



Phocuswright White Paper

The Emerging Tech-Driven Corporate Travel Revolution

In cooperation with



Written and researched by
Norm Rose

Phocuswright 

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At Egencia, we believe in the power of technology to revolutionize business travel.

It started 15 years ago with the belief that we could bring the best of consumer travel technology into the corporate travel space. In today's world, that means providing the smoothest possible experience on all devices – a mobile phone, an Apple Watch, whatever. This is as true for millennials as it is for a senior executive with 30 years' experience, or the hot-shot app developer fresh out of school. We call this "business travel for the Expedia generation."

Are business travelers human? Of course – and we think emerging technologies will help humanize our work trips.



The "Expedia generation" keeps up with the rapidly changing digital landscape – increasingly intuitive, more and more connected – and expects the business travel industry to do the same. That means we must quickly adopt new technology. Soon, emerging technologies like chatbots, virtual assistants like Amazon Echo and Google Home, and virtual reality (VR) will fundamentally change (some might say improve) the way travelers choose their routes, manage disruptions and stay safe on the road.

Saying that, the future isn't necessarily all chatbots and VR travel consultants. These new solutions simply enable better service which, in our opinion, will be more "human-friendly" than ever, not less so. Powerful data makes it possible to create more intuitive and "human" experiences which feel deeply personalized. With access to billions of rows of data from Expedia and a scientific approach to product development, Egencia is well positioned to embrace emerging technologies, personalizing them specifically for business travelers. Are business travelers human? Of course – and we think emerging technologies will help humanize our work trips.

This paper by Phocuswright explores several of the most exciting examples of emerging technology and how they are likely to impact business travelers in the years to come. We look forward to continuing that conversation and taking an ever-closer look at what these changes mean to the humans who travel for business, today and tomorrow.

Thank you,

Michael Gulmann
Chief Product Officer, Egencia

About Phocuswright Inc.

Phocuswright is the travel industry research authority on how travelers, suppliers and intermediaries connect. Independent, rigorous and unbiased, Phocuswright fosters smart strategic planning, tactical decision-making and organizational effectiveness.

Phocuswright delivers qualitative and quantitative research on the evolving dynamics that influence travel, tourism and hospitality distribution. Our marketplace intelligence is the industry standard for segmentation, sizing, forecasting, trends, analysis and consumer travel planning behavior. Every day around the world, senior executives, marketers, strategists and research professionals from all segments of the industry value chain use Phocuswright research for competitive advantage.

To complement its primary research in North and Latin America, Europe and Asia, Phocuswright produces several high-profile conferences in the United States, Europe and India, and partners with conferences in China and Singapore. Industry leaders and company analysts bring this intelligence to life by debating issues, sharing ideas and defining the ever-evolving reality of travel commerce.

The company is headquartered in the United States with Asia Pacific operations based in India and local analysts on five continents.

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The Emerging Tech-Driven Corporate Travel Revolution

Written and researched by Norm Rose

Introduction

"Open the pod bay doors, HAL," commands Dave. "I'm sorry, Dave. I'm afraid I can't do that," replies the spaceship's computer. This classic conversation between astronaut Dave Bowman and the HAL 9000 computer from the 1968 film "2001: A Space Odyssey" has grown to symbolize a vision of the dark side of Artificial Intelligence (AI). We've come a long way since 1968. Today AI is transforming all aspects of our lives, and corporate travel is no exception. Artificial intelligence is no longer the dream of science fiction, as AI techniques such as machine learning and natural language processing are being adopted at an accelerated pace by all companies and industries.

When online booking tools (OBTs) first emerged on the market in the late 1990s, many in corporate travel described these applications as electronic travel agents, eliminating the need for human travel counselors. After 20 years, standalone OBTs have not yet lived up to this vision. Although OBTs have transformed elements of corporate travel into a self-service process, they lack intelligence and struggle with complex reservations. This has led to an emergence of solutions that integrate online booking with human-backed travel management company (TMC) services, reinforcing the need for a single platform that is shared between the self-service tool and the agency support system.

We are now on the verge of a radical change where AI applications may fulfill the promise of bringing intelligent computing to the corporate travel process. Whether the traveler interacts with new interfaces such as voice or chatbots, or if advanced software delivers more personalized content through machine learning or smart data, AI is poised to alter the entire corporate travel ecosystem.

There's little doubt that AI and a collection of other technologies will have a dramatic impact on all aspects of business travel, such as compliance, shopping, booking, the en-route and in-destination experience, and expense management. This paper will explore how emerging technologies will impact corporate travel in the near, mid and long term, enhancing the traveler experience and advancing the overall discipline of corporate travel management. In addition to the broad subject of AI, we will review smart devices, machine learning, natural language processing, chatbots, smart data, augmented reality and virtual reality. This paper will also review the impact of innovation on certain aspects

of business travel such as duty of care and trip disruption, and highlight differences across regions.

Methodology

Phocuswright interviewed corporate travel managers and buyers in the U.S., Europe and Asia to understand the buyer's view of emerging trends and technologies. This effort was combined with existing Phocuswright research and insight to identify the key emerging technology trends. The statements made in this paper are a direct reference to the learnings gleaned from those interviews and research efforts.

Current and Emerging Trends

Mobile continues to reshape the business travel experience

Mobile technology has trained travelers to expect personalized, meaningful services instantaneously. In many cases, smart devices have enabled the traveler to use information to solve trip disruptions or other travel problems in a self-service or agent-assisted (e.g., push-to-call) environment. Improved access to information through smart devices is also leading to higher expectations, as travelers have grown intolerant if problems are not fixed to their satisfaction. This is particularly true as mobile has become an essential en-route and in-destination tool for the business traveler.

The potential of mobile technology as a travel management tool is still emerging. To be successful, corporate travel managers/buyers must implement technology to provide travelers support and advice at every stage of the journey. Extending corporate travel to a mobile platform is more than supplying travelers with a corporate-approved third party or TMC-provided app. Information shared through the app or messaging services needs to be timely and situationally relevant to the traveler, based on the traveler's location and specific circumstances. Providing timely, relevant data to the traveler is a common objective for travel management programs in 2017, according to stakeholder interviews. For example, delivering a compliant recommendation for a hotel after the traveler has already booked their accommodation through their smartphone is an ineffective use of this new communication platform.

Understanding the context of a traveler's request and/or anticipating their needs is critical. When a traveler experiences a trip disruption, proactive, situationally appropriate assistance and information should appear automatically on the traveler's device. To accomplish this goal, corporate travel managers/buyers – supported by their TMCs – need to proactively track traveler behavior and use advanced analytics to deliver clear value. Smart data and emerging AI technologies will play a critical role in bringing this vision to reality.

The Internet of Things (IoT), networked computing devices embedded in everyday objects, will also play a key role in enhancing the en-route experience. IoT will enable constant interaction as physical and digital worlds collide. In the not-too-distant future, IoT may enable automatic check-in for airline, hotel and delivery of preferred ground

When a traveler experiences a trip disruption, proactive, situationally appropriate assistance and information should appear automatically on the traveler's device.

Figure 1: Mobile Reduces Points of Friction for Business Travelers Throughout the Trip



Source: Phocuswright Inc.

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transportation, all without the traveler needing to take any action. We are at the dawn of a new age of services delivered by emerging technologies. These innovations will change the corporate travel experience for the individual and travel management organization.

Artificial Intelligence

The term artificial intelligence often triggers two conflicting views. Some believe AI is here today, disrupting our world with near sentient computer intelligence. Others believe that AI is irrelevant in our daily lives, as it is pure science fiction. With dire predictions from revered scientists such as Stephen Hawking¹ and successful entrepreneurs like Elon Musk and Bill Gates² on the demise of humanity due to AI, the average person may be confused about AI's capabilities and potential. As is often the case, the reality of AI today and in the immediate future is somewhere between these two views of the world.

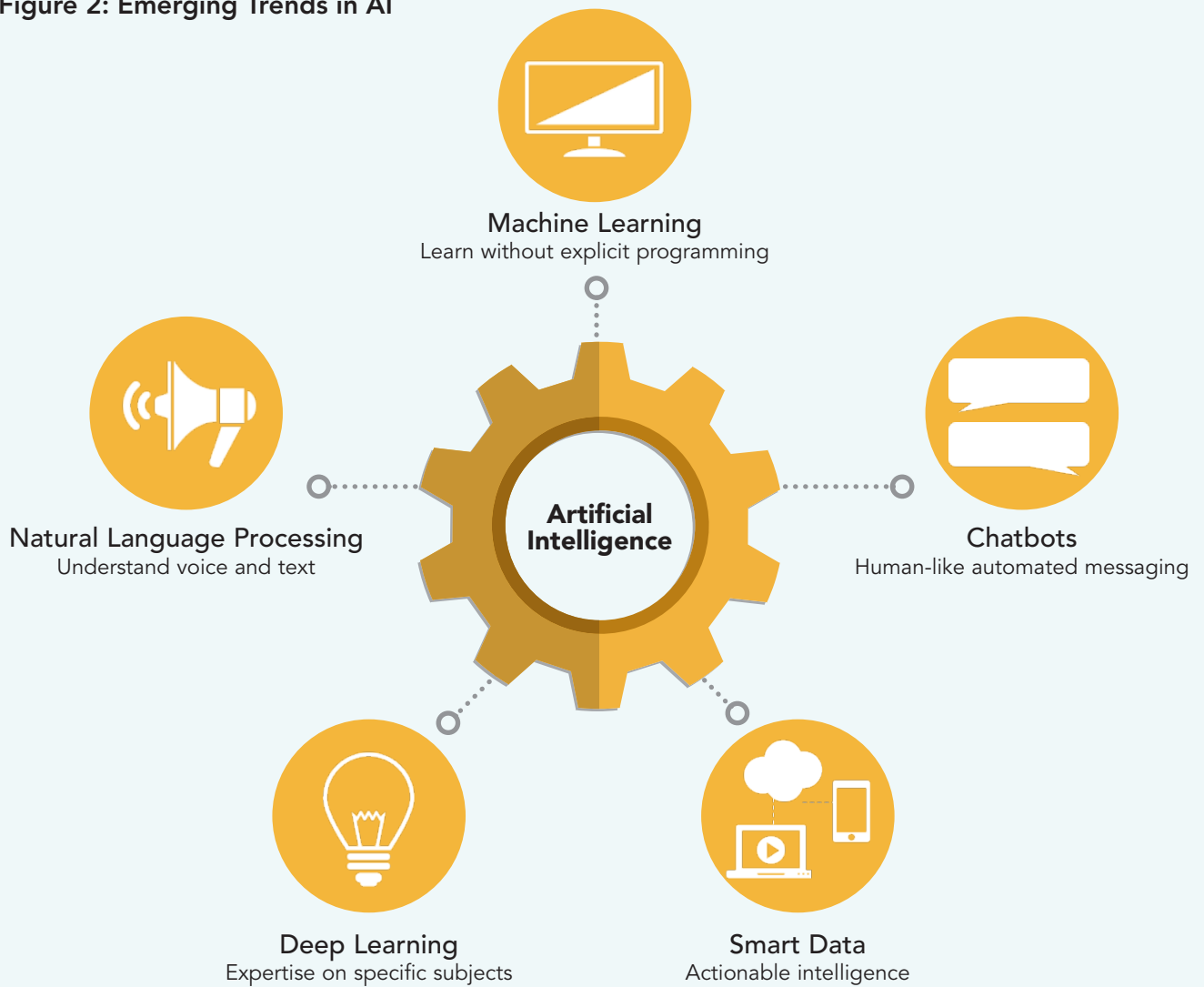
The most visible and impactful way AI is used today basically mirrors the way we interact with technology. Whether it is through voice interfaces, chatbots or the delivery of personalized services, we often interact with AI without really thinking about it as such.

1) Rory Cellan-Jones, "[Stephen Hawking warns artificial intelligence could end mankind](#)," BBC (Dec. 2, 2014).

2) Michael Sainato, "[Stephen Hawking, Elon Musk, and Bill Gates Warn About Artificial Intelligence](#)," The Observer (Aug. 19, 2015).

In fact, many believe that as soon as AI becomes mainstream it will no longer be considered AI, but simply an accepted technology. In this sense, business travelers are already using AI when they search or use voice commands. Its use will increase based on specific types of AI such as machine learning, deep learning, natural language processing and smart data. As these techniques are deployed within existing solutions, simpler, more intuitive interfaces will emerge that reduce data entry and deliver personalized, relevant information to the traveler throughout their journey. Overall, AI will have a major impact on corporate travel, which by its very nature often involves complex travel patterns. AI will drive improved self-booking solutions, as well as human-assisted tools that will enhance managed travel support services.

Figure 2: Emerging Trends in AI



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Using ML to drive a better experience is a major travel management benefit that can ease friction for all types of travelers (not just VIPs) – a shared goal expressed by travel managers/buyers.

Machine Learning

Machine learning (ML) is a type of AI that enables computers to learn without explicit programming. Machines can learn both at an individual level and across groups of people. The more an ML-enabled application is used, the smarter the machine becomes. Corporate travel involves repetition, either by an individual or across the traveler community. Machine learning embedded in online services could anticipate preferences across trips and automatically book repetitive trips. It can include supplier brand or ground transportation preferences. Travel managers/buyers are concerned that ML may drive more rogue behavior if the application learns that a specific traveler frequently chooses non-compliant options. To overcome this concern, machine learning must be used to not only track the traveler's patterns, but to understand how that behavior fits into overall corporate policy compliance.

ML can also help the travel manager/buyer deliver actionable data that is both policy-compliant and relevant. It can identify patterns of certain employee types and enable services that similar employees would prefer. For example, if most VIPs use a specific car service when arriving at JFK airport and traveling to Manhattan, ML could offer the car service proactively to all VIP travelers arriving at JFK.

Using ML to drive a better experience is a major travel management benefit that can ease friction for all types of travelers (not just VIPs) – a shared goal expressed by travel managers/buyers.

Deep Learning (DL) uses a more narrowly focused subset of ML tools and techniques, and applies them to solve a specific problem which requires "thought" – human or artificial.³ In 2016, Google's DL application defeated the Korean grandmaster Lee Sedol at GO, a 500-year-old game that's exponentially more complex than chess and requires, at least among humans, an added degree of intuition.⁴

In the corporate travel context, DL techniques may be applied to improve the re-accommodation of travelers during disruptions. Though advanced algorithms are already used to manage airline re-accommodation, DL could be deployed to better incorporate a traveler's business needs into the process, rather than simply putting them on the next available flight.

DL can also be applied to corporate analytics and compliance. Reducing traveler friction is a common goal voiced by travel managers and buyers, and travel management must go beyond cost savings and recognize the cost of employee attrition and poor productivity. By examining travel patterns and measuring customer satisfaction, DL could yield new insight into the right balance between negotiated savings, traveler comfort and efficiency. DL can help travel managers/buyers understand the true total cost of travel and identify ways to offer services such as TSA Pre✓ and Global Entry to the right type of traveler, based on their travel patterns and role within the organization.

3) Bernard Marr, "[What Is The Difference Between Deep Learning, Machine Learning and AI?](#)," Forbes (Dec. 8, 2016).

4) Cade Metz, "[Google's AI Wins Fifth And Final Game Against Go Genius Lee Sedol](#)," Wired (Mar. 15, 2016).

Despite the use of these AI techniques, there is still significant debate on whether conversational bots can handle the complexity inherent in a range of corporate travel processes.

Natural Language Processing

One of the most exciting examples of AI is natural language processing (NLP), the capability of machines to understand speech or text. Text search has been around for over a decade, but voice is just now gaining credibility as a legitimate computer interface. Platforms such as Amazon's Alexa were among the hottest technologies at the 2017 Consumer Electronics Show.⁵ Despite past challenges, NLP has now reached a level of maturity where it can confidently answer some basic requests. Travel is an obvious target for NLP interfaces, as evidenced by Expedia's work with Alexa.⁶

Some computer interaction in the corporate travel context is simple and can be handled by NLP today, while more complex queries still present a challenge. NLP alone is not effective unless there is deep knowledge of the terms associated with a particular activity. As travel companies and software vendors begin embracing NLP for corporate travel, the ability to use voice for travel reservations will become more of a reality. NLP in corporate travel will take off when it is combined with other AI techniques such as ML, to enable voice response at the level of intelligence needed to complete a multi-leg itinerary. NLP has already begun to enter the corporate market, and this will likely accelerate over the next few years.

Chatbots

Chatbots represent a different style of computer interface that utilizes both ML and NLP. A chatbot is an automated messaging application that can behave like a human through text messaging, and eliminates the need to download an app. The recent surge of chatbots has been fueled by the mass adoption of platforms such as Facebook Messenger and China's WeChat. Both platforms allow the storage of payment information, which can help simplify e-commerce transactions.

There has been an explosion of chatbots used for travel booking and customer service. Today, these platforms are primarily used for simple purchases, but as more companies leverage chatbots in a corporate travel setting, the simplicity of typing "buy" into the chat conversation eliminates the need to enter payment information. Despite the use of these AI techniques, there is still significant debate on whether conversational bots can handle the complexity inherent in a range of corporate travel processes.

Smart Data

The term smart data refers to information that provides actionable intelligence. Data is the foundation of effective corporate travel management, and we are no longer in a world where data analysis can be reviewed monthly to analyze spending and see how key performance indicators responded; data must be immediate and actionable. Using smart data is particularly important to provide personalized, relevant, actionable data to travelers and travel managers. Whether it is answering a C-Level on policy, spend, or duty of care, or providing guidance to travelers in need of immediate assistance, the importance of smart data in the travel management process cannot be overstated.

5) Maricris Francisco, "[Amazon's Alexa Is The Real Star Of CES 2017: Here Are Your Alexa-Enabled Devices](#)," Tech Times (Jan. 8, 2017).

6) "[Expedia.com Launches First Amazon Alexa Skill for Personalized Real-Time Travel Updates](#)," Expedia press release (Nov. 30, 2016).

If AR becomes mainstream through consumer adoption of smart glasses or other wearables, its impact on the corporate travel experience may change.

Changing Reality

The year 2016 may go down in history as when we began to see an altered reality. The two most common techniques in this regard are augmented and virtual reality.

Augmented Reality (AR)

As the name implies, augmented reality refers to superimposing a computer-generated image on a user's view of the real world. In 2016, Pokémon Go created an international craze as millions of people played the AR game. AR had been around for over a decade with limited consumer acceptance. It is unclear if the Pokémon Go craze will usher in a new round of AR innovation.

The acceptance of AR may also be contingent on the adoption of wearables. Though Google Glass was unsuccessful in launching a practical smart glass wearable, smart glasses may reappear soon. Both Apple and Google are working with eyewear manufacturers to embed smart glass capabilities into existing lens and frames.⁷ There are also rumors that future iPhones will have a clear glass design, facilitating the use of AR.⁸

Navigation and delivering information in an airport or at an unfamiliar destination are the most practical examples of AR. At this point, most travel managers/buyers believe AR is a peripheral technology that can add some value, but not something that will have a radical impact on corporate travel. Of course, if AR becomes mainstream through consumer adoption of smart glasses or other wearables, its impact on the corporate travel experience may change.

Virtual Reality

Virtual reality (VR) is an artificial environment that is created with software and presented to the user in such a way that the user suspends belief and accepts what they see as "real." Facebook's \$2 billion purchase of VR manufacturer Oculus Rift in 2014 signaled a new energized round of research and investment in VR.

The impact of VR on the travel industry may be significant, potentially allowing leisure travelers to experience destinations before purchasing a trip. In a corporate travel context, the focus is on using VR to replace meetings and launch virtual conferences. VR may prove to be disruptive if consumer acceptance grows and VR successfully penetrates the enterprise as a legitimate alternative to travel. Not surprisingly, Facebook's primary focus for VR is social interactions, but corporate travel managers should remain vigilant on VR if the positioning of the technology moves to a more business-oriented focus.

Enabling Next Generation Corporate Travel Management

Corporate travel management has entered an era of predictive travel services. Rather than simply relying on business intelligence to highlight non-compliance and lost savings after the fact, new tools are emerging. These tools will help travel managers/buyers identify immediate savings and compliance issues in real time, with targeted information

7) Mark Gurman, Alex Webb and Ian King, "[Apple Considers Wearables Expansion With Digital Glasses](#)," Bloomberg (Nov. 14, 2016).

8) Anita Balakrishnan, "[Apple will release three new phones next year – all with new glass backings, report says](#)," CNBC (Oct. 26, 2016).

Combining traditional risk management data with information derived by IoT sensors will likely fuel more accurate location and employee status information.

delivered to travelers' mobile devices that can alter their behavior. This includes corporate efforts around duty of care and trip disruption.

Duty of Care

The term duty of care (or traveler risk management, as it is increasingly called) refers to a company's responsibility for its employees' well-being from both a moral and legal perspective, and is particularly relevant for business travel. With global terrorism on the rise, employee health and safety has become a critical part of the travel management discipline.

A major challenge in executing an effective duty of care program is developing the right balance between accurately identifying the traveler's location and respecting their privacy rights. For example, while smartphones have GPS capabilities that can locate users via satellites, no companies interviewed are using GPS to locate their travelers due to privacy concerns. More traditional means of running TMC reports on travelers' locations are still a cornerstone of duty of care technology. This can be very problematic if the traveler books outside the preferred channel. In those cases, the TMC reports may be missing critical location information.

Emerging trends in duty of care include proactive notification on risk fueled by intelligence derived from corporate social connections. This approach augments the top-down delivery of risk information from security specialists, and instead encourages travelers to use dedicated apps or social media to report on security issues. The data is then digested and repurposed to help assist other travelers, for example by identifying risky areas of a city that should be avoided.

Tighter integration with risk management services is a clear goal of corporate travel managers. Combining traditional risk management data with information derived by IoT sensors will likely fuel more accurate location and employee status information. Wearables, technology in the form of glasses, watches, clothing and jewelry worn by the traveler, may also play a role in capturing key data about the traveler's health and precise location. The adoption of this type of advanced technology is very dependent on the culture of the company and government rules on privacy in specific countries.

Trip Disruption

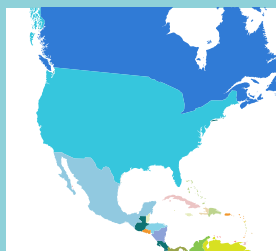
Emerging technology can also play an important role with trip disruptions, whether triggered by a traveler's change of plans or by delays caused by weather or mechanical issues. Airlines have invested millions on elaborate operational control centers, and often pride themselves on the ability to re-accommodate passengers automatically when an aircraft is delayed due to weather, air traffic control issues or mechanical problems. Travelers, on the other hand, may find the alternative booked by the airline unacceptable. Progressive TMCs have deployed quick response apps that provide a prompt agent call back. While there have been advances in the use of data to personalize services for the disrupted traveler, better coordination between airline support services and TMC solutions is still needed. Ultimately, the severity of the disruption is defined by the traveler, as even a relatively short delay can cause a business person to miss a critical meeting.

Emerging technology needs to be deployed that delivers insight into a trip's purpose and better coordinates efforts by the airlines and TMC community. This may be aided by IoT beacons deployed at the airport, smart wearables and effective smartphone communication that simplifies the options for the traveler with consistent and clear messaging.

In order to leverage emerging technologies such as ML, DL and NLP, and to better handle duty of care and trip disruptions, corporate travel management companies need to implement a platform that delivers proprietary technology across global operations. This single platform should be the foundation for all types of customer interfaces, including voice, chatbots and agency support services. By taking a platform approach to managed travel, TMCs can deliver personalized, relevant services on any device at any point in the travel process.

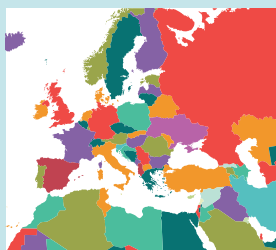
Regional Differences

The technologies discussed in this paper are happening throughout the globe. There will be common themes that apply to all geographies. Due to different levels of complexity and nuances associated with corporate travel in specific areas of the world, these technologies may have a different level of impact dependent on the region.



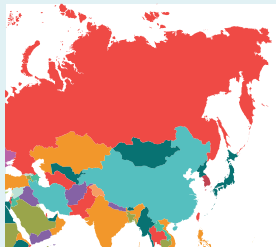
The United States

There is increased focus on balancing cost savings with improving the traveler experience. It is logical to assume that technology such as machine learning and smart data will be used to enhance the traveler experience while driving compliance to policy within the context of improved traveler efficiency. The U.S. will be quicker to embrace crowdsourced duty of care solutions if they can effectively augment traditional security information.



Europe

With myriad different sources of supply (e.g., independent hotels, rail, LCCs) combined with a focus on traveler privacy, European business travel will embrace AI techniques if they do not violate personal information and help simplify the complexity of options. Mobile adoption is high in the region, especially in southern Europe, where traditional online travel was slower to emerge. In these countries, mobile solutions such as NLP and chatbots may have greater traction.



Asia

Mobile adoption has taken off throughout Asia at a phenomenal rate. Asia has some of the highest mobile booking percentages, and services such as WeChat dominate as an m-commerce platform. Mobile applications such as NLP and chatbots will likely have a higher reception rate in Asia. Proactive services will catch on quickly if they can simplify the travel experience.

Source: Phocuswright Inc.

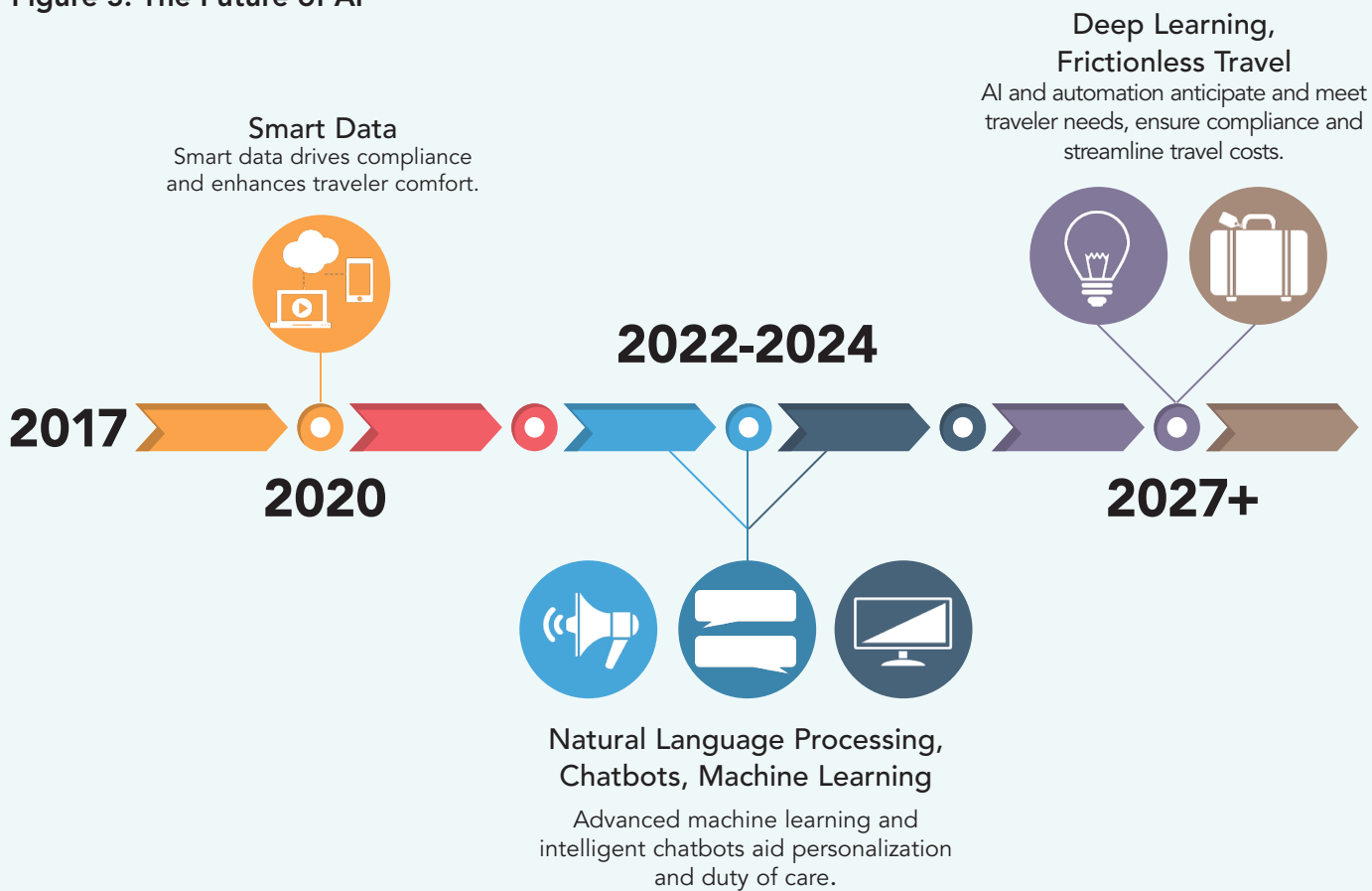
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Envisioning the Future

2020

In just three years, as we enter a new decade, AI and other emerging technologies will likely be imbedded into corporate travel. Though these technologies have the potential to improve the travel experience, it is unlikely that the physical act of taking a business trip will dramatically change in just three years. What will change is the smart data available to corporate travel managers/buyers, and their understanding of how to utilize it. Being able to communicate services to the traveler that drive compliance and enhance their comfort will become a focus of the travel management process, particularly during the trip. Though we will see evidence of NLP, chatbots and ML by 2020, full implementation of these technologies will take more time to be fully embedded in corporate travel solutions.

Figure 3: The Future of AI



5-7 Years

Within five to seven years, we are likely to see the true impact of AI on the business travel experience and travel management discipline, with these technologies broadly implemented across the corporate travel ecosystem. The always connected travel environment, aided by IoT and wearables, will lead to an expectation of immediate service delivery, much of which will be coordinated behind the scenes by machine learning. Within this timeframe we will also see broad adoption of voice and intelligent chatbots that provide a flexible human-to-computer interface option dependent on the traveler's preference. Compliance will be simplified, as travelers will be immediately notified when non-compliant choices are selected. Duty of care will be aided by IoT and wearables, which will automatically monitor the health and safety of the corporate employee and provide precise location information in the event of an emergency.

10+ Years

While it's always difficult to predict far into the future, AI technology will likely take us to a future where our needs are anticipated and proactively met automatically. We will finally enter an environment where all types of business travel friction are removed. This ranges from automated security scans as travelers walk through the airport, to automatic check-in and check-out at the hotel. When we arrive at our destination, anything we've forgotten will automatically be provided (e.g., a hot meal, a spare power cord, a small conference room for a meeting) by analyzing individual travel patterns and purposes, knowing allowable corporate amenities, and offering services precisely when they are needed. For the managed traveler, these services will be provided within a corporate-compliant setting that meets both the traveler's personal needs and saves the corporation travel costs.

This vision of the future may sound utopian. After all, we are likely to see increased terrorism, economic upheaval and cultural clashes, which technology alone cannot remedy. But keep this in mind: If you were to talk to a traveler from the late 1960s and tell them that today you have in your pocket a device more powerful than the computers that sent a man to the moon, they would be amazed. The pace of technology change is accelerating, and we can only hope that the positive vision of the frictionless compliant travel experience described here becomes a reality.

Glossary of Terms

- **Augmented Reality** – Superimposing a computer-generated image on a user's view of the real world.
- **Beacons** – Small devices that broadcast and capture information to and from mobile applications within a short proximity.
- **Chatbots** – An automated messaging application that can behave like a human through dedicated or existing text messaging platforms (e.g., Facebook Messenger).
- **Deep Learning (DL)** – Computer programs that use a more narrowly focused subset of machine learning (ML) tools and techniques and apply them to solve a specific problem which requires “thought” – human or artificial.
- **Duty of Care or Traveler Risk Management** – A company's responsibility for the well-being of its employees, from both a moral and legal perspective.
- **The Internet of Things (IoT)** – The network of physical objects that feature Internet connectivity, and the communication that occurs between these objects and other Internet-enabled devices and systems.
- **Machine Learning (ML)** – A type of artificial intelligence that enables computers to learn without explicit programming.
- **Natural Language Processing (NLP)** – The capability of machines to understand speech or text.
- **Online Booking Tool (OBT)** – Web-based interface for booking travel online that incorporates travel policy. May be provided by third party, TMCs or expense management vendor.
- **Sentient computer intelligence** – Computers that are self-aware and capable of independent thought.
- **Smart Data** – Information that provides actionable intelligence.
- **Virtual Reality** – An artificial environment that is created with software and presented to the user in such a way that the user suspends belief and accepts what they see as “real.”
- **Wearables** – Computer technology that is worn by the consumer. Wearables may take the form of watches, jewelry, glasses or clothing.



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