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Duty of care

Emerging technology and travel management

Blockchain, chatbots, machine learning, virtual reality (VR) and the Internet of Things (IoT) are among the emerging technologies capturing the imagination of the business travel community. These innovations have the potential to be truly disruptive forces. But precisely how they will change corporate travel, and how buyers can prepare, isn't yet clear.

This series of *Inform* reports explores how these technologies can interact with six aspects of travel program management: sourcing, policy, communications, duty of care, payment and expense, and performance management.

We'll help you understand how these emerging technologies can deal with some of the challenges you face in managing different parts of your travel programs.

This report takes a closer look at how emerging technologies like machine learning, chatbots *et al* can radically improve the way companies care for their traveling employees. These technologies offer better options for not only tracking and assisting travelers, but more importantly, keeping them safe in the first place.

Technology bridges the duty of care gap

Organizations have a legal and moral responsibility to look after the safety and well-being of their employees and other stakeholders. This is known as their duty of care.

Duty of care - useful principles

Information is a powerful tool for keeping travelers safe

Duty of care has become more complex, as once "safe" destinations no longer feel that way

Technology is helping companies provide relevant, timely information at all stages of a trip

Fulfilling a duty of care towards employees is relatively straightforward when they are at their normal place of work. A controlled, predictable environment means companies have a better understanding of what they must do to keep their people safe and healthy. Business travelers may be more exposed to risk, as companies are less able to control and manage the environment they're operating in.

Regulation, litigation and reputation have elevated the importance of employee care. At the same time, travelers want more control over choices affecting trip quality. Keeping business travelers safe therefore requires a balanced approach.

This is where technology comes in. Emerging technologies can bridge the duty of care gap between responsibility and control by helping companies easily provide relevant, timely information via the mobile devices carried by nearly every corporate traveler today.

The newest generation of digital technologies allow travel managers to:

- Better prepare travelers for their trip
- Take preventive action to minimize predicted disruption
- Find and help travelers even faster if they run into problems during a trip

Read on to find out how machine learning, bots, blockchain, virtual/augmented reality and the Internet of Things will all help improve the way travel managers look after travelers, wherever they are in the world.

Machine learning – Anticipate trouble before it happens

What it all means	Artificial intelligence	Machine learning	Predictive analytics
	When technology performs a human function.	A form of artificial intelligence, where computer software improves its own performance by learning from the past.	The analysis of data using machine learning and other techniques to predict future outcomes.

See into the future

In the movie *Minority Report*, detectives used predictive technology to identify people for arrest before they could commit crimes in the future. Machine learning, artificial intelligence (AI) and predictive analytics don't offer that level of insight yet, but they are already making the prediction of likely outcomes much more accurate.

Working together, these computing techniques combine vast sets of current and historical data from different sources to generate patterns. The tools can distinguish between what's normal and what's exceptional. They can alert travel managers to anything unusual. That means – whether it's unusual card spending patterns, weather problems or travel-related health risks – travel managers can use the information to avoid a problem or minimize an employee's exposure to risk or disruption.

Let's get personal

Technology can make service more personalized, not less. Machine learning can help reduce traveler stress by anticipating and meeting a traveler's needs before the traveler has even thought of them. For example, it could make some clothing recommendations for the traveler based on the weather forecast at the destination.

Manage travel and the traveler

Cost control remains a priority for managed travel programs, but the sophisticated use of data allows travel managers to start meeting other important strategic goals for their business. For example, travel managers can use data to anticipate and prevent traveler burnout, ultimately improving productivity and employee recruitment and retention – strategic targets for many companies. And that makes travel managers an even more important asset to any business.

Traveler security with DecisionSource®

During a crisis, travel managers need information at their fingertips to keep travelers safe and secure. With the help of BCD Travel's DecisionSource platform they can:

- Locate travelers using a real-time, interactive security map powered by and updated with the help of machine learning.
- Instantly alert travelers to an incident via the TripSource® travel app, allowing them to confirm their safety at the touch of a button.
- View travelers' responses and – if needed – their contact information – all on one screen.
- Get in touch via email and SMS messaging with those travelers who need assistance.

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Machine learning – Anticipate trouble before it happens

Avoid problems
by predicting risk

Predictive analytics can help by:

- Analyzing historical and current data to predict potential threats, ranging from crime to political disturbances to weather disruption.
- Cross-checking intelligence reports from a range of sources to spot emerging incidents at an early stage.
- Spotting problems by identifying erratic behavior, such as suspicious payment activity through the traveler's corporate card.

Provide relevant duty of care
by predicting a traveler's location

Data analysis can help quickly locate travelers:

- In an emergency, data from sources like GPS tracking or the Internet of Things can help to accurately pinpoint a traveler's location.
- Other sources, including booking records and corporate card transaction data, can also help to locate travelers when needed.
- Machine learning will reconcile the data from multiple sources for the most accurate prediction.

Reduce traveler stress
proactively

Anticipate, avoid and deal with travelers' pain points:

- Save travelers time by offering them program-compliant hotel options based on preferences learned from their booking history.
- Anticipate the build-up of travel stress by monitoring how often travelers fly, and whether they travel at weekends or outside of work hours.
- Create alerts for any travel patterns likely to cause high stress levels.
- Act on these alerts: Recommend that potentially stressed travelers seek a medical or psychological check-up.
- Benchmark the results against the company norm.

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Blockchain – Fast, accurate, secure traveler data

What it all means	Blockchain	Cryptocurrency	Smart contract
	A shared ledger, or distributed database, in which information is verified and permanently stored by a large number of independent people (called miners).	A digital currency that is generated and transferred using cryptography, a technique for transforming transmitted data that makes it hard for unauthorized users to decipher.	A self-executing contract triggered by a set condition.

At last – a single source of truth for business travel

While there has been a lot of hype about blockchain, this technology does offer three crucial benefits:

It is a database effectively holding an infinite amount of information

It can share that information among any number of *authorized* people

It cannot be tampered with

Taken together, these benefits promise some great advantages for traveler duty of care, because of the complexity and volume of data that travel involves. Any business trip involving a flight, a hotel and a car rental demands many different databases exchange personal data about the traveler. On that same trip, the traveler will need to prove their identity at numerous touch points. Making sure all this data is exchanged quickly, accurately and securely can be extremely challenging.

Blockchain — if it delivers on its promises — could provide the answer. It is comprehensive. It can't be changed. And while anyone can potentially access the information, that access can be strictly controlled.

Confirm travelers' identities
with a single, universal ID

Travelers need to be identified just once:

- Verification of a traveler's identity is confirmed and held by a token in a mobile app.
- Validation of this identity is securely held on a public blockchain.
- At every checkpoint, agents validate the authenticity of the traveler's identity, possibly using biometrics, and check the token.
- Travelers no longer show passports or another form of ID that can be forged or outdated.
- Personal data cannot be lost, stolen or stored at a checkpoint, because it is the token that is checked, not the original data.
- No single authority runs, processes or stores the traveler's data.

Keep travelers safe
by locating them faster

A real-time location for each traveler:

- Feed all of a traveler's location data into a blockchain.
- Include original reservations, amendments and cancellations; records of airport, hotel and car rental check-ins; phone data; payment data etc.
- Create a map of the traveler's movements using machine learning.
- Constantly update the map as new information is added, providing close to a real-time location.

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Blockchain – Fast, accurate, secure traveler data

Keep travelers safe
when using alternative accommodations

Know more about hosts:

- Use a blockchain to store and verify the hosts' identities and service reviews for alternative accommodations.
- This information cannot be tampered with.
- Travel managers may be more relaxed about allowing private accommodation into preferred programs.

Improve traveler care
during a medical emergency

Access medical records, anywhere, any time:

- A medical record on a blockchain allows authorized personnel instant access to a traveler's medical information.
- The blockchain enables information to be shared securely around the world, overcoming long-standing problems with lack of systems interoperability and avoiding delays.

Keep personal data safe
with a travel profile blockchain

One system to manage them all:

- Travelers' profiles are held on a blockchain to which travel suppliers can be given access.
- Security and accuracy are improved, because data no longer needs to be exchanged between different databases.
- Data access is strictly controlled.
- The profile is portable, so business travelers can take it with them when they change employer.

Support travelers
by sending emergency funds quickly and securely

Cryptocurrency to the rescue:

- In an emergency, transmit cryptocurrency funds directly to a traveler's phone or other device.
- Cryptocurrencies have lower transaction costs and should be usable (in theory) in any country.

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Bots and chatbots – Look after all travelers

What it all means	Bot	Chatbot	Natural language processing
	Software fulfilling an automated task.	A messenger app or a virtual assistant programmed to provide personalized responses and perform a variety of other tasks based on machine learning, thus substituting a human.	The area of Artificial Intelligence that helps computers understand and analyze human speech.

Helping people more

Bots and chatbots can help travel managers better fulfill their duty of care commitments. The software can automate many of the basic tasks around informing, contacting and assisting travelers both pre-trip and on-trip. Should travelers need additional support, bots and chatbots can immediately refer them to the travel manager and security department. Bots may serve as a triage system, helping travel managers to prioritize which travelers have the greatest need for assistance.

Better than a human?

When it comes to duty of care, bots and chatbots can be programmed to simultaneously perform tasks for multiple users. Bots can save time for humans and may even do a better job, especially when using their natural language processing capabilities.

Targeted care: Bots ensure that the right messages and assistance are delivered to the correct traveler in any location exactly when needed.

Integrated care: Bots can talk to other technology tools, make decisions and take instant action to manage a trip disruption.

Total care: Bots can play the role of enforcer, only allowing travelers to proceed with their trip once they have taken all recommended precautions.

Manage travel risk
pre-trip

Bots can prepare travelers by:

- Sending them targeted guidance about their destinations.
- Showing videos about higher-risk destinations.
- Issuing updated alerts about destinations they are booked to visit.
- Informing them about necessary inoculations, visas and other precautions.
- Only issuing tickets and other confirmations once travelers have addressed all recommended precautions.

Assist travelers
during an incident

Early communication will help keep travelers safe:

- When an incident happens, bots can prompt travelers to report their safety status.
- The bot automatically requests human assistance for travelers who need help or who fail to respond to safety inquiries.

Manage travel risk
on-trip

Bots can send targeted, timely alerts to keep travelers safe by:

- Advising them on the safest way to travel between the airport and a destination.
- Sending security updates for their destination.

Improve traveler care
with bot-based disruption management

Bots can take the stress out of travel disruption by:

- Automatically sending targeted alerts to travelers facing disruption.
- Liaising with airlines and airports to update travelers on length of delays, emergency accommodation and cancellation compensation.
- Suggesting and handling flight, hotel and car rental re-bookings.

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Virtual and augmented reality – Remove the uncertainty

What it all means	Augmented reality	Virtual reality
	Using virtual information, like holograms or GPS information, to enhance the real world.	An immersive computer-generated environment, which can be experienced by a person as if they are really there.

Unfamiliarity is the underlying challenge faced by business travelers during many disruptions and security incidents. Virtual and augmented reality can help to make the unfamiliar familiar by guiding travelers through a location or sharing their situation with security professionals. By remotely seeing the world as the traveler sees it, it will be easier to help manage their way through an incident. Alternatively, virtual reality can be used as a pre-emptive measure, providing a meetings substitute that avoids the need to travel to high-risk destinations in the first place.

Keep travelers safe
with destination previews

Let travelers make a virtual visit pre-trip:

- Virtual tours can walk travelers through a destination, hotel or office.
- Preview maps and directions will help to minimize risky behaviors, like checking maps or directions, which mark travelers out as visitors and potential targets.

Avoid risk completely
don't travel

For higher-risk destinations:

- Consider not traveling.
- Meet virtually instead.
- Telepresence and virtual collaboration technologies already offer "in the same room" reality, which will become even more convincing in the future.

Get travelers to safety
using escape route mapping

All it needs is an app which:

- Shows travelers the location of an incident and reroutes them to safety.
- Provides instructions on what to do next.

Enhance traveler assistance
by being with them – virtually

Be "on the ground" with travelers during an incident:

- Use 360° virtual views to remotely offer travelers accurate, effective direction.
- Work with local security experts and other personnel who can assess the situation and advise actions.

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Internet of Things – Someone to watch over them

What it all means

Internet of Things (IoT)
A network of connected intelligent devices using the Internet to communicate and share data.

Telemetric systems
The systems that remotely collect and transmit data.

The Internet of Things makes it possible to remotely monitor where travelers go, what they do and even how they feel. This has the potential to take duty of care to another level – but it inevitably raises questions about individual privacy (see Challenges section below).

Know exactly where travelers are
during an incident

Telemetric sensors are the ultimate traveler trackers:

- They can pinpoint a traveler's exact location and steer them away from an incident or direct them to available help.
- They can confirm that a traveler has reached a safe location.
- By integrating with machine learning and blockchain technologies, they can be part of a total tracking program.

Keep travelers safe
when they rent a car

Sensors in smart vehicles make car rental safer by:

- Controlling a vehicle's speed if driven too fast.
- Proactively identifying and rectifying vehicle faults.
- Operating driverless cars, which could potentially make road travel safer.

Keep travelers healthy
by monitoring their vital signs on-trip

Be proactive with the health of travelers:

- Create alerts for the medical team if there are critical changes in a traveler's vital signs.
- Initiate traveler wellness checks; provide help if needed.
- Create amber alerts if monitoring indicates potential problems. Suggest the traveler takes a medical check-up on their return.

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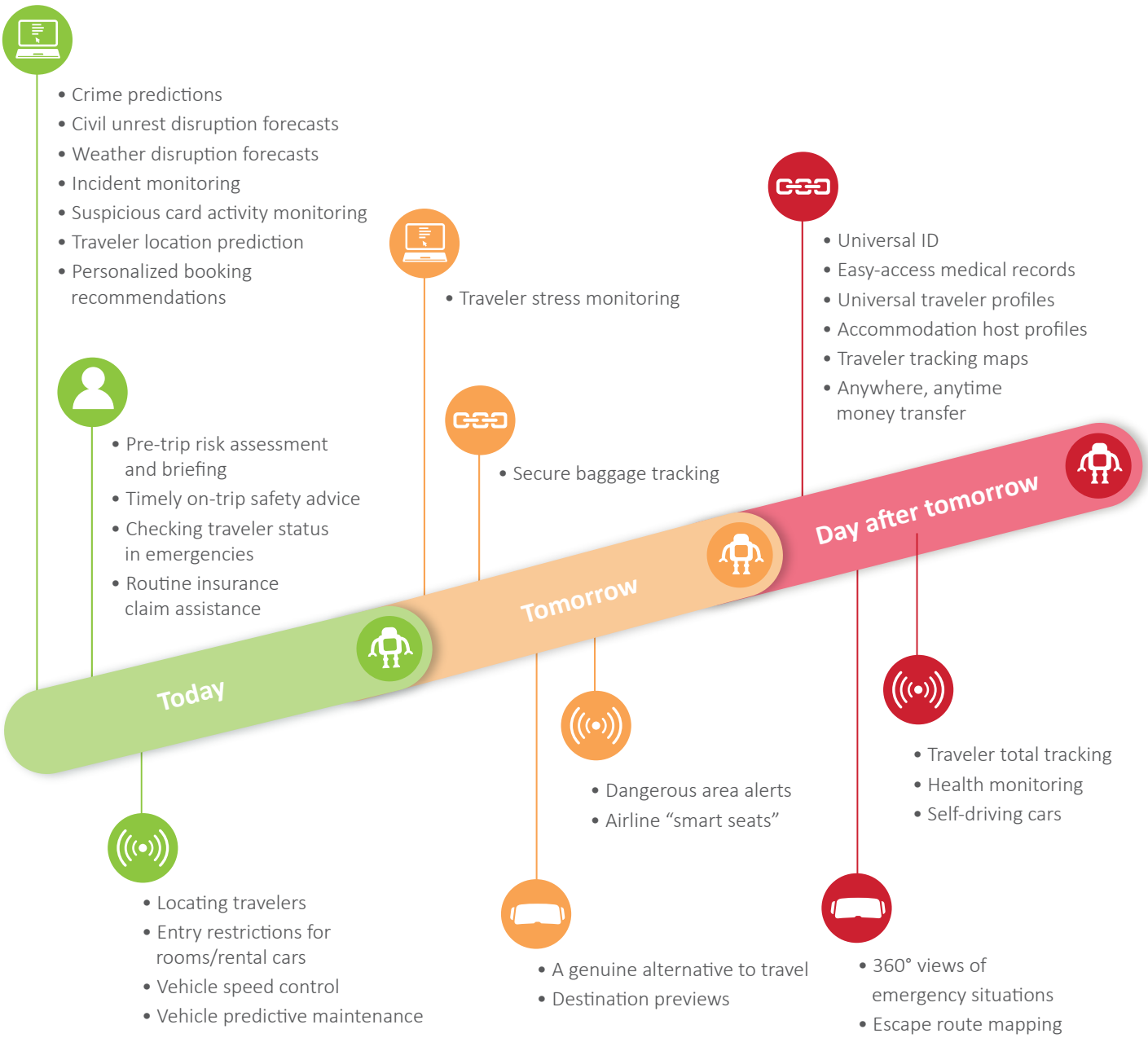
How emerging technology can transform duty of care



Augmented and virtual reality

Blockchain

Bots and virtual assistants

Internet of Things

Machine learning

This is how we see the application of these emerging technologies to duty of care. But things are changing fast, and some developments may happen more quickly than we expect.

Challenges

Emerging technologies are revolutionizing the way travel managers care for their travelers. But innovation also brings some challenges.

Data privacy

- When embracing emerging technologies, all aspects of travel management must deal with data privacy issues. Arguably, these are most acute when it comes to duty of care, as more detailed information must be gathered on where employees are going and even the state of their physical and mental health. In some countries this may be ethically unacceptable or even illegal. And this may conflict with another duty of care: the duty to respect privacy and the dignity of individuals.
- These issues need sensitive exploration as emerging technologies open new possibilities. It's worth noting that, as technology evolves, so do attitudes. Generally, younger people appear less fearful of being monitored by machines.

Data security

The collection of sensitive personal data increases the need for effective cybersecurity. Companies, and suppliers working for them, that fail to take the strongest possible precautions to protect employee data could face severe penalties under laws such as the European Union's General Data Protection Regulation (GDPR).

Technology as a threat

While technology can help to reduce risks for travelers and their employers, it has the potential to increase risks as well, as the following examples show:

- Authorities in a country with conservative attitudes may use bots and machine learning to scan social media and other sources to predict a traveler's sexual orientation. That could place the traveler at risk when visiting a country that outlaws homosexuality.
- The same automated searches could reveal insights about the visitor's attitude towards the regime itself. These could be used to deny entry or support charges of espionage or incitement against a traveler.
- IoT-based surveillance could be abused by authorities or suppliers.

Don't over-rely on technology

- Technology is not perfect. It can fail in a crisis, or an employee might visit a location without network coverage.
- Technology is prone to human error, too. Travelers might forget to charge their phone or might not have sufficient technical proficiency.
- Lower-tech duty of care options should be kept available.

Getting the best from technology

Re-think your travel risk management strategy

- Emerging technologies can fundamentally change traveler care; so, perform a thorough review of your risk management approach.
- Don't do the review alone. Involve other stakeholders, including human resources, security and IT.

Educate yourself

- Understand which suppliers and service providers offer the risk management tools most appropriate for your program.
- Get involved. Be prepared to help test new products.
- Familiarize yourself and your team with local data privacy and safety regulations.

Educate your travelers

- Excellent communication will make travelers enthusiastic about – not suspicious of – any recently introduced technology.
- Explain what's already here, what's coming, and how it will benefit them.
- Clarify how the technology will not be used. For example, that it won't be used to track a traveler's every movement.

Remember the basics

- Make sure there are low-technology alternatives to fall back on, in case a high technology-based solution fails.
- Before implementation, do the essential preparation work, like creating an up-to-date list of mobile numbers for every traveler.

Review travel policy

- Make sure travelers comply with policy, especially by using authorized booking channels, so they can be tracked and helped more easily.
- Consider how adopting a more flexible policy might help travelers. For example, use a host/guest ID verification blockchain to address concerns about Airbnb-style accommodations.

Make data security and privacy the No. 1 priority

- Detailed data protection planning is essential when handling large amounts of highly sensitive data.
- Familiarize yourself with data privacy regulations and ethical considerations.

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About BCD Travel

BCD Travel helps companies make the most of what they spend on travel. For travelers, this means keeping them safe and productive, and equipping them to make good choices on the road. For travel and procurement managers, it means advising them on how to grow the value of their travel program. In short, we help our clients travel smart and achieve more. We make this happen in 109 countries with almost 13,500 creative, committed and experienced people. And it's how we maintain the industry's most consistent client retention rate (95% over the past 10 years), with 2017 sales of US$25.7 billion. For more information, visit www.bcdtravel.com.