



Inspire Beyond Today's Technology magazine



“In the transition to a data economy one should be able to have faith in how organizations handle data.”

Jacques Platieu,
Country General Manager
IBM Belgium and Luxembourg

With innovation comes responsibility

This edition of IBM Inspire Beyond Today's Technology magazine is all about innovation that matters – to you as a business, a consumer, a client or an individual. Whether it's ensuring food safety, securing financial transactions, or experiencing a golf match in an unparalleled digital way: they all matter.

But we understand that with any innovation comes responsibility; organizations collect, store, manage and/or process valuable data in ways that require trust and responsible handling.

Leading the way to data responsibility

Today every interaction, transaction and product not only generates new data, but is also recorded in data, which contains untold value and untapped insights. Although individuals might easily share a payment request with their friends through an app, buy a book or order food, a lot of our data is shared with parties whose existence we are not even aware of. These parties enable other organizations to improve their existing services and products with smart algorithms, artificial intelligence and cloud platforms. New responsibilities arise with the introduction of such technologies, and two fundamental questions come to light: how can companies deal with data transparently, and who does this data belong to? You can read more about Data Responsibility at IBM on page 28.

A secure transition to a data economy

The public debate focuses on citizens, but the data exchanged by governments and business is also the subject of scrutiny.

→

At the same time, many organizations are becoming aware of possible implications when using the services of other parties. They safeguard the location where data is stored and take the required security and privacy measures.

Having the right skills

For organisations to responsibly disrupt industries and introduce innovations that matter, they need the right workforce. This is a topic clients and partners often discuss with me. As I commented in a blog for Knack.be a few months ago, working in the IT sector isn't a matter of having the right degrees, but one of having the right skills. At IBM we call this 'new collar'. The emphasis shifts to in-demand skills rather than specific academic degrees.

The social impact of digitization and industries' disruptions is not limited to skills; these changes can affect the values of our society. Throughout our history at IBM we have guided our clients from one era into the next. In the transition to a data economy one should be able to have faith in how organizations handle data. It should be done safely and transparently, and it is crucial to an economy that depends on technological innovation. To develop innovations that matter to the world and add value, handling data responsibly and ensuring your workforce has the right skills has implications that are part of the societal debate.

Trust in a data-driven economy is more important than ever, and dealing with data responsibly, safely and transparently is the foundation on which this trust is built.



Jacques Platieu
Country General Manager
IBM Belgium and Luxembourg

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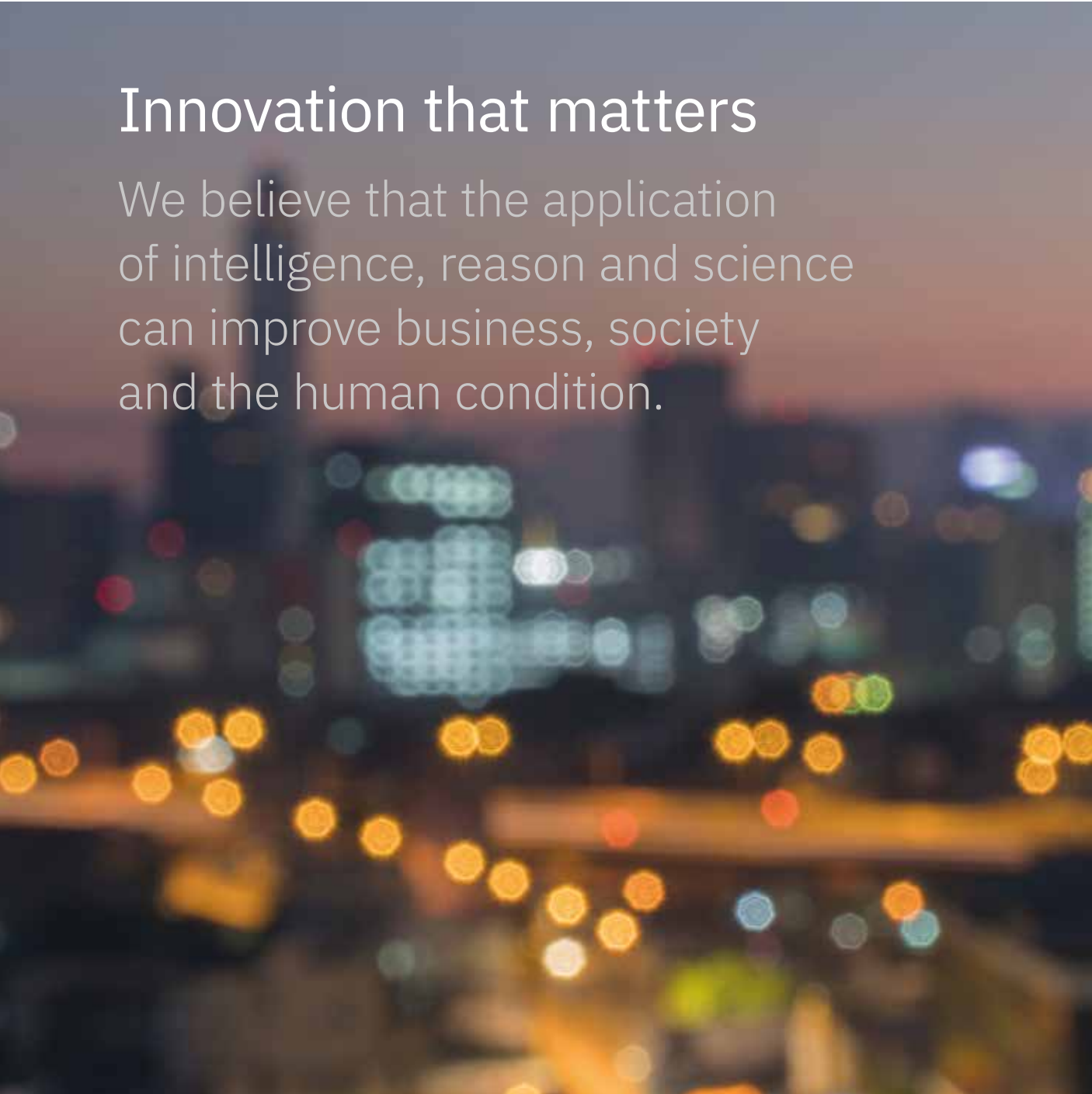
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I CAN FIND A BAD APPLE AMONG A BILLION IN JUST SECONDS.

With IBM Blockchain, companies like Walmart will be able to know where their food was grown and how and when it was shipped. Transparent supply chains help them spot food issues faster—so one bad apple doesn't become one big headache. Find out more at ibm.com/you
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Where did your bonbon come from?

Blockchain for food safety

1



Imagine eating a delicious chocolate bonbon, made from Swiss cacao, mascarpone from Italy, cinnamon from India and a host of other ingredients. How is it possible to guarantee the food safety of all of those ingredients and increase sustainability of the final product, the bonbon? This is a challenge — there are many stages between production, transportation and consumption, and globalization makes it even harder to keep track of it all. Blockchain technology helps improve food safety and sustainability for billions of people around the world. It can create transparency and trust in the food industry, while avoiding the unnecessary waste of precious food.

By Kitty Döppenbecker

“Blockchain can do for food safety what the internet did for communication.”

Louis de Bruin,
Blockchain Leader
Europe at IBM

The recent fipronil crisis proved how important it is to know what is in our food. Luckily, eating the contaminated eggs had no effect on our health, but the economic damage was huge – it even affected Dutch exports according to Statistics Netherlands (CBS). And it didn't do any favors to our already wavering trust in the food industry either. Blockchain offers a solution, says Louis de Bruin, Blockchain Leader Europe at IBM. “This technology can do for food safety, what the internet did for communication. It can make information accessible and transparent, and that's what our supply chain is lacking today. It tells you exactly where a batch of contaminated eggs has come from and where it has ended up, whether it's in an apple pie or a pudding.”

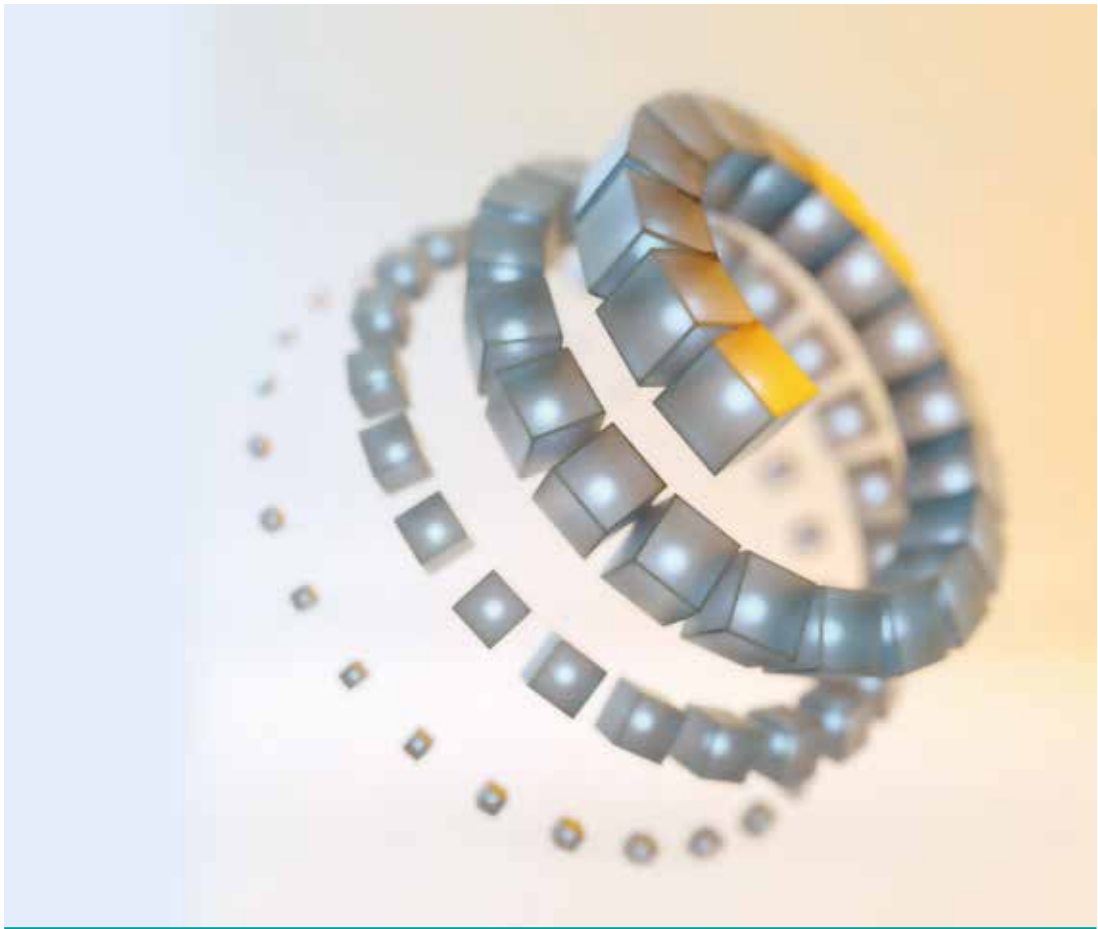
Information continuously available on a need-to-know basis

IBM and a number of big food manufacturers and supermarkets are currently examining the possibilities of applying blockchain in the food industry. De Bruin explains how the technology works. “A blockchain is a digital ledger, allowing all parties in a supply chain to share transactional data in a transparent way. All the data is stored decentralized in information blocks that are linked to each other,

hence the name. The information is continuously available, but strictly on a need-to-know basis. The data is encrypted; as a party in the chain, you only see what is relevant to you.”

Reliable information exchange

Once the data is in the blockchain, it can't be altered. This makes it a very reliable way of sharing information. However, the quality of the data depends on the parties supplying it. “Of course, you can't tell if someone is doing something he shouldn't, like using a banned pesticide on his farm. But it is very easy to trace a problem back to a specific link in the chain, this can even be done completely automatically. →





“It’s very easy to trace a problem back to a link in the chain.”

Louis de Bruin,
Blockchain Leader
Europe at IBM

So, the blockchain works preventively and I am sure the system will make food producers think twice about using questionable ingredients or applying untested practice as this can be traced back to them in a matter of seconds,” says De Bruin.

A lot of the data will also be captured automatically, by sensors connected to the Internet of Things. “Think of sensors in warehouses, measuring the temperature. Or sensors in trucks, feeding data to a transport blockchain that can be integrated with a food blockchain.”

Tracing a mango

De Bruin illustrates the speed and effectiveness of blockchain technology. “Say you have a mango in the fresh-food department of your supermarket and you want to trace its origin. What would normally take two months will take just two seconds using blockchain.”

All the links in the supply chain of the mangos are connected.

Everyone keeps data on the mangos in the digital ledger: where they are and what happens to them. “It begins with the farmer growing the mangos, labelling each crate he produces, and goes all the way up the supply chain. From the warehouse where they are kept, all through the company transporting the goods. And if part of the batch is used in other products, like juice or a fruit salad, you’ll be able to tell as well, because food processing companies are also included in the food-safety blockchain.”

Easier to take measures during major crises

According to De Bruin, blockchain technology can help prevent major crises in the food industry, while enabling it to react effectively if things do go wrong. “It’s much easier to take the necessary measures, because you can trace the source of a contaminated product so quickly. Within a very short period of time you can stop it from being distributed any further, limiting the spread of diseases and risks.”

Improving food safety is an important advantage of blockchain, but there is more to it than that. “You don’t have to waste large amounts of food anymore just to be on the safe side, while it also realizes savings on costly product recalls. And you can easily prove that the claims you make on your packaging are true, whether you’re

Award winning blockchain

Processing a claim for a stolen bicycle in just 3 seconds

If you ever had your bike or car stolen, you will know how frustrating and costly this can be. In 2015, over 30,000 vehicles and 25,000 e-bikes were taken by thieves, leading to a collective €10.5 million payout on claims that year by the country's three biggest insurance companies. The Dutch Vehicle Authority (RDW) asked IBM to help put a stop to the theft. Working closely together, they developed a proof of concept for the safe registration of e-bikes, tying the workflows of the police, RDW, and insurers together with blockchain technology. The e-bikes are equipped with a smart lock, registered by the store when a bike is sold. If a lock is forced, its GPS coordinates are immediately transmitted to the police, while at the same time the claim resulting from the theft is processed by the insurance company. The effort and time involved in processing the claim for a stolen bike is reduced from weeks of cumbersome interaction between the parties involved, to 3 clicks by the original bike owner with a clear result in just 3 seconds. The project was a great success, saving time and money for all parties concerned. It received the Award of the Year for Governmental Projects by the leading Dutch IT magazine *Computable* in October 2017. Parties involved are now working on making this solution available to the public nationwide.

Read more about this project (in Dutch) on:
<http://bit.ly/RDW-IBM-Computable>

Read more about the award winners (in Dutch) on:
<http://bit.ly/ComputableAwardsWinners>



manufacturing halal or kosher food or gluten-free products, or stating that you don't use genetically-modified crops. You can even keep data on your labor conditions, demonstrating that your business practices are sustainable."

A good thing for the food industry

IBM conducted a number of pilots with US supermarket chain Walmart in the past year and will continue its efforts on putting blockchain to work for the food industry in the time to come. De Bruin is convinced the technology will have a huge impact on the sector. "Refraining from participation will not be an option. First the big players will sit around the table and make arrangements. They will make demands on smaller players to apply blockchain as well." As the whole supply chain will be transparent, it will also be clear who's willing to share information, and who's not. "There is nowhere to hide; you will have to account for your practices. And that's a good thing. It's about time to join forces and get blockchain in our shops, regaining trust in the food industry for consumers." The ingredients of that tasty bonbon will all be traceable, giving end consumers and all players in the supply chain reliable information and the tools to take action, fast. ●

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Turning electric cars and household batteries
into distributed energy sources

Controlling weather-dependent renewable electricity production with blockchain

2



How can IT make our world more sustainable, save millions of Euros and improve customer loyalty and engagement? Europe is undergoing a widescale energy transition, replacing fossil fuels and nuclear power with renewable energy sources. TenneT is driving this transition for more than 41 million customers in the Netherlands and Germany by implementing a first-of-a-kind blockchain for energy. It enables a better integration of renewable energy sources into the grid, by using flexibility from widely-distributed devices such as electric cars and household batteries. The potential is huge.

By Kitty Döppenbecker

TenneT manages more than 22,500 kilometers of electrical grid and plays two pivotal roles as an electricity transmission system operator (TSO). First, it's responsible for long-distance transport of electricity within countries and across borders. Second, it has to guarantee a continuous supply of electricity by balancing supply and demand 24 hours a day.

More volatile grid

As renewable electricity generation accounts for a growing share in the overall power supply, the electricity grid is becoming more volatile. "Wind and solar power are largely weather dependent. There is a big impact if the sun does or doesn't shine, or if the wind does or doesn't blow. In the past we could easily rely on large power plants to give us a bit of extra power, or ask them to produce less in order to secure system balance," says René Kerkmeester, Digital Transformation Lead at TenneT. "It was a very predictable system," says Kerkmeester. "We also see much more volatility on the demand side than in the past. For example, we now have electric cars whose batteries need charging, but we don't know exactly where and when that power supply will be needed."



Re-dispatching energy

There's no surefire way to predict this fluctuating supply and demand, but TenneT must still balance the grid at all times. Often, there is a sudden increase in renewable energy production in northern Germany, as well as a rise in demand from industry and households in the south. Resulting grid congestions constrain the electricity to flow to where it is needed, requiring TenneT to curtail wind turbines in the north and to increase production from large coal or gas-fired power plants in the south. The cost of this process is now approaching 1 billion euros annually; these re-dispatch costs are passed on to consumers as part of the grid fee households pay in their electricity bills.

→



Sustainable approach: ‘crowd balancing’

‘Crowd balancing’ aims to source electricity from, and to store electricity in, decentralized, flexible units such as household electricity storage batteries and electric vehicles. However, before integrating these smaller electricity sources into the grid, TenneT realized that it would need to implement new technologies to support this change and solve two critical issues. Kerkmeester explains, “We needed a way to manage the electricity flow to and from these small, individual electricity sources. Furthermore, we needed a solution to accurately record and monitor those energy transactions to ensure they actually occur as reported, and to use that information as a basis for payment.”

First-of-a-kind blockchain implementation

TenneT found the technology to accomplish its goals in blockchain. Blockchain offers new possibilities to securely and intelligently manage flows of electricity in networks with decentralized, distributed energy sources. TenneT has embarked on a first-of-a-kind implementation of blockchain technology in the Energy & Utilities (E&U) industry in Europe together with IBM. The blockchain platform built by IBM is a distributed, permissioned ledger system that provides an immutable record of transactions communicated between TenneT and its energy partners with cloud technology.

Turning car batteries into distributed energy sources

In the Netherlands, TenneT is working on a blockchain project with Vandebron Energie B.V., a marketplace provider of renewable energy. Vandebron links small-scale energy producers such as farmers with energy-conscious consumers. Vandebron's (approximately 100,000) customers get their power from this marketplace with more than 120 local sources. Many of the company's customers also drive electric vehicles, charging them at their homes.

TenneT will draw power from the Vandebron electrical network to supplement the grid in times of highest demand. Participating Vandebron customers will make the capacity of their car batteries available as distributed energy sources to help TenneT balance the grid. The process will be transparent to the car owner, who will simply plug the car in to charge it, as usual. When TenneT needs to increase power in the grid, charging will briefly stop, and the car owner will be compensated for the interruption. The blockchain records each car's energy availability and every transaction in response to signals from TenneT.

Storing energy generated by solar panels

In Germany, TenneT is cooperating with sonnen GmbH, which manufactures and distributes home battery and energy-storage systems. →



“We needed to manage electricity flow from small individual electricity sources and accurately monitor energy transactions.”

René Kerkmeester,
Digital Transformation
Lead, TenneT



“Blockchain could potentially form the basis for a new European energy system, and become a standard for other European countries.”

René Kerkmeester,
Digital Transformation
Lead, TenneT



The sonnen batteries store energy generated by home solar panels or collected directly from the electrical grid when rates are lowest. Typically, homeowners use the stored energy from these batteries to power their home or sell it back to the electricity distributor when rates are highest.

For this project, sonnen has created the sonnenCommunity, a network of home energy storage systems that form a virtual energy pool for TenneT to tap into. The blockchain solution designed and developed by TenneT and IBM records the transfer of energy between the grid and the flexible devices, so that TenneT always has visibility into the pool of available energy and storage capacity. TenneT can then use the devices to absorb or discharge excess power in a matter of seconds when and where required, helping reduce transmission bottlenecks in the grid.

Lower electricity costs, higher earnings

This alternative to re-dispatch measures, particularly in areas of higher power demand, helps reduce the occurrence and associated costs of increasing the energy output of fossil-fuel or nuclear power plants. It also helps increase the use of renewable energy by reducing the need to curtail wind energy generation at times of insufficient transport capacity. Homeowners benefit from lower



electricity costs and can earn money each time they provide power to the grid. The process is transparent to the homeowner, and the blockchain ledger helps ensure transaction accuracy and transparency between sonnen and TenneT.

Increasing customer loyalty

The blockchain technology enables TenneT to facilitate and trust the thousands of recorded transactions in the secure ledger. In both projects, the partner companies manage their networks of distributed devices and their relationships with their customers. TenneT interacts with Vandebrom and sonnen to set prices and manage payment transactions to the companies. In this way the energy partners, rather than TenneT, manage the relationship with the end consumer.

The expectation is that sonnen and Vandebrom will acquire more customers and increase customer loyalty and engagement as more citizens decide to participate in this crowd-balancing initiative. TenneT also anticipates that positive results from its initial blockchain implementations with sonnen and Vandebrom will encourage other energy companies and aggregators to enter the new crowd-sourced energy market.

→



Standard for Europe

Through its crowd-balancing projects in Germany and the Netherlands, TenneT is paving the way for consumers across Europe to participate in the energy transition from fossil fuels to renewable energy. “We believe that blockchain could potentially form the basis for a new European energy system, and become a standard for other European countries,” concludes Kerkmeester. ●

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Developer

Fully operational humanoid robot ready in weeks

BRUce Pepper helps passengers find their way at Brussels Airport

3



How do you build a fully operational humanoid robot in only eight weeks? Brussels Airport Company and IBM took on this challenge at the Hack Belgium 2017 innovation festival held at the beginning of May. By the end of June BRUce Pepper, the robot, joined the airport crew to help passengers in the airport. Perfect timing for the summer rush – the first weekend of the holidays when 232,000 passengers were expected. He returned for Christmas, and will continue his services at Brussels Airport in the future.

By Kitty Döppenbecker

At which gate should you board? Where are the nearest restrooms? And where can you find a nice restaurant to have a bite to eat before getting on the plane? BRUce Pepper has the answer to your questions when travelling from Brussels Airport. After reading your boarding pass, the smart little robot gives you all the information and practical tips you need – in three languages, on screen and in speech. He can even tell you what the weather will be like at your destination. BRUce Pepper is also always up for a fun game. And if you like, he'll take a nice selfie of the two of you together and post it on social media for you.

Working prototype in three days

BRUce Pepper is the result of the cooperation between Brussels Airport Company and IBM at Hack Belgium held from May 4th to 6th in Brussels, using a humanoid robot from Softbank Robotics. During the three days of the innovation festival they built a working prototype that was developed into an operational model in the weeks following the event.

“Our condition for participating in the project was to have BRUce Pepper ready for the start of the holiday season, the last weekend of June,” says Geert Lambrechts, ICT Project Manager at Brussels Airport Company and one of the initiators of the project.

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“People were genuinely impressed. Families with younger children, but also business travelers and baby boomers, all liked BRUce Pepper.”

Anja Paermentier,
ICT Project Manager,
Brussels Airport Company



“An API lets
BRUce Pepper
extract flight
data from our
systems in
real-time.”

Geert Lambrechts,
ICT Project Manager,
Brussels Airport Company

It left the development team with only eight weeks to do the job. Not the least of their challenges, as robotics is a new technology, and until then the team had little experience with it.

Quickly decide on the feasibility of ideas with the user in mind

An agile way of working and design-driven approach let the team meet the summer-rush deadline. Based on the IBM Design Thinking development framework, they worked in sprints of one week at a time. Lambrechts: “What makes the IBM Design Thinking approach so powerful, is that it puts the user of the application you’re developing at the center of everything you do. We used the imaginary persona of Anna, her husband and two children as a reference.” The framework also helped to determine the project’s scope. “Our team came up with all kinds of ideas for using BRUce Pepper at Brussels Airport. IBM Design Thinking helped us quickly decide what ideas would be feasible and useful for optimizing the customer experience of Anna and her family,” says Lambrechts.

Easy-to-use APIs with a fun factor

BRUce Pepper is a custom-made application, integrating an API (Application Program Interface) from Brussels Airport Company’s own ICT department with APIs from IBM Cloud. “We made an API available to the development team that lets BRUce Pepper extract flight data from our systems in real-time. This data changes day by day, hour by hour,” explains Lambrechts.

The team applied various easy-to-use APIs available on IBM Cloud. They let BRUce Pepper scan boarding passes, take pictures and upload them to Facebook, and give real-time weather information. BRUce Pepper gets his weather data directly from the Weather Company, the world’s largest private weather enterprise and part of IBM. Lambrechts: “It’s a real fun factor, even if the prospects are not ideal. BRUce Pepper brings you the news in his own playful way.”

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“IBM Design Thinking helped us quickly decide what ideas would be feasible to optimize customer experience”

Geert Lambrechts,
ICT Project Manager,
Brussels Airport Company



“We are now considering how we can optimize the use of BRUce Pepper, adding artificial intelligence features like face or voice recognition.”

Anja Paermentier,
ICT Project Manager,
Brussels Airport Company

Impressing passengers

Brussels Airport Company monitored the way passengers interacted with BRUce Pepper all through the summer holidays. “We wanted to know how they would react to the robot. Whether they would be willing to use BRUce Pepper and listen to it, or would walk away in the middle of their encounter with our new digital assistant,” says Lambrechts’ colleague Anja Paermentier. She is currently leading the robotics project at Brussels Airport as an ICT Project Manager.

The sympathetic and helpful digital assistant turned out to be a great success. Paermentier: “People were genuinely impressed. Families with younger children, but also business travelers and baby boomers, all of them liked BRUce Pepper.”

Increased interaction

BRUce Pepper returned to Brussels Airport last December for the Christmas holidays, his capabilities extended. Paermentier: “One of the things we did is create more interaction between the robot and our passengers. Now if he hears voices around him, he will respond

BRUce Pepper at Brussels Airport press conference on June 28th 2017, with Tim Vanderhoeven (IBM), Geoffroy Gillis (IBM), Jim Hulderts (IBM), Geert Lambrechts (Brussels Airport Company), Dirk Somers (Brussels Airport Company), Ludovic Bonivert (IBM), Zoe Mesman (IBM) and Huu Quand Nguyen (IBM).



and welcome people.” BRUce Pepper was also equipped with a smartphone for scanning boarding passes, where previously the flight number had to be inserted manually. “We left this feature out in our first production version, because we wanted to make sure it worked flawlessly,” says Lambrechts. The smartphone is also used to take the selfies that BRUce Pepper will share on social media.

Further improving customer experience

To gather customer data for analytics purposes, BRUce Pepper’s Christmas iteration invited passengers to play a game and rewarded them with a special gift. “This lets us further improve the customer experience at Brussels Airport, one of our strategic goals,” says Paermentier. “We are now considering how we can optimize the use of BRUce Pepper to help us achieve that goal, adding artificial intelligence features like face or voice recognition.” BRUce Pepper is definitely ready, willing and able to support Brussels Airport Company in any way he can. He will be back at the airport in 2018, informing, engaging and entertaining passengers. ●



Digital transformation of Brussels Airport Company

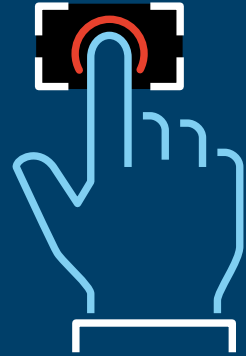
Keen to learn more? Read the views of Bart Saverwyn, Chief Digital Officer of Brussels Airport Company, to see how developers and the latest technologies will lead the airport through its digital transformation. Visit the digital version of this article, at ibm.com/inspire/developer

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Data Responsibility @IBM

IBM believes organizations that collect, store, manage or process data have an obligation to handle it responsibly. That belief—embodied in our century-long commitment to trust and responsibility in all relationships—is why the world’s largest enterprises trust IBM as a steward of their most valuable data. We take that trust seriously and earn it every day by following these responsible principles and practices:



1. Data Ownership and Privacy

OWNERSHIP: We believe that our clients’ data is their own, and that government data policies should be fair and equitable and prioritize openness. Our client agreements are transparent; clients are not required to relinquish rights to their data—nor the insights derived from that data—to benefit from IBM’s solutions and services.

PRIVACY: IBM is fully committed to protecting the privacy of our clients’ data. While there is no single approach to privacy, IBM complies with the data privacy laws in all countries and territories in which we operate; we support global cooperation to strengthen privacy protections.



2. Data Flows and Access

FLows: We believe clients, not governments, should determine where their data is stored and how it is processed. IBM therefore supports digital trade agreements that enable and facilitate the cross-border flow of data and that limit data localization requirements.

ACCESS: IBM has not provided client data to any government agency under any surveillance program involving bulk collection of content or metadata. We do not provide access to client data stored outside the lawful jurisdiction of any government requesting such data, unless the request is made through internationally recognized legal channels such as mutual legal assistance treaties (MLATs). If we receive a request for enterprise client data that does not follow such processes, we will take appropriate steps to challenge the request through judicial action or other means.

[more>](#)



3. Data Security and Trust

ENCRYPTION: IBM opposes any effort to weaken or limit the effectiveness of commercial encryption technologies that are essential to modern business. IBM does not put ‘backdoors’ in its products for any government agency, nor do we provide source code or encryption keys to any government agency for the purpose of accessing client data. We support the use of internationally accepted encryption standards and algorithms, rather than those mandated by individual governments.

CYBERSECURITY: IBM believes in public-private partnerships and voluntary, real-time sharing of actionable cyber threat information between government, business and academia to collaboratively prevent and mitigate cyber attacks.



4. AI and Data

We firmly believe that artificial intelligence cannot and will not replace human decision-making, judgment, intuition or ethical choices. Companies must be able to explain what went into their algorithm’s recommendations. If they can’t, then their systems shouldn’t be on the market. IBM

therefore supports transparency and data governance policies that will ensure people understand how an AI system came to a given conclusion or recommendation. As society debates the implications of AI systems, IBM opposes efforts to tax automation or penalize innovation.



5. Data Skills and New Collar Jobs

IBM is leading efforts to ensure workers worldwide are prepared for data-driven changes that are reshaping how work gets done, and that are driving productivity, economic growth and job creation. We

are working with policymakers to modernize education systems to emphasize in-demand skills rather than specific academic degrees, preparing more workers for new collar jobs.

ABN AMRO and innovative technology in the Port of Rotterdam

Shipping containers: from black box to glass box

4



An almost unimaginable number of shipping containers travel the world each day. Just through the Port of Rotterdam, millions of Europeans are supplied with the various products they carry. What if these containers could provide us with information about their whereabouts and content in real-time? And what if all this information could be shared safely and reliably, by all supply chain partners? This would result in greater financial control and less paperwork, enabling all sorts of new business models. Internet of Things and blockchain technology can make it happen — and ABN AMRO is taking the lead.

There are many things worthwhile knowing about a container and its content. Is it carrying everything it should be? How's the air humidity? What is the temperature on the inside and on the outside? "Say you have a container with deep fried meat, being shipped from South America to Europe. If you know how its journey went, this will mean you have an idea about the quality and the value of the goods being transported. As a trade bank, this is very important to us and to our clients. The goods are our collateral. The more data we have, the more accurate we can assess our risk — optimizing our offer and expanding our business," says Arnout Buschenhenke, Business Development Manager at ABN AMRO Commercial Finance Holding.

From black box to glass box

As one of the biggest trade banks in the Netherlands, ABN AMRO is constantly looking to improve supply chain finance with technology and data. Part of its latest initiatives stems from the Beyond Banking hackathon the bank organized last spring. Buschenhenke: "One of the challenges was to help us get shipping containers online, turning them into a glass box instead of a black box. IBM came up with a solution to equip the containers with sensors gathering Internet of Things (IoT) data on its condition, location and status, and sharing this through the global platform for trade digitization that it is currently developing with shipping company Maersk. →

By Kitty Döppenbecker

“The goods
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Arnout Buschenhenke,
Business Development Manager,
ABN AMRO
Commercial Finance Holding

“Blockchain technology makes the logistic process transparent for all value chain partners and speeds up the administrative process.”

Arnout Buschenhenke,
Business Development Manager,
ABN AMRO
Commercial Finance Holding



It applies blockchain technology to make the logistic process transparent for all value chain partners, from sellers, buyers and carriers to insurers and banks, while speeding up the administrative process.”

Clarity every step of the way with the ‘smart container’

A prototype of the first ‘smart container’— a co-production between ABN AMRO, Maersk, technology company Corevision and IBM — was presented at the World Port Days in Rotterdam, last September. A combination of LoRa (long range low power) and ultrasonic communication technology enables gathering data from all the containers on a ship, even when there’s thousands of them — the biggest Maersk ship today carries no less than 22,000 containers. Buschenhenke: “All the data will go to the digital platform by satellite, where each individual container can be followed around the world. So, if a container is left out on a quay for days in the blazing sun, you will know. There will be clear information on what’s happened, who’s responsible, every step of the way. That’s the power of blockchain: each piece of information is there for everyone to see, and it can’t be changed by a single party. There’s a single version of the truth.”



Reducing paperwork from 40 days to 23

The smart container solution can make the administrative trading process far more efficient. “Shipping goods from Shanghai to Rotterdam takes 23 days, the paperwork takes 40. We want to bring these numbers closer together. Take the bill of lading, determining the ownership of the goods. Currently it’s either faxed or sent by post, requiring all kinds of stamps. With blockchain it’s simply in the system, saving a lot of time spent on physically exchanging trade documents,” says Buschenhenke. There’s also a big efficiency gain in custom procedures, and that’s not just from less document handling. “If a container door was closed in China, and sensor data tells you that it wasn’t opened during the journey, then why would you check the content again on arrival in Rotterdam? This kind of control will no longer be necessary.”

→

“The prospects are promising, speeding up the value chain will boost trade and our economy.”

Arnout Buschenhenke,
Business Development Manager,
ABN AMRO
Commercial Finance Holding

Set up an Uber for containers

For ABN AMRO, the project opens the door to new business models. Buschenhenke: “A host of things spring to mind. Dynamic risk pricing is one of them. For example, if a container on a ship is standing askew, there’s a bigger chance that the content will get damaged. And a ship carrying wood has a much smaller risk of being hijacked than a ship with computers. We can take it all into account when determining our prices.”

Another opportunity for the bank lies in developing all kinds of customer apps based on the IoT data. From a ‘risk as a service’ app, enabling trading partners to determine the risk of a trade deal, to apps that speed up their business processes and give them more control over it. “Imagine knowing exactly when your trucks need to pick up containers in transshipment. Or being able to adjust the amount of ethylene in a container in the middle of the ocean, for the perfect ripening process of your bananas. It’s even conceivable to set up a kind of Uber to get your containers home instead of transporting them yourself.”

Creating an economic boost

At an IBM Design Thinking Workshop during the World Port Days, ABN AMRO customers were invited to share their thoughts on the smart container concept. Buschenhenke: “They were really enthusiastic about





the possibilities, and would like to see it extended to truck transport to improve the efficiency of the supply chain further down the line.” For now, the next step for ABN AMRO and its project partners is a pilot at sea. “We need to determine how we can use the data that we collect for the benefit of our customers. Together with them, we can then work out our financial proposition. There are still some technological and business challenges to tackle, but in a year or so we will be ready to take that step. Meanwhile, we are looking for more partners to take on this initiative, mainly in the logistics sector. The prospects are promising, speeding up the value chain will boost trade and our economy.” ●

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Cyber security starts in primary school

The KIVI-0070Lab: closing the security skills gap for a safe digital society

5



ICT is all around us, and this involves a number of risks. How do we keep our society, data and infrastructure safe? An alarming shortage of security professionals presents a threat to our cyber safety. The same goes for human behavior: we prove to be the weakest link in the security chain. The Dutch engineers' association KIVI and IBM have joined forces to turn the tide. KIVI's recently-opened 0070Lab in The Hague offers a unique environment, to raise awareness, train future security talents and develop joint educational plans.

The professional engineers' organization KIVI ('Koninklijk Instituut Van Ingenieurs') was established back in 1847. Although having been active for 170 years, KIVI is very much alive. It has a clear view on the future of our society and the vital role engineers of all disciplines need to play to make it as strong and safe as possible.

"ICT is an integral part of any engineer's job and of the world we live in," says Micaela dos Ramos, Executive Director of KIVI. "It doesn't matter whether you're designing a surgical robot or a smart intersection directing traffic automatically, you have to deal with big data and ensure cyber security. We want to support the professional development of engineers and help them address these important topics, by encouraging and enabling education and knowledge-sharing."

Addressing shortage of security professionals

KIVI aims to achieve its targets in close interaction with other social groups, like corporations, governmental organizations and educational institutions. In this context it is working together with IBM to help address the security skills gap that we face. According to a worldwide study, we will lack 1.8 million security professionals by 2022. This is a 20 percent increase since 2015. Other research shows that in Europe today, almost a third of all European cyber security job openings remain unfilled. Another prediction is that in 2022 we will be short of 350,000 security professionals as a result of the introduction of GDPR.

By Kitty Döppenbecker

"We want to create a platform for cooperation and knowledge exchange on big data and cyber security."

Micaela dos Ramos,
Executive Director of KIVI

“Closing
the security
skills gap
is essential
to our
society. ”

Micaela dos Ramos,
Executive Director of KIVI



Experimenting with the latest technologies

Last October KIVI added a completely new initiative to the conferences, lectures, coaching and other activities it traditionally organizes: the 0070Lab. This groundbreaking ICT lab, equipped with the latest technology, is located in the attic of KIVI's monumental office building in the heart of Dutch city The Hague. Dos Ramos: "It's a very exciting and attractive place, where people can experiment with new technologies in many different ways. They can play games, develop applications or experience what it's like to be hacked, learning hands-on about a whole range of cyber security and big data topics."



Big data and the cyber security community

The KIVI-0070Lab is directed not just at KIVI's own members, but at a much broader audience. "Our goal is to create a real community, a platform for cooperation and knowledge exchange on big data and cyber security. Corporates, start-ups, students, teachers, we want to bring people together to create awareness and build new solutions together," says Dos Ramos. Such a community will also help engineers design better products. "They need to listen carefully to what people are saying and feeling, so as to understand why some products will work and others won't. The lab enables engineers to engage people better in their projects and plans."

80 percent of all data breaches arise from human error

IBM is one of KIVI's partners in the 0070Lab. "Our focus lies on cyber security: we want to share as much knowledge as we can on the subject, at every level," says Erno Doorenspleet, Executive Security Advisor Europe at IBM. He sees the lab as a stepping stone, educating young and old on the risks of cyber space. "Research shows that 80 percent of all data breaches arise from human error. People simply don't know what they are doing wrong, and they need to learn how to act safely – the sooner, the better. It starts in primary school."





“KIVI's 0070Lab is a playground, where you can learn from experience instead of taking in theoretical knowledge.”

Erno Doorenspleet,
Executive Security Advisor
Europe at IBM

Learning from experience in a challenging environment

What makes the lab really special is its challenging and inviting atmosphere. Doorenspleet: “It’s a playground, where you can learn from experience instead of taking in theoretical knowledge. Think of building an app together, with all the necessary security features included. Sharing the knowledge of an expert in application and vulnerability scanning. Or integrating the new European data protection legislation, GDPR, into a new application right from the start.” Each session can be tailored to the group’s level and needs, from a workshop to a game or a hackathon.

High social relevance

Warner Dijkhuizen, IBM Corporate Citizenship Manager, emphasizes the social relevance of the KIVI-0070Lab. “ICT has entered into every vein of our society, sometimes unnoticed, sometimes clearly visible. Citizens need to be better informed and more aware of the consequences. Children must learn digital skills like finding and judging information on the internet at a young age. Other skills, like what information you provide or what links you click on, are essential for people of all ages. 0070Lab is a place where experts come together to put their theoretical knowledge into practice and to give teachers inspiration for their lessons with live cases.”

Collaboration needed at all levels

KIVI and IBM are considering more ways than the 0070Lab to cooperate on educating people about cyber security. “We want to develop educational programs and teaching materials together. For example, right now we’re talking about developing a minor and a master study in security with two colleges in the Netherlands,” says Doorenspleet. Increasing collaboration between all parties concerned is required, he adds. “If we want to take cyber security knowledge to a higher level, we must work together in every possible way – including from a technological perspective. Together we can shape the future.”

Dos Ramos: “Closing the security skills gap is essential to our society. It is yet another reason for us to start the 0070Lab. IBM’s expertise, experience and solutions are very valuable for achieving this goal. It’s a very exciting project,” she concludes. ●



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Professor Geert Hofstede: Inspired by the wellbeing of employees

Diversity determines how successful a company is

6



How do you cope with uncertainty in your professional and personal life? What about equality? And are you focused on the past, the present or the future? It's all part of your national culture, says Professor Geert Hofstede. People from different countries think, feel and act differently. Understanding and applying this cultural diversity is vital for your organization's success. In the 1960's Hofstede laid the foundation for his Cultural Dimensions theory while working at IBM. It was adopted by many companies throughout the world in the last three decades as 'industry standard' and it's now more relevant than ever.

By Kitty Döppenbecker

Last fall, although already far in his 80's, Hofstede was invited to speak about his Cultural Dimensions theory at IBM's Benelux office in Amsterdam, for the 10th anniversary of the IBM Corporate Service Corps. It was kind of a homecoming. With his Ph.D. in organizational behavior, Hofstede worked at IBM on personnel research from 1965 to 1971. Following the example of IBM's US organization, he was asked to set up an employee opinion survey program for all its national European subsidiaries. "This was really exceptional at the time. IBM's CEO Thomas J. Watson was very concerned with the wellbeing of his employees."

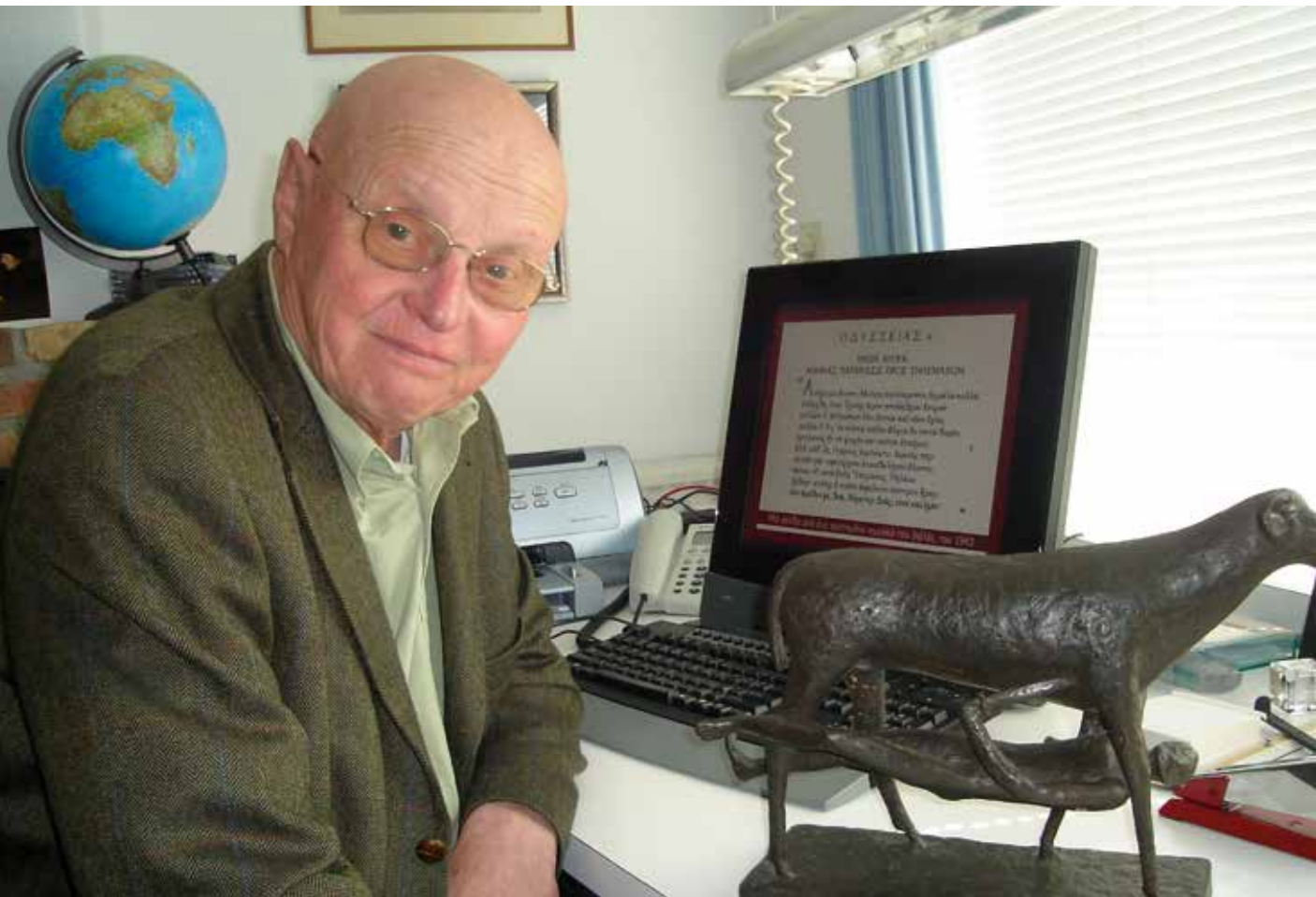
Standard reference work on national cultures

Hofstede was even granted an IBM award for realizing the so-called International Opinion Survey Program, the first time ever for a non-technical innovation. The program would afterwards play a key role in Hofstede's discoveries about the importance of national cultures in people's thinking, feeling and acting. While teaching at a business school in Switzerland during a sabbatical year, he started analyzing and enriching the data, which led to building his worldwide acknowledged theory.

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After this sabbatical, Hofstede pursued a research career outside of IBM, focusing his study on how values in the workplace are influenced by culture in an academic setting. He published his first manuscript in 1980, followed by a popular publication in 1991 called 'Cultures and Organizations: Software of the Mind'. The book grew into to a standard reference work for the international business world. The various editions of this book appeared in 21 languages; they were translated into 20 other languages.

Professor Geert Hofstede



The value of understanding national cultures

Now what exactly is the problem with national cultures? And why is it so important to address this? We tend to think our way of doing things is the right way, and sometimes ignore or lack interest in how others feel and think, says Hofstede. “We underestimate the cultural differences between nations. It’s a pitfall when doing business or working together with people from other countries.” Among the better-known examples of such cultural differences are the different approaches East and West take to thinking over the longer and shorter term, their different attitudes to communicating directly and indirectly, and the extent to which face retention is important in negotiations. Hofstede: “If you want to succeed in a multinational environment, you need to be aware of such differences, and learn to recognize and understand them. You must listen to each other and deepen your insights. It’s a matter of changing your attitude and training.”

Bridging natural culture gaps

Hofstede’s Cultural Dimensions theory provides organizations with a framework to help bridge national culture gaps. It originally consisted of four dimensions: the distance to power, individualism versus collectivism, uncertainty avoidance, and masculinity versus femininity. In later years, two more dimensions were added: long-term versus short-term orientation, and indulgence versus restraint. Hofstede: “Of course, the world is endlessly more complex than these six dimensions, but they offer an aid to discover and comprehend national culture differences.”

Setting the example as a multinational

Since its founding, IBM has always had a global footprint. When Hofstede was working there in the late sixties, it set the example for how multinational companies should operate. “The subsidiaries had local management, with employees from different nationalities working closely together. National culture was even considered when fulfilling certain positions. →

“If you want to succeed you need to be aware of national culture differences.”

Professor Geert Hofstede



“We tend to think our way of doing things is the right way, and sometimes ignore or lack interest in how others feel and think.”

Professor Geert Hofstede

For example, because the Swiss are generally good at international communications they can be ideal candidates for jobs where that matters.” IBM’s cultural diversity has contributed to its success, says Hofstede. “Things don’t necessarily work the way you’re used to in your own culture. You need to understand the country you’re doing business with and take a different approach. Multicultural teams are better at that.”

Corporate Service Corps: a tool to open the minds of employees

Today, IBM is represented in no less than 70 countries. Hofstede is happy to see that diversity is once again high on the agenda. “IBM’s Corporate Service Corps is a great example of that.” This global pro bono consulting program, in short CSC, was launched in 2007 by IBM to become a more globally integrated company. It was created as a tool to open employees’ minds to the demands and constraints of working in a globalized world. It facilitates this using direct interaction with geographically and functionally diverse teams that work in resource-limited environments.

Since its inception, CSC has grown to be the world’s largest corporate assistance program. Each year, teams of up to 500 of some of IBM’s most talented employees are sent to developing countries to help tackle issues that intersect business, technology and society. Together, they completed over 4,000 projects to the benefit of local communities and their own personal development: innovation that matters.

Ask yourself: How do I become a world citizen?

Though times are rapidly changing, Hofstede is convinced that his Cultural Dimensions theory will remain relevant. “Take the fast-technological developments. Many children may have a smart phone or a tablet, but how they use it still varies country by country. In some countries, people will use a social platform like Facebook to connect to as many persons as they can, while in others they will stick to their own small group.” Other dimensional changes are felt

in all countries. “For example, the distance to power is decreasing everywhere, while individualism is increasing.”

For Hofstede, only one thing really matters. “Inspired by Thomas J. Watson’s concern for improving the wellbeing of IBM’s employees, I hope my contribution may help nations with different cultures to build a common world, encouraging world citizenship instead of nationalism. How to be a world citizen: that’s the question we should all ask ourselves.” ●

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KLM Open app

Rethink the way customers interact with your brand

7



The digitalization game is on: how customers experience your product or service is becoming as important as the product or service itself. The KLM Open app, designed for visitors of the Dutch KLM Open golf tournament, is a great example of that. It shows how a combination of mobile, real-time data analytics and other innovative technologies can transform the way customers interact with your brand. And there's more to gain than customer engagement and increased revenue.

By Kitty Döppenbecker

The KLM Open is one of the oldest golf tournaments in Europe and part of the prestigious European Tour. Last September, the 98th edition of the 4-day golf tournament took place at The Dutch golf course in Spijk. It was not that long ago that spectators at the tournament used hand-written booklets or checked out the manually updated leader boards along the course for the standings. Finding and following the action on an 18-hole golf course and across more than 8 square kilometers on foot was quite a challenge. IBM, together with the promotor of the KLM Open TIG Sports, developed an innovative mobile app to transform the spectator's visit to the tournament into the ultimate golf experience.

Real-time game experience

The app gives visitors to the Dutch Open instant access to a fully interactive map of the golf course. It also gives a rundown on the players and their scores. They can locate the flights and players, at any moment, based on data automatically provided over the internet by the GPS trackers of each player's team. By zooming into a specific hole, a detailed overview of the players, such as their real-time status of play and ranking, is provided. For this purpose, the scores of the players are entered into a mobile device by officials accompanying the flights. →





This is then combined with historical data from the European Tour that is stored in the United Kingdom. All this data is continuously aggregated, cleaned, analyzed and made available through IBM Cloud, offering golf fans real-time insight.

Increasing number of fans

Providing the right information at the right time enables the golf fans to get the best out of their KLM Open visit. They can decide where to go to see the best part of the tournament and do not have to worry about missing any play. Spectators can even take it all in from the terrace of The Dutch's restaurant. The app allows them to follow all flights on the course on demand, as many as 50 simultaneously. Live radio streaming adds an extra dimension to their experience. An increasing number of golf lovers have come to appreciate the KLM Open app. The first edition of the app, introduced in 2015, was downloaded by 7,500 people. That number almost doubled to 14,000 in 2016. While last year more than 20,000 people downloaded the KLM Open app on their mobile.

Think out-of-the-box

Re-envisioning the customer experience asks for out-of-the-box thinking. The KLM Open app was built by a team of experts from multiple disciplines: mobile architects and developers as well as designers and marketers. They used IBM Design Thinking, an agile development framework that focusses on what users really want, from ideas to outcomes. In close cooperation with TIG Sports, the development team ensured that the app addressed the needs of the golf fans. While rebuilding the 2016 app for the new tournament, they made it as intuitive as possible. In only seven weeks' time, they managed to deliver a fully operational and easy scalable app with limited means based on the ready to use software building blocks (API's) available in IBM Cloud. Last year, the successful project was rewarded with a nomination in the category innovation for the Dutch SpinAwards for creativity in interactive communication. The KLM Open app made it all the way to the finals. →



The KLM Open app demonstrates how employing technologies such as mobile and real-time analytics can enhance customer engagement.



With a great design and end-to-end technology, you don't need to reinvent a traditional game to reinvent the experience.

Personalize relationships at scale

The KLM Open app clearly demonstrates how employing technologies such as mobile and real-time analytics can enhance customer engagement. This helps drive revenue by attracting new and retaining existing customers. However, these types of capabilities should not just be restricted to these purposes. They can also be used to replace infrastructure, streamline processes and enable personalized relationships at scale without high cost. Imagine a company like Netflix being able to deliver media with an almost unlimited assortment and unparalleled personalization, all at a price far below many cable competitors. Or a bank, where you can sign up for an account in minutes through a mobile app.

Cost benefits

Cognitive computing is another horizon that will accelerate this digital transformation trend. It is enabling companies to re-think the role of non-human channels, by allowing all channels to be “human-like” and even tailored to individual customers’ desires. For example, cognitive can guide people through complex decisions, such as choosing tax efficient investments, using natural language to learn about and advise the customer, all while considering an exhaustive set of options. For large companies, this can drive significant cost benefits

while actually improving customer satisfaction. Cognitive technology can be easily integrated in mobile apps, like that of the KLM Open.

New frontier in customer experiences

Digital opens up a whole new frontier in delivering great customer experiences and having customers interact with your brand, often without the associated high cost of the past. The KLM Open app is a perfect example of that, helping transform some of the drawbacks in being a golf fan into true fan empowerment. It shows that with a great design and end-to-end technology, you don't need to reinvent a traditional game to reinvent the experience. ●



KLM OPEN 2017
18 HOLES | 1 APP

#KLM OPEN

Map
HOLE 8
HOLE 9
32

FLIGHT 22
Scheepmaker, Wouda & Co.

Pos.	Name	Score
T1	Jens LUYTEN	-4 0 0 >
T1	Thomas FRETZKE	-1 0 0 >

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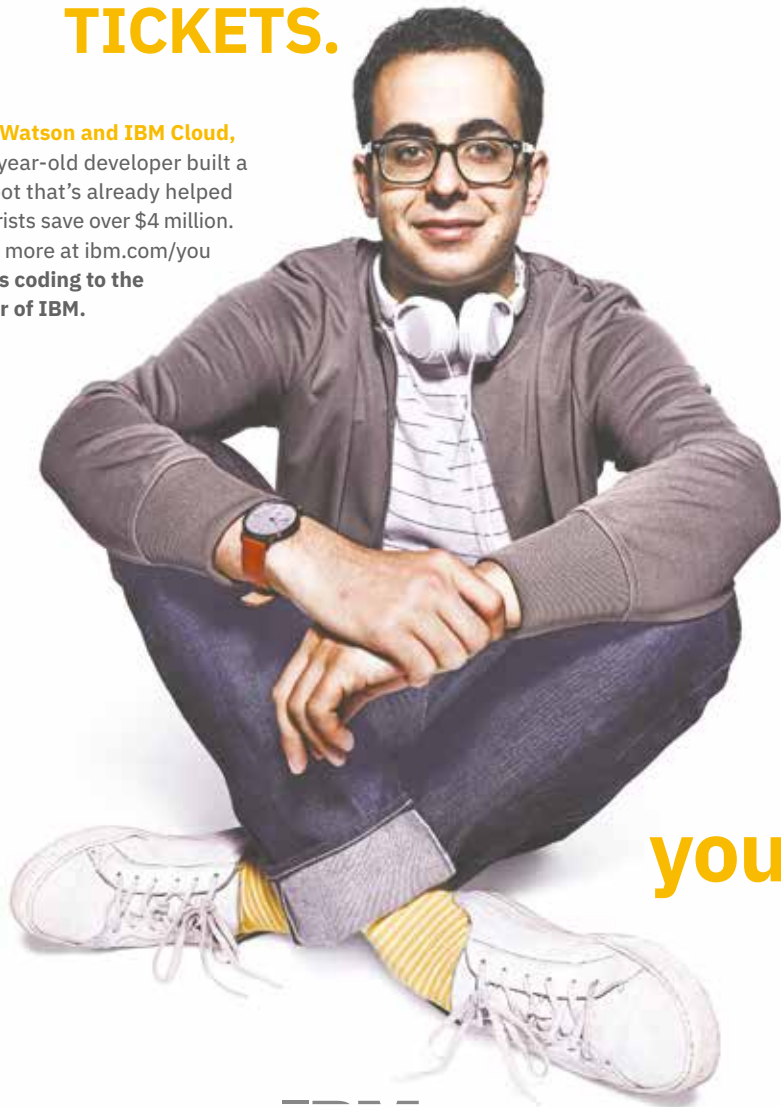


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