Payment and expense

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 simplify payment and expense management, not just for travelers, but for their employers, too. The data visibility enhancements made possible by these technologies will improve control while freeing up management time. It's possible that they will even relieve travelers of their payment and expense responsibilities completely.

Payment and expense could prove to be the area of travel management where emerging technologies make life better for everyone involved in corporate travel.

| Sourcing | Policy | Comms | Duty of care | Payment | Performance |

Payment and expense – No one enjoys it

Travelers dislike it

Payment and expense reporting are necessary evils in business travel. For the traveler, the whole process of paying for hotels, restaurants, ground transportation etc., and then filling in reports to claim reimbursement, can be an inconvenience, taking up more time than many can spare.

The distraction of reclaiming expenses from a business trip impacts traveler productivity and happiness.

… and so do managers

Managers also regard checking expense claims or reconciling invoices and payments as a distraction from their normal responsibilities. But it's something they must do to:

- Stay tax-compliant
- Balance the books
- Check that no one is overspending or defrauding the company

Technology removes the pain

Emerging technologies will relieve the pain points experienced by travelers and managers alike. They can ease the burden placed on travelers, who are ultimately looking for a completely invisible process, with no need even to make payments or expense claims.

At the same time, emerging technologies will help management maintain control over payment. In fact, they can improve it. They can offer travel managers and their colleagues in the Finance department greater payment visibility. They'll also free up management time by reducing reconciliation and streamlining expense approval. Travel managers will only need to get directly involved when the system automatically highlights irregular transactions or other issues.

Other payment innovations happening

The emerging technologies featured in this report are not the only innovations changing the face of payment. Other technologies are also contributing to payment's evolution:

- Contactless cards already make low-value payments simple with a mere wave of a card past a reader.
- Virtual cards digitally generating single-use card numbers are being used today for hotel stays. Payment is often settled through a centrally billed account, which means travelers don't need to expense them afterwards.
- Mobile payment services like Apple Pay or WeChat are increasing in popularity.

Regulatory changes are also promoting payment innovation. In Europe, the Revised Payment Services Directive (also known as PSD2) now requires banks to allow third parties to access customers' bank accounts. Instant bank transfer has been introduced, too. Such developments are encouraging a new generation of FinTech companies to offer fresh creative payment solutions, often based on bank transfer. It means tomorrow's payment methods for business travel may not be card-based at all.

Machine learning – An end to expense management?

What it all means	**Artificial intelligence** When technology performs a human function.	**Machine learning** A form of artificial intelligence, where computer software improves its own performance by autonomously learning from the past.

Machine learning is powering the automation of what travelers do today to pay and submit their expenses – and the work employers do to approve and audit them. By examining millions of transactions, systems learn what should be included in a payment or expense claim, and what shouldn't. The more they learn, the less information humans will need to provide. As well as saving travelers time, it can make fraudulent claims more difficult, too.

Self-writing, self-checking expenses

In time, machine learning will help expense systems evolve to become fully self-writing expense reports. But that's not the end of the story. Ultimately, travelers may not ever need to see expense reports submitted on their behalf; and managers wouldn't need to check and approve them. Everything will happen in the background, with travelers, line managers or accounts departments only alerted when exceptions occur.

Save time
with autofill expense claims

Here's how machine learning can help:
- Analysis of invoices automatically feeds information into the correct fields of an expense claim.
- Missing data is added, e.g. the correct expense category.
- After learning which expenses will and won't be approved, the system automatically warns travelers if a claim is likely to be rejected.

Save time
with a default claims form for repeat trips

Data from past trips completes a default claim form:
- The traveler amends any differences.
- The system checks actual invoices and payments.
- The traveler verifies any exceptions, such as a higher-than-usual cost for the hotel stay.

Today   Tomorrow   Day after tomorrow

Save time
spent on expenses

Imagine a future where:
- The entire expense report is automatically produced, submitted, approved and reimbursed.
- Relevant receipts and invoices are automatically attached.
- Travelers, approvers or Finance are only involved if there is an inconsistency.

Reduce fraud
by automating expense audits

By referencing multiple data sources, machine learning can check if:
- A claimed fare or hotel rate is reasonable.
- A receipt is genuine, and the supplier exists.
- A vendor is what the traveler claims it is, e.g. a hotel and not a nightclub.
- Manual approval is required.

Eliminate fraud
at point of payment

Before payment is taken:
- Card companies score transactions against the characteristics of previous fraudulent payments.
- If the score is too low, the transaction is automatically rejected.

Better data quality
with the blanks removed

Reduce missing detail on payment reports by automatically:
- Importing data from previous similar transactions.
- Flagging imported data for confirmation by the client.

How Uber helps avoid payment confusion

Helping travelers select the right card:
- Many travelers have two payment cards stored in the Uber app: one for personal use and one for business trips.
- Machine learning helps Uber predict whether a trip is for business or leisure.
- If it appears a traveler is using the wrong card to authorize the trip, the app asks them to reconsider.
- This reduces unintentional claims for personal expenses and the time needed to sort out mistakes later on.

Today   Tomorrow   Day after tomorrow

| Sourcing | Policy | Comms | Duty of care | Payment | Performance |

Blockchain – More than cryptocurrency

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.

Blockchain had its origins in payment

Blockchain was created to enable a new form of payment. It acts as the ledger for recording payments made in virtual currencies known as cryptocurrencies, such as Bitcoin.
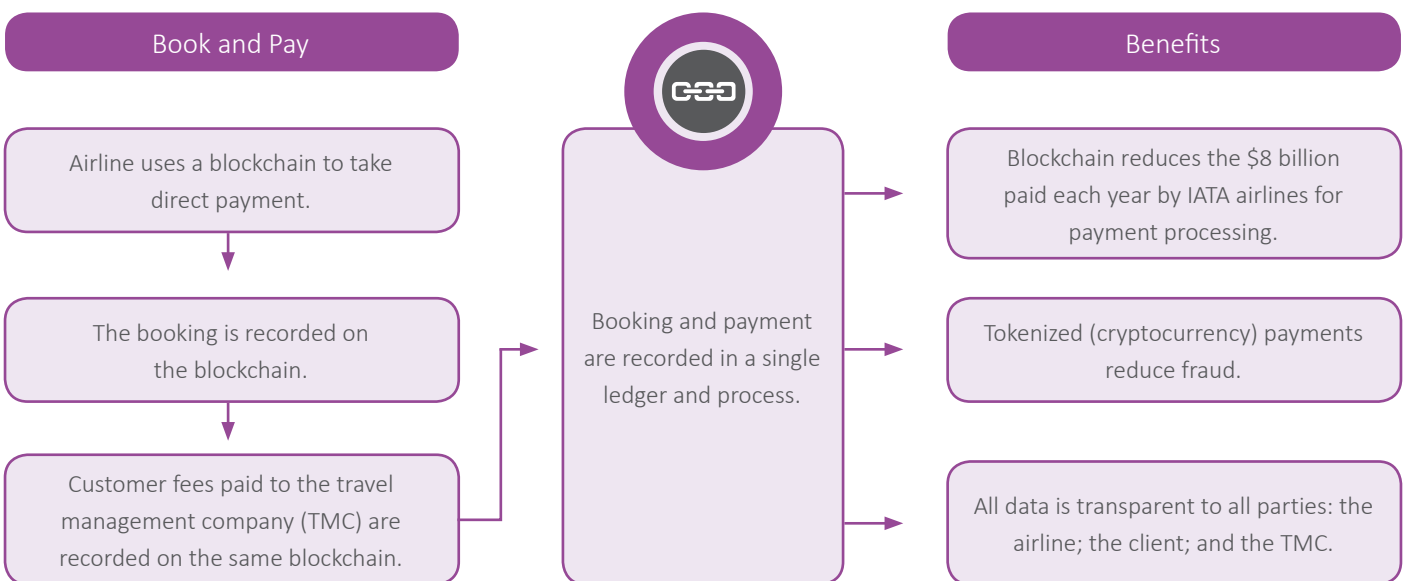
Bitcoin was conceived as an international currency that would allow people to pay each other directly, without involving third parties, such as financial institutions (banks), or the same level of oversight and control when regulators and governments are involved. In principle, cryptocurrencies sound very appealing: No banks means no fees when making a payment. In practice, however, using cryptocurrency publicly has had its problems, and it has struggled to gain widespread acceptance.

Although cryptocurrencies have their challenges, there are ways in which blockchain could one day make a real difference to corporate payment and expense. Blockchain's ability to act as a "distributed ledger" offers two attractive benefits:
- Recording transactions of all types (not just payments) is tamper-proof and unchangeable.
- Records can be shared with everyone involved in the process.

These benefits can be applied to payment and expense, especially if the blockchain is private – accessible only to a limited, relevant group of approved users.

Using the example of paying for an airfare, here's how blockchain could one day help save money and eliminate fraud:

Book and Pay

Airline uses a blockchain to take direct payment.

The booking is recorded on the blockchain.

Customer fees paid to the travel management company (TMC) are recorded on the same blockchain.

Booking and payment are recorded in a single ledger and process.

Benefits

Blockchain reduces the $8 billion paid each year by IATA airlines for payment processing.

Tokenized (cryptocurrency) payments reduce fraud.

All data is transparent to all parties: the airline; the client; and the TMC.

Payment and expense

Improve supplier relations
with better negotiated deals

Using a smart contract:
- Payment can only be at the price agreed by the two parties.
- Discounts only apply once certain conditions are met, such as a minimum number of bookings in a certain period.
- All parties see the same report, enabling greater transparency in future negotiations.

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.
- The transfer is recorded instantly on the company's expense blockchain.
- Cryptocurrencies have lower transaction costs and in theory should be usable in any country.

Save money
with loyalty recognition

Why wait to benefit?
- To recognize and reward client loyalty, a hotel issues cryptocurrency vouchers to be redeemed against future bookings.
- This provides immediate access to volume-based savings, rather than relying upon the outcome of annual rate negotiations.

Improve payment security
when paying private individuals

Secure payment for alternative accommodation:
- Use a blockchain to store and verify the identities of host and guest.
- This information cannot be tampered with.
- Payment is automatically made through the blockchain.
- A smart contract ensures payment is made once certain conditions are met.
- Travel managers may be more relaxed about allowing private accommodation into preferred programs.

Save time
by simplifying expense management

Blockchain replaces expense reporting:
- Supplier issues a fully-itemized transaction record direct into the client company's accounting system.
- Payment is made centrally.
- The traveler is not involved at any point.
- The transaction is tamper-proof.

Save money
by encouraging considerate spending

Introduce peer-reviewed expenses:
- Expense claims are held on a blockchain, where all employees can view them.
- Transparency and peer pressure encourage more considerate spending among employees.
- Positive behavior is publicly recognized and rewarded.

Today | Tomorrow | Day after tomorrow

Sourcing | Policy | Comms | Duty of care | Payment | Performance

Bots and chatbots – Let's talk payment and expense

What it all means	**Bot** Software fulfilling an automated task.	**Chatbot** 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.	**Natural language processing** The area of artificial intelligence that helps computers understand and analyze human speech.

Bots and chatbots improve the way travelers communicate with their card providers and expense tools. Travelers and bots can communicate with each other, asking questions or passing on information. Bots can trigger payment after a booking is made or take care of refunds after cancellations. They also may be helpful when submitting expense reports.

Save time and money
using automated alerts

Tighten up payment and expense with bots that:
- Remind travelers it's time to settle their card bills or complete and submit their expenses.
- Alert travelers and traveler managers to unusual transactions or duplicate payments:
  – "Did you mean to pay for that taxi journey twice?"
  – "Date of receipt is outside the dates of travel."
- Advise travelers if their claim needs amending before submission.

Engage travelers
with simple messaging

Natural language processing means travelers can:
- Record an expense in an instant-messaging service like Slack: "I spent $30 on lunch"
- Ask for data: "Show my expenses for this week"
- Send a warning: "I don't recognize that expense"
- Seek help: "Why is my claim being disputed?"

Today   Tomorrow   Day after tomorrow

Sourcing	Policy	Comms	Duty of care	**Payment**	Performance

Virtual and augmented reality – See what you're paying for

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

Virtual and augmented reality offer enormous promise in the consumer payments world. Online shoppers, for instance, will be able to "walk" through virtual stores, look at (and even try out) products and then pay for them. This technology may seem of less relevance to business travel payment, but there are some cases where it could apply.

Engage travelers
with a more visual approach

Make booking and payment "fun" with virtual reality:
- A traveler books a flight by selecting an airplane that's flying across a virtual map.
- Payment is made by selecting the right credit card from a 3D floating wallet.

New saving opportunities
using virtual data visualization

Imagine data and reporting in 3D:
- Drill down into the detail.
- Visually analyze expenses by department or individual.

● Today   ● Tomorrow   ● Day after tomorrow

| Sourcing | Policy | Comms | Duty of care | Payment | Performance |

Internet of Things – Invisible payment on the move

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 (IoT) offers real potential by establishing links between an enabled environment or object and a smartphone or other computer. By confirming that a traveler has been at a certain location or used a particular service, the IoT can automatically authorize invisible payments for the traveler while making data much more visible for the travel manager.

Avoid overspend
by paying the right fare

Recommend ground transportation apps, which:
- Combine GPS location and credit card information in a traveler's smartphone.
- Calculate journey distance accurately.
- Automatically take payment from the passenger's card.
- Require the passenger to simply "tap and go".
- Provide full, accurate data visibility for employers.

Simplify payment
by using the traveler's own body

Biometrics: the ultimate in IoT
- Biometric recognition confirms a traveler's identity at points where payment is required, e.g. at hotel check-out.
- Payment is taken by scanning a microchip implant. This is already available to rail commuters in Sweden[1].

[1] The Independent, June 16, 2017

Save travelers time
by avoiding hotel check-in/out

Let the IoT automate the hotel experience:
- Travelers use their phone to check in and out.
- Payment is taken from the traveler's phone.
- A receipt is emailed to the traveler or sent direct to their expensing system.
- Credit card fraud is avoided.

Simplify expenses
for travelers driving on business

With an IoT-connected car:
- Actual mileage traveled feeds directly into the traveler's expense report.
- Rental payments can be based on actual time the vehicle is driven.
- Automatic payment can be taken for ancillary expenses, such as car parking, refueling or even drive-through food purchases.
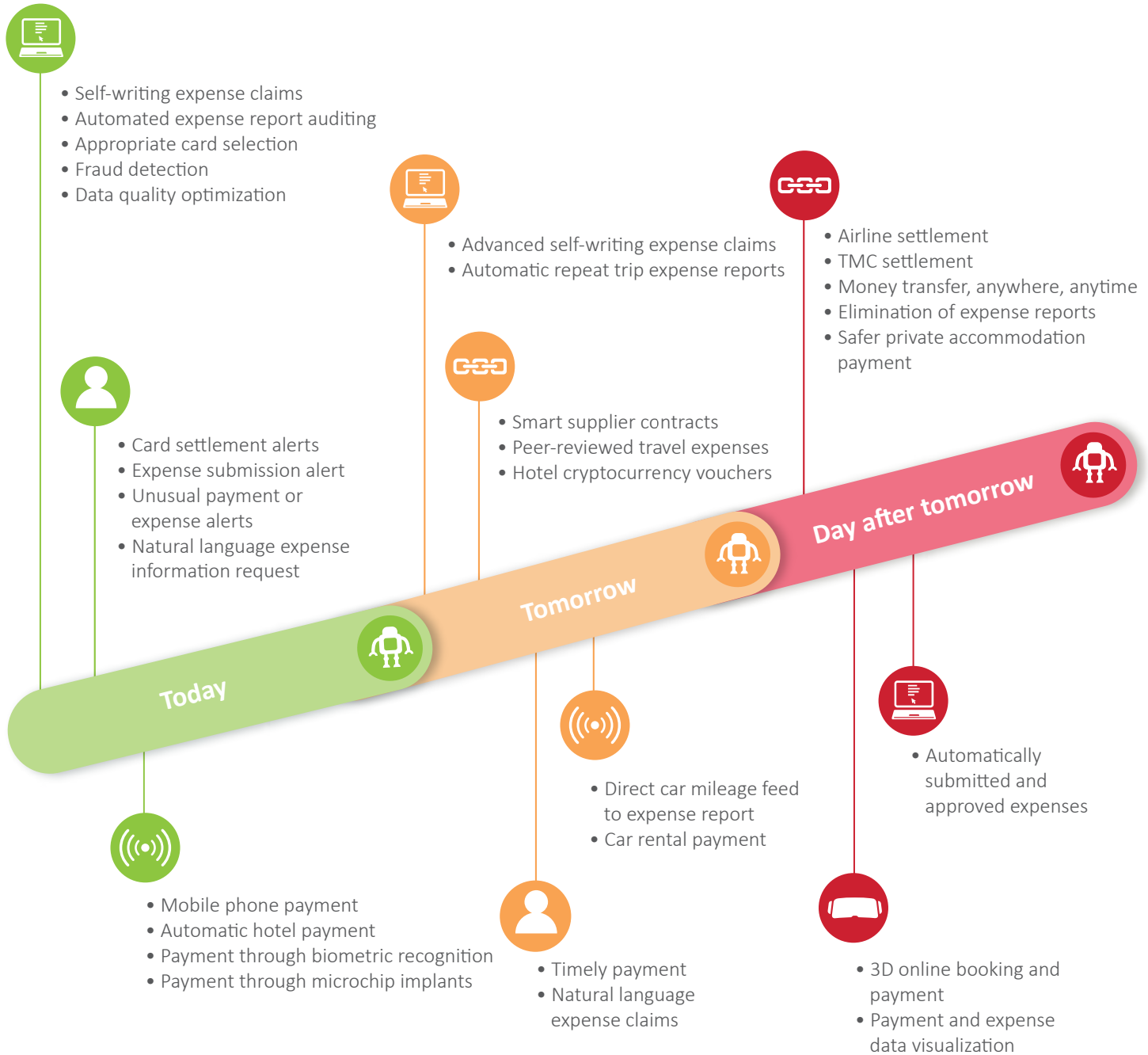
Today   Tomorrow   Day after tomorrow

Sourcing	Policy	Comms	Duty of care	Payment	Performance

How emerging technology can transform travel payment and expense

Today

- Self-writing expense claims
- Automated expense report auditing
- Appropriate card selection
- Fraud detection
- Data quality optimization

- Card settlement alerts
- Expense submission alert
- Unusual payment or expense alerts
- Natural language expense information request

- Mobile phone payment
- Automatic hotel payment
- Payment through biometric recognition
- Payment through microchip implants

Tomorrow

- Advanced self-writing expense claims
- Automatic repeat trip expense reports

- Smart supplier contracts
- Peer-reviewed travel expenses
- Hotel cryptocurrency vouchers

- Direct car mileage feed to expense report
- Car rental payment

- Timely payment
- Natural language expense claims

Day after tomorrow

- Airline settlement
- TMC settlement
- Money transfer, anywhere, anytime
- Elimination of expense reports
- Safer private accommodation payment

- Automatically submitted and approved expenses

- 3D online booking and payment
- Payment and expense data visualization

Legend

- Augmented and virtual reality
- Blockchain
- Bots and virtual assistants
- Internet of Things
- Machine learning

| Sourcing | Policy | Comms | Duty of care | Payment | Performance |

Challenges

Emerging technologies are revolutionizing corporate travel payment and expense. But the innovations they offer come with some challenges, too.

Blockchain

Blockchain sounds great in theory, but in practice it leaves some major obstacles to overcome:

- Financial transactions made through a blockchain rely on cryptocurrency conversion, but cryptocurrencies have so far proved highly volatile. Extreme fluctuations in value make many blockchain-based ideas unworkable for payment at present.
- It's unclear whether regulators would permit any payment systems based on blockchain instead of the global card industry's existing, well-regulated infrastructure. For example, cryptocurrency trading is banned in China.

Hype

FinTech innovation has attracted a lot of interest from investors. As they scramble to develop the next big payment solution, there's a temptation for some commercial ideas to be launched without being fully tested. Reputational damage could slow the progress of emerging technologies within the payment space.

Standards

It's not clear which way some new technologies are heading. There are several competing standards around the world relating to the Internet of Things, for example.

Security

When money is being transferred between two parties, it's paramount to protect the transaction from fraud. Any payment innovation will need to be fully risk-assessed before it can be accepted. For example, if you can use "smart" spectacles as a payment device, what happens if you lose them? How can you cancel payment or disable the device?

Corporate acceptance

Not all innovations that have found wide acceptance in the consumer world successfully make the transition to corporate payments. PayPal is one such example. There are a number of reasons for this:

- The corporate payment market is smaller than that for consumer payment, so innovators don't always see a return on investment in adapting their products for it.
- Corporate clients are reluctant to switch to new payment or expense management methods. Even migrating from static spreadsheets to online expense tools has taken decades. Ideas like a peer-reviewed expense blockchain may be too extreme for many.
- Financial governance rules also make companies very cautious about payment innovation.
- Companies need to ensure innovations meet their needs technically. For example, will a new tool be available through all devices used by its employees?

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Getting the best from technology

Take your time

- Lots of great ideas are emerging in payment and expense, but many aren't fully formed yet.
- There are significant technical, legal and other challenges to overcome.
- Time is on the side of travel managers: Existing payment options already meet clients' and travelers' needs fairly well. So, you can afford to take your time when considering what enhancements emerging technology can offer.

Don't delay either

- Now is the time to start investigating what new payment options are available and what's in the pipeline.
- Taking the pain out of expense management is one area worth taking a closer look at. Making life easier for travelers could make a surprising difference to talent recruitment and retention.

What will really help the business?

- Emerging technology is great at capturing the imagination, but novelty alone is not enough.
- When considering new payment and expense options, evaluate how they will genuinely help meet strategic company goals.
- Prioritize the innovations that save time, money or both.

It's time for strategic review

- Rethink every step of payment and expense before pursuing innovative solutions.
- For example, if accepting invoices directly from vendors instead of via employees, does the invoice amount have to be identical with what was pre-approved?

Where will this work?

- An innovation that offers benefits in one country might not be acceptable or workable elsewhere.
- Seek feedback on new ideas from across your organization. Data protection regulations vary around the world and may be an obstacle to innovation in some locations. Cultural differences could also impact the success of new approaches to payment and expense.

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About BCD Travel

BCD Travel helps companies make the most of what they spend on travel. We give travelers innovative tools that keep them safe and productive, and help them make good choices on the road. We partner with travel and procurement leaders to simplify the complexities of business travel, drive savings and satisfaction, and move whole companies toward their goals. In short, we help our clients travel smart and achieve more. We make this happen in 109 countries with almost 13,800 creative, committed and experienced people. And it's how we maintain the industry's most consistent client retention rate, with 2018 sales of US$27.1 billion. For more information, visit www.bcdtravel.com.