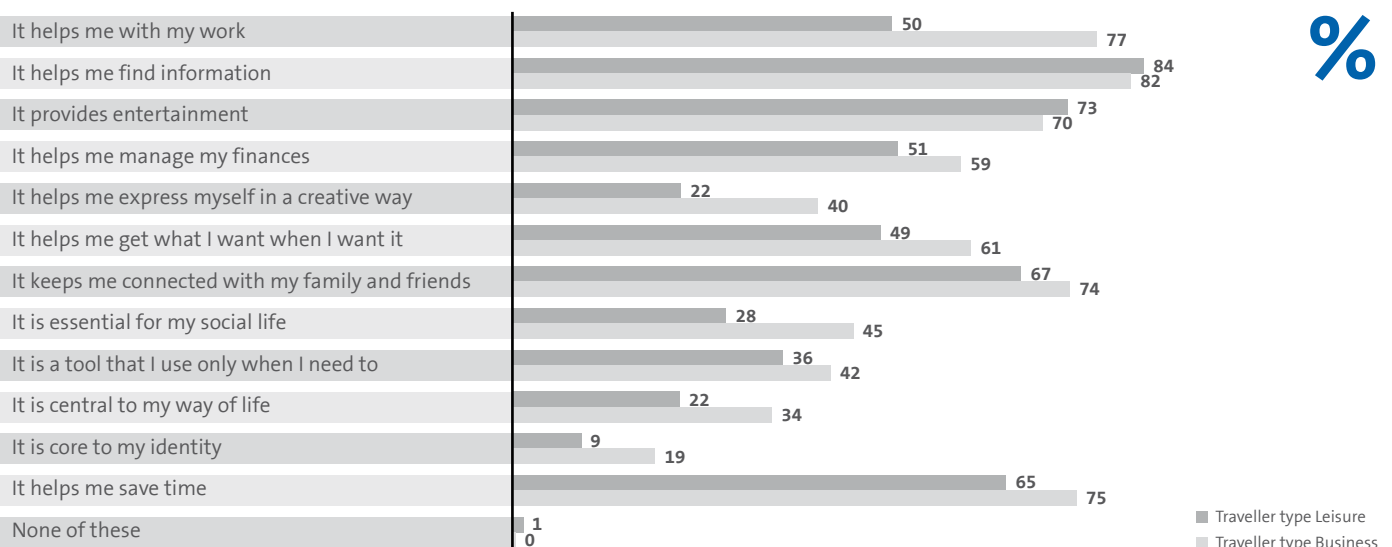
When we look at our data, we see that technology plays a far more central role in the life of the business traveller – they are more likely to say that it is essential to their social life, helps them with work, is core to their identity and helps save them time than leisure travellers.

In this context, the potential for cloud computing that makes it easier for travellers to access whatever they want from home while they are away – be it a presentation from work they forgot to bring with them, a favourite video from their collection, or a photo of their children from their fridge door – is clear.

#### What does this mean for providers?

The business travellers dependence on ICT has obvious implications for hoteliers reliant on the business market. Making home away from home technology convenient and easy to use will become a set piece of service. Business travellers are much more likely to feel frustrated if they can’t get an internet connection, or they are forced to use an unfamiliar or substandard service, or they cannot access the same media in their hotel room that they can at home, than their leisure counterparts. Given that business travellers are also the most vocal group – much more likely to make complaints and recommendations and write reviews according to our data – this is a hugely important consideration for hotels.

### What roles does technology play in your life...?<sup>27</sup>



<sup>27</sup> Amadeus Future of Technology in Travel survey; base: All, n=1,437

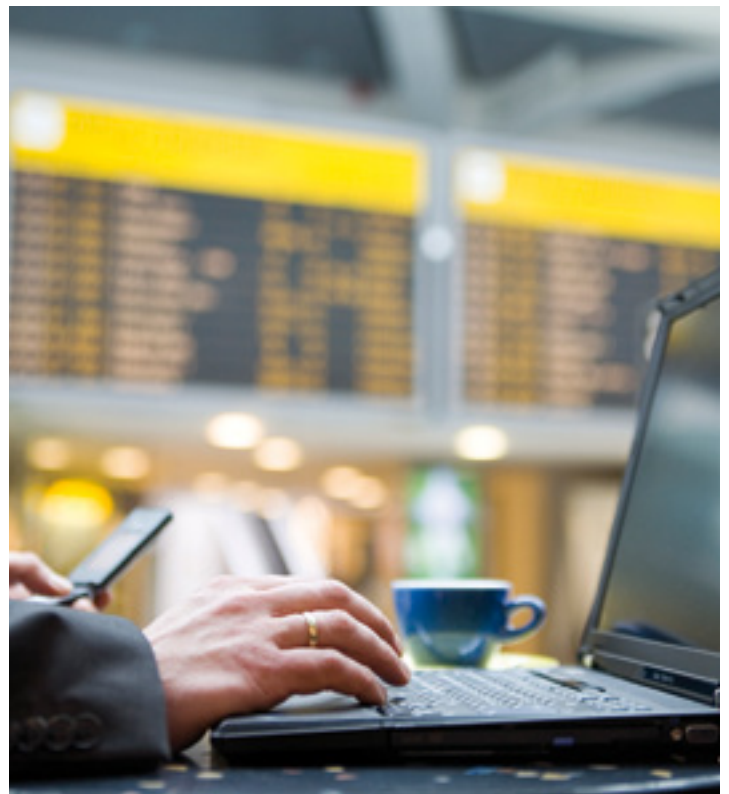
### Did you do any of the following during your last trip?<sup>28</sup>



With the business traveller of the future carrying their work and social life with them, in the form of a tablet computer, laptop and smartphone (or some combination of the three), there will be less need for hotels to provide – or charge for – tools in the hotel room. All that will be required will be the physical space, the infrastructure and, perhaps, larger screens for work and entertainment. Increasingly, the opportunities for hotels to add value will exist outside the hotel room. Advanced ICT means the hotel experience could begin even before you check in – for example, with an app on your mobile device that helps you find your way around the airport. This was a concept that particularly resonated with the business travellers in our online forum.

*“There are so many steps on the way when you’re going some place [on business] ... and because of this there are also so many places where things can go wrong. If there were a service that took away some of this stress and where you could just focus on doing work while getting to where you need to be – or to just relax, for that matter – I think that would be desirable for many people in London.”*

UK Traveller online forum



<sup>28</sup> Amadeus Future of Technology in Travel survey; base: All, n=1,437

*“Nowadays I would say that ‘real life’ video has taken over. For all the great things mentioned, why not have a real time video of the airport, city, hotel room, flat, house, villa, resort? Then you will see exactly what you are going to get as real images as you would when you get there.”*

UAE Traveller online forum

## New experiences

Despite saying they want a home away from home, **71% of business travellers also say that when they travel they want a complete contrast to their daily life**, compared to 60% of people who travel for leisure only.

How can these two, apparently contradictory needs, be reconciled? They both have the same root: frustration with the additional burden business travel places on already busy already conflicted lives. Business travellers want the comfort and seamlessness of a home away from home, but, as compensation for the inconvenience of being away, they also want to be able to experience a place more fully. (The trend towards more flexible working, endorsed by governments and by many employers as part of their CSR agendas, means it will be easier and more acceptable for business travellers to take a short amount of holiday time either side of a trip.)

Hotels will need to take into account the desire for authentic local experience. To add more value to the business traveller’s experience, they’ll need to transform themselves into information centres and local tour reps.

*“Hotels could be used as local community hubs, for example with local bands and artists coming and performing, meaning that the hotel has much more connection with the community. This is why people like boutiques at the moment – people want to experience the local.”*

**Stephen Johnston**  
Fordcastle LLC

The sort of technology that could be used to help travellers experience the richness of a place is described earlier in this report (‘The next generation of experience’).

Hotels could provide guests with augmented reality apps – or even just audio tours. Technology, combined with the local knowledge to help people explore the hidden layers of cities, could make them the hyper-local travel guides of the future.

## The decline of business travel?

Both this report and an Oxford Economics report The Travel Gold Rush 2020 challenge the idea that business travel is under significant threat.

Those who foretell its decline argue that:

- > Slow and uncertain economic growth will mean increased pressure on corporate travel budgets;
- > Improvements in videoconferencing and telepresencing technology – e.g. holographic projections – will make the virtual meeting almost indistinguishable from the real thing<sup>29</sup>. (In the future, touchable 3D holographs<sup>30</sup> could make the “remote handshake” possible.)
- > Air travel will become increasingly expensive as carriers face higher energy costs and taxes on carbon emissions.
- > Growing environmental concerns may make frequent air travel socially unacceptable.

*“It’s an ‘and’ not an ‘or’; a call prompts a visit and a visit prompts a call – there’s usually not a trade-off between convenience and travel.”*

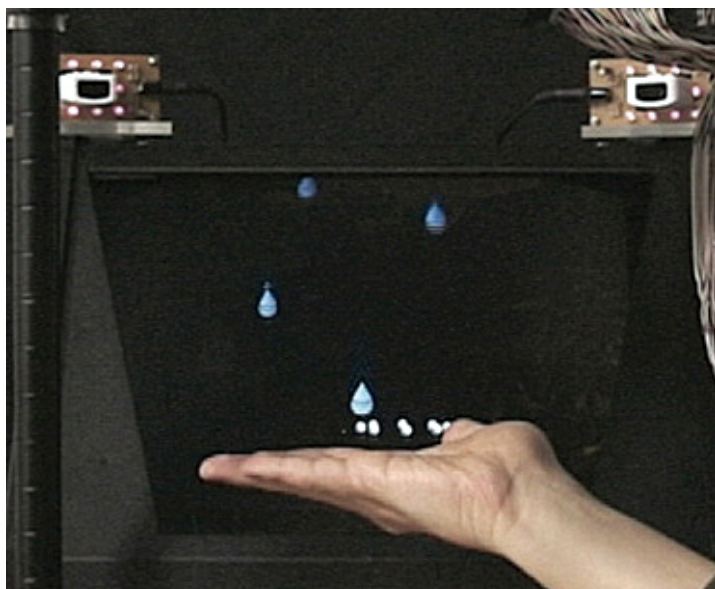
**Professor James Woudhuysen**  
Professor of Forecasting and Innovation, De Montfort University

*“Technology can be a replacement for travel. Most recently, we saw the ‘AIG effect’, with businesses cutting costs and premium travel. However, in the future, with the growth of developing economies, I actually think business travel for face-to-face meetings will be more important.”*

**Suzanne Cook**  
U.S Travel Association

<sup>29</sup> See for example [http://www.musion.co.uk/Cisco\\_TelePresence.html](http://www.musion.co.uk/Cisco_TelePresence.html)

<sup>30</sup> <http://www.alab.t.u-tokyo.ac.jp/~siggraph/09/TouchableHolography/SIGGRAPH09-TH.html>



#### Touchable holograms<sup>31</sup>

Researchers from the University of Tokyo have developed a technique that allows 3D holograms to be “touched”. By blending a holographic display, a couple of Nintendo Wiimotes (to track the hand) and an ultrasound phenomenon called acoustic radiation pressure, the researchers were able to create the Airborne Ultrasound Tactile Display. This system can give the feeling of holographic raindrops hitting an outstretched hand or a virtual creature running across a palm.

### The carbon challenge

Incremental innovations will be needed to enable more energy-efficient journeys.

One of the biggest technological challenges facing the aviation sector is the problem of carbon emissions (and the related issue of rising energy costs). The industry accounts for around 5% of carbon emissions – a proportion that’s small relative to its size but, as is the case in all transport sectors, continuing to rise.

While there is work in progress to develop more efficient alternatives to existing liquid fuels with lower carbon emissions, the path to market is slow and scale is an issue. However, towards 2020 we expect to see a range of incremental innovations to improve performance, substitutional effects, and – beyond 2020 – some innovative market disruption.

Incremental innovations are likely to include changes in fuel mix to reduce carbon intensity and the use of lighter materials. Operational innovations can also have surprisingly big effects on consumption patterns.

Substitutional effects include the use of video and telepresence technology, discussed earlier in the report, and a shift for short-haul journeys to long-distance rail, already a part of the service strategy of airlines such as Air France. It should be noted that high speed rail can be substantially less sustainable than conventional rail, depending on the energy mix.

Looking further out, it’s possible to imagine the return of the airship to short-haul travel duties, and in less combustible designs than the ill-fated Hindenburg. One proof of concept airship, developed by the architect and designer Bill Dunster, uses helium to rise and descend, and a solar power energy capture and storage system for propulsion. It would fly at 180km/h, travelling almost silently at a height of around 3,000 meters (almost 2 miles), and would be able to land and take off vertically.

But such models require a re-imagining – and realigning – of the way airspace is allocated and used. As ever, technology on its own is not enough.

<sup>31</sup> Image from <http://www.gizmag.com/tactile-holographic-display/12466/>

While all these points are valid, there remain strong counterarguments:

- > Research continually reinforces the value of face-to-face meetings in business to build trust and encourage effective collaboration – particularly when people and companies are working with each other for the first time<sup>32</sup>.
- > There is likely to be greater economic co-operation between Asia and the West and this will increase the need for long-distance business travel.
- > Social values limit the impact of new technologies. Email has not replaced the telephone call, and videoconferencing will not replace the face-to-face meeting. Technologies can reinforce social bonds between business partners – but not, of themselves, create them.

Our view, shared by most of our interviewees, is that growing environmental concerns and increased pressure to improve efficiency and control costs will make the benefits of improved technologies impossible to ignore – but that the need to travel for business will never go away. Technology will replace the routine kind of meeting – typically, between people who already know each other – but it will be no substitute for those that introduce new business partners and co-workers to each other, or those designed to resolve complex issues and set the parameters for complex tasks. The key difference between the virtual and the physical meeting is in building trust and relationships. Even the most advanced technology will struggle to provide a forum for iterative discussions, for sharing ideas in a shared space and for reading participants' reactions through body language, eye contact and facial expressions. Face-to-face meetings are building blocks of complex knowledge<sup>33</sup> of stories, values and shared traditions. They make a qualitatively different contribution to professional and working relationships from ICT.



<sup>32</sup> Research by Oxford Economics cited in *Travel Gold Rush 2020* found that in the U.S, roughly 40% of prospective customers are converted to new ones due to F2F meetings compared to 16% without such meetings

<sup>33</sup> *Complex Knowledge: studies in organizational epistemology*, Haridimos Tsoukas, 2005



## Conclusion: the future for collaborative travel

Throughout this report, we have referred to the impact of collaborative travel in different areas of the travel experience: automatic transit systems that focus on flows of people rather than individuals; intelligent recommendation networks that form the guidebooks of the future; and the experience of travel itself that is mediated and layered according to the memories and interpretations of a place by other people. The single key message for travel providers for the next decade is arguably not about placing bets on a single technology, but rather about shifting focus from satisfying the needs and wants of individual travellers to providing the environment for networks and flows of travellers as a group to move and flourish.

### Specifically, this will entail:

- › **Working more with data:** There will be more data on all aspects of the travel experience, and travel providers will need to become more adept at managing and making sense of large quantities of data across multiple sources. However, this isn't about knowing more about your customer so you can sell more to them. Success in an environment of collaborative travel requires earning the trust of travellers, which in turn means that it needs to be apparent to them that the data they give you translates into a higher quality of service. This is the difference between welcoming more tailored and intelligent recommendations from a service such as Amazon, and rejecting unsolicited direct mail out of hand.
- › **Working more with others:** In a world of collaborative travel, providers will need to think more about the value of their lifetime relationship with a traveller rather than the next transaction. This will mean taking a more participatory approach to working with other businesses, including those with which they are in indirect competition, for the sake of giving the traveller a better experience. Over the course of a lifetime relationship, everyone is likely to do better when the traveller is happier, less stressed and has a better experience.
- › **Helping people learn from others:** In a future where people are increasingly well travelled, value will be derived from helping people find new angles and new experiences from old places. However, travellers are more likely to get this from other travellers than businesses. What travel providers can do is be a facilitator of interactions and information, connecting what they know about a traveller with other people who share similar experiences. This means being more of a stage manager rather than a director; not necessarily selling a specific package or service, but taking more of a background role and allowing for services to be co-created by the group.

As we've discussed throughout the report, several factors will enable this transformation. Significant improvements in infrastructure will need to be made to facilitate the transfer and effective usage of traveller data. As well as upgrades that will be required for the technological infrastructure, this will entail changing organisational processes and even business models.

However, one of the key shifts, in terms of technology, will be the adoption of the 4G network. Around the middle of this decade, a significant proportion of the population will have fast and reliable access to the internet through the phone in their pocket.

The fact that the transformation won't be complete before the middle of this decade means providers have time to shape – rather than simply await – the future. As the computer scientist Alan Kay famously said, “The best way to predict the future is to invent it”. Larger companies in particular have the ability to pre-empt rather than simply respond to change. The most successful operators will be those with the vision to spot and take advantage of an emerging trend ahead of their competitors.



## Contributors

We are extremely grateful to all of the individuals who contributed their time and ideas to the development of this report:

**Joseph Batista**, Chief Creatologist, HP

**Hadley Beeman**, UK Technology Strategy Board, open data expert

**Michael Chadwick**, Head of Planning, JWT Singapore

**Suzanne Cook**, Senior Advisor and former Head of Research, U.S Travel Association

**Martin Ince**, science and technology writer and journalist

**Stephen Johnston**, CEO of Fordcastle LLC, a New York-based innovation consultancy, and a mobile technology expert

**Tim Jones**, Co-founder of Future Agenda; innovation, growth and futures specialist

**James Woudhuysen**, Professor for Forecasting and Innovation, De Montfort University

We are also grateful for the time and perspective of the following senior Amadeus representatives:

**Frédéric Bessis**, VP, Product Architecture and Delivery

**Luc Blanchet**, Director, Software Services

**Eberhard Haag**, EVP, Global Operations

**Jean-Paul Hamon**, EVP, Development

**Benoît Janin**, VP, Pricing and Shopping Platform

**Mary G. Keagul**, Vice President, Product Development, North America

**François Laburthe**, Director, Operations Research & Innovation

**Jean-Noel Lau**, Head of Product Management, Corporate, Security and Services

**Denis Lacroix**, VP, Product Development, Sales and e-commerce Platforms

**François Weissert**, VP, Global Core Development

*The opinions and viewpoints expressed in this report do not necessarily reflect wholly those of the contributors.*

## About The Futures Company

*From chaos to collaboration* was written by Andy Stubbings and Andrew Curry at The Futures Company, and edited by Caroline Passmore.

The Futures Company is the leading global foresight and futures consultancy, formed in 2008 from the coming together of The Henley Centre, HeadlightVision and Yankelovich. Through a combination of subscription foresight services and custom research and consultancy, we create commercial advantage for our clients by helping them to take control of their futures. By exploring the future needs, motivations and behaviors of consumers, and the broader dynamics shaping the marketplace, we unlock the future of consumers, brands, categories and companies.

Our point of difference for our technology work – since the days of our Media Futures analysis in the 1990s – is that we understand the extent to which the usage and development of media and technology is based on social systems and social relationships. We don't look at technology in a vacuum.

The clients we work for in the technology industry span the areas of mobile, digital and networked media, as well as traditional media. Our work with them includes helping to identify social, economic, environmental and technology trends that will affect the future development of their businesses, and strategies to respond; segmentation and modelling; and future-facing qualitative research which explores the role of needs, habits and social context. Our work with clients is supported by a knowledge venturing team which tracks developments in media and technology globally, and develops a point of view on these.

The Futures Company is a Kantar company within WPP with teams in the UK, US, Mexico, Brazil, Argentina and India.

**[www.thefuturescompany.com](http://www.thefuturescompany.com)**

# About Amadeus

Amadeus is a leading transaction processor and provider of advanced technology solutions for the global travel and tourism industry.

Customer groups include travel providers (e.g. airlines, hotels, rail, ferries, etc.), travel sellers (travel agencies and websites), and travel buyers (corporations and individual travellers).

The group operates a transaction-based business model and processed 850 million billable travel transactions in 2010.

Amadeus has central sites in Madrid (corporate headquarters and marketing), Nice (development) and Erding (Operations – data processing centre) and regional offices in Miami, Buenos Aires, Bangkok and Dubai. At a market level, Amadeus maintains customer operations through 73 local Amadeus Commercial Organisations covering 195 countries.

Amadeus is listed on the Madrid, Barcelona, Bilbao and Valencia stock exchanges and trades under the symbol “AMS.MC”. For the year ended 31 December 2010, the company reported revenues of EUR 2,683 million and EBITDA of EUR 1,015 million. The Amadeus group employs around 10,000 employees worldwide, with 123 nationalities represented at the central offices.

To find out more about Amadeus please go to [www.amadeus.com](http://www.amadeus.com)

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