Urban Mobility in Latin America: a connection to a brighter tomorrow

How Rio de Janeiro transportation ecosystem has been improving citizens' lives by offering a smarter way to move around the city

VISA everywhere you want to be

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Why Urban Mobility?

As simple as it sounds, moving effectively from point A to point B in an urban environment can be a real challenge today. Not only caused by recent events such as a global pandemic, but because megacities – cities with more than 10 million habitants – have seen exploding population growth –not necessarily in an organized, sustainable manner.

Urban Mobility is not just about taking a train or bus home - it is about the overall customer experience of what happens in a door-to-door journey – from planning, booking and paying securely for tickets, to tracking schedules and arriving at the destination. Secure, frictionless payments are fundamental to making this process run smoothly for commuters and Visa has expertise in this area.

At Visa, only in the past 6 months, we observed an acceleration among the more than 650 active urban mobility projects worldwide, including 55 launched during FY20, in cities as Santo Domingo, Brussels and Hong Kong. Even in a future where people have more remote activities and virtual connections, effective urban mobility systems will continue to exist as is the pre-condition for economic growth, sustainable development and human livability.

Those who live in cities want a dynamic transportation system that reliably moves them around the urban landscape with as little hassle as possible. Faster, easier, safer, cleaner, and greener transportation encourages more users, which boosts population density, drives cities' economic success, and reduces the carbon footprint of transportation networks.

Next, we will present how Visa has been partnering with clients and governments in the urban mobility front, highlighting how in a collaborative effort, it is possible to develop effective mobility ecosystems for megacities around the world. More especifically, how Visa Urban Mobility is already a reality in Latin America and Caribbean highlighting Rio de Janeiro Metrô business case.

Aida Esteban Millat

Head of Urban Mobility & Smart Cities,
Visa Latin America and the Caribbean

Moving in Latin America: Challenges and Opportunities

With a rate of urbanization that has doubled over the last 50 years, Latin America and the Caribbean is today the most urbanized region in the world. About 85% of Latin Americans live in cities today, a percentage expected to grow to 90% over the next 30 years[1], and the region accounts for six megacities – Mexico City, Sao Paulo, Buenos Aires, Rio de Janeiro, Lima and Bogota.

When it comes to the Urban Mobility ecosystem in the region, transportation and financial barriers are among the foundational challenges the region face today are, which directly interfere in how mobility solutions are designed for Latam's environment.

Transportation

While motorist congestion is a major challenge, 68% of passenger travel in Latin American cities is on public transit or shared systems.[2] So governments, transport authorities and public transport operators have a real incentive to improve the consumer experience for travelers, increase ridership, reduce fraud and fare evasion, lower operational costs and increase revenues. At the same time, the hope is to reduce the need and use of private transportation, helping cities to become more sustainable.

"Traffic congestion exacts a toll of 2% to 4% of national GDP, by measures such as lost time, wasted fuel, and increased cost of doing business."

McKinsey & Company[3]

1. https://www.weforum.org/agenda/2018/06/latin-america-cities-urbanization-infrastructure-failing-robert-muggah/
2. https://publications.iadb.org/publications/english/document/Urban-Transport-Systems-in-Latin-America-and-the-Caribbean-Challenges-and-Lessons-Learned.pdf
3. https://www.mckinsey.com/business-functions/sustainability/our-insights/urban-commercial-transport-and-the-future-of-mobility#

Financial barriers

Urban Mobility constitutes one of the major necessary spends by all consumers around the world. In 2019, Visa commissioned a global study, **"The Future of Transportation: Mobility in the Age of the Megacity",** to better understand the challenges commuters face today and in the future. The key findings were combined with a view of existing and near horizon innovations provided by experts at Stanford University, to better understand the technology gaps in addressing their painpoints.

Payments lie at the heart of every form of travel, and will continue to become more integral as more cities move to contactless public transportation, digital payments for parking and rental services such as bikes or scooters.

Underbanked and unbanked individuals often struggle with the costs of using public transport and therefore may lack access to a network that is needed for economic opportunity. Cash dependency and the inability to incorporate digital services into their lives can contribute to further disenfranchisement and in the long term can even restrict overall city health and growth.

Nearly a quarter of the world's adult population (about 1.7 billion people) remains unbanked[4]. And in Latin America there is still a vast path to cover when it comes to expanding digital fiinancial access. In several Latin American countries, **30 to 50 percent of the population over age 15 have an account with a financial institution**, compared to more than 90 percent in countries like the US, UK, or Spain, or roughly 80 percent in China[5].

4. The World Bank, "The Global Findex Database 2017: Measuring Financial Inclusion and the Fintech Revolution" conducted in partnership with Gallup with funding from the Bill & Melinda Gates Foundation

5. https://www.mckinsey.com/industries/financial-services/our-insights/lessons-from-leaders-in-latin-americas-retail-banking-market

19,000
consumers

19
countries

The study reflects the feedback of **19,000 consumers in 19 countries** and identified significant challenges faced by growing urban centres, including:

Complexity
in payment is often at the root of many common complaints

27%
If it was easier to pay for public transport, average use would increase by **27%**

47%
said the need for different tickets for different modes of travel is an issue

44%
said not knowing how much to pay is a problem

41%
cited services being "cash-only" as an annoyance. According to those surveyed, these frustrations make them less likely to use public transport and more likely to drive their own cars

Digitalization:
the first step to Urban Mobility

Driven by changing consumers' needs and enabled by new technological possibilities, urban mobility is changing the way we travel, we move within the city, the way we shop and the way we work - and payments have become an integral aspect of this process. And digital inclusion is at the foundational core of developing urban mobility solutions.

While cash has long been sticky and digitization uneven, Latin America may now be facing the most powerful force for digitization it has ever experienced. Digitalization has gained relevance as an enabler of resilience in recent years, which has been accelerated by the pandemic as people have started changing the way they access services, interact and navigate spaces. We have seen the acceleration of ecommerce and contactless payment growth and adoption of digital payments displacing cash as a result of COVID-19; consumers, merchants and governments are embracing the value of **touchless payments** – like tap to pay – as a replacement for cash; and governments taking increased interest in digitizing their economies. The digital infrastructures are critical to recovery, and partnerships as well.

Different forces are creating the right conditions and in cities like Rio de Janeiro we are starting to see the begginings of what leading transportation experts see as a re-imagining of the entire public transportation experience—systems that are more flexible, equitable, and resilient. Many transportation agencies now view touchless payment experiences as a must-have for post-pandemic recovery.

COVID-19 has had a massive impact on cities and public transportation companies across the globe as they work to deliver safe, reliable, and affordable modes of transport. And with heightened consumer anxiety over commuting, and the challenges in practicing safe social distancing and limiting interaction on journeys, forward-thinking transportation providers will be more important than ever in getting cities safely back to work, driving economic growth, and planning for the future of urban mobility.

Clearly, reliance on urban mobility will only continue to increase. Now more than ever governments, businesses, transportation operators and banks need to be poised for the next step: to reignite our economies, strengthen our communities, expand digitization and financial inclusion on a broad scale, making our cities sustainable and smarter to compete in what will be our new reality. Urban mobility is a fundamental piece of this puzzle as people need to get back to work and to school efficiently and with as little friction as possible.

Visa's Urban Mobility Approach

Visa is the world's largest payment network, with over 3.5 billion cards and more than 9 trillion dollars in annual volume (FY20) transacted in 200+ countries. Our corporate mission is to connect the world through our innovative and highly-secure network, so that individuals, businesses and economies may thrive.

Finding solutions that make people's lives better has been one of Visa's main guiding principles. As a premise for its innovation strategy, the leading payment technology company works to develop innovations centered and focused on consumers. Through **Human Centered Design** we are able to test, prototype and validate concepts. Within this context, the deconstruction of plastic, that is, the possibility of having a payment credential on a cell phone, on a watch and even in a car has opened a new world of opportunities for new Visa solutions. And this is where the work developed in urban mobility by the Visa team around the world comes in.

Visa's vision of mobility gained a higher profile in 2014, in London, with the implementation of contactless technology in the city's metro system as the result of a partnership with the government transit agency. In 2017, this experience originated **Visa Ready for Transit (VRfT)**, a Visa program that helps participating companies realize opportunities as more cities around the world look to enable new payment methods that meet evolving consumer preferences and expectations. Currently, VRfT has 127 technology partners. Visa developed global models to support scenarios where there is a known fare at the start of the journey or where the fare is only calculated after travel is complete. These models offer a high degree of flexibility to transport operators and can accommodate complex fare policies such as multi-modal, capping, concessionary or discounted fares.

Visa is involved in over 650 urban mobility projects worldwide and has helped launch over 280 contactless projects —including in Edinburgh, Manchester, Miami, New York, Santo Domingo and Singapore. Visa Contactless is increasingly accepted at the point of access to public transport services around the world, reducing the need for traditional tickets or travel smartcards. Visa is accelerating adoption of these solutions by approving partners who are able to provide solutions that comply with Visa's requirements and recommended practices for mass transit acceptance. This means that Visa Ready is bringing together all of the players in the ecosystem to drive adoption of open-loop systems that eliminate the need for separate transit cards or for purchasing tickets in advance.

All of the experience acquired and lessons learned by Visa from the global urban mobility ecosystem enabled the creation of a solution designed not just to solve consumer pain points, but also to meet the needs of transport operators. Can you imagine the budgetary, logistical and procedural challenge of updating the hardware of a massive bus fleet in a large metropolis? Let's take São Paulo, for instance: how could we effectively and quickly update more than 12,000 buses equipped with card readers? **The solution was found in the Visa Secure Access Module, or VSAM.**

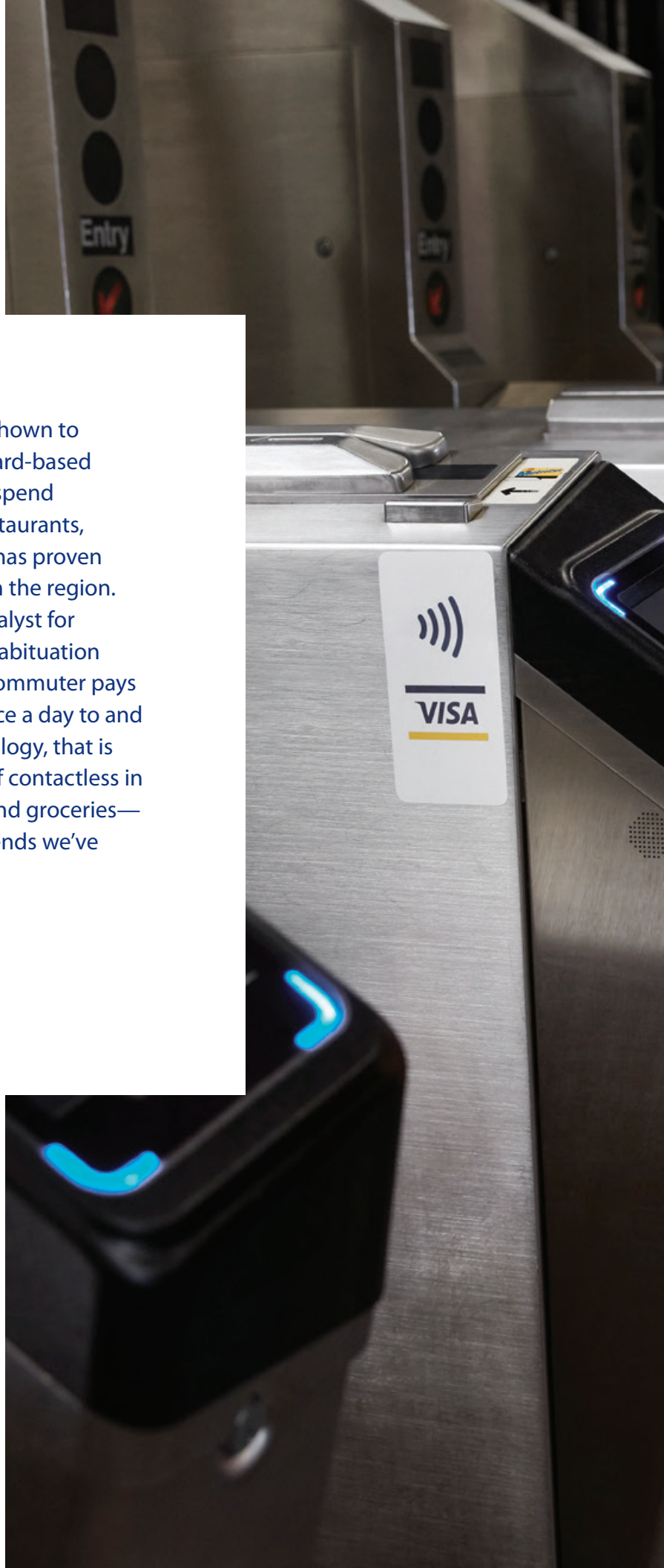
This innovation broke paradigms by combining the Visa Ready specification – a success worldwide – with a technology solution that could facilitate field deployment, but that did not necessarily require replacing the entire legacy system. In order to develop the system, Visa partnered with two other companies: Planeta Informatica and FastproBr.

VSAM

VSAM allows a chip to be introduced in the readers that is able to securely accept the NFC (Near Field Communication) technology found in EMV® payment cards and mobile devices, such as cell phones, bands, and watches. Its differential is that it accelerates implementation and lowers commercial deployment costs, since it does not require that the existing transportation card reading system be replaced.

Once a rider taps an EMV®-enabled card – that is, a contactless payment card – the reader calls VSAM to process the transaction, and VSAM identifies it as a payment transaction. That's where all security steps take place, encrypted and according to the standards required by the payment industry. VSAM conducts the safety procedures and sends the transaction data to a server, located on the transport operator's premises. At the end of the day, the operator´s PMS (Payment Management System) sends the transactions to the payment gateway or the acquirer, and then to the payment credential issuer.

The VSAM was launched during the Mobile World Congress 2019 in Barcelona and the first VSAM trial was done in the MetrôRio operation, in Rio de Janeiro, Brazil, in 2019. This was a milestone for Visa and the payment industry. It has changed how Visa collaborates with transport operators.



"Contactless payments have been shown to be effective at converting cash to card-based payments, particularly in everyday spend categories such as quick-service restaurants, grocery, vending and parking. This has proven to be true as we see adoption rise in the region. Public transport is an important catalyst for expanding the use and consumer habituation toward contactless payments. If a commuter pays for their ride on the train or bus twice a day to and from work using contactless technology, that is shown to increase habitual usage of contactless in other categories—like gas, coffee and groceries—based on internal spending data trends we've observed

Ruben Salazar

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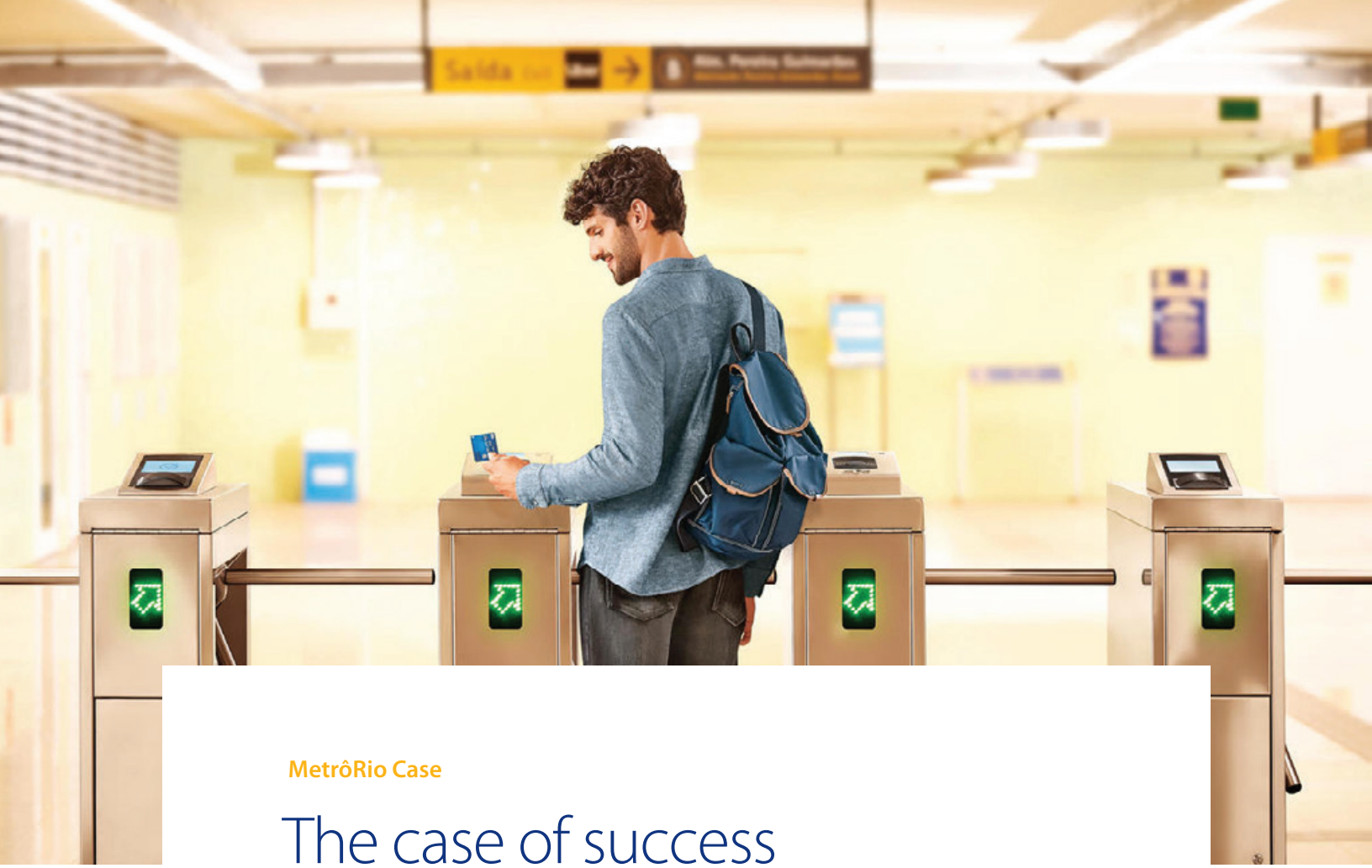


MetrôRio Case

The case of success in Rio de Janeiro

At the end of April 2019, Visa, MetrôRio and their partners announced the introduction of contactless payments in the Rio de Janeiro metro system, along with new VSAM technology. This drew the attention of the entire country as contactless payment was introduced in a pioneering manner into a major Brazilian city's metro system, which transports over 800,000 riders a day[6], and raised interest in the transport and payment industry on the complexity behind the deployment of such a robust system at the 331 access points to the 41 metro stations.

The answer to this deployment question is simple.

> *"With VSAM, updating the readers was extremely fast and efficient. What would have taken months, took place in a matter of weeks."*

says Marcelo Souza, Head of Information Technology at INVEPAR, MetrôRio's controlling company.

6. MetrôRio data.

One year after the launch, Visa, MetrôRio, metro riders and the city of Rio de Janeiro are celebrating the results of the project. Check out some of the improvements that contactless payments combined with VSAM brought to Rio de Janeiro residents and visitors, and to the city.

Adoption

Since the launch, the number of individuals adopting contactless payment technology has been growing exponentially every month – more than one million transactions with the solution. **On average, this growth is at approximately 40% per month and the average daily usage during the week is 1.75 times per passenger.** In the beginning of the operation, only credit transactions were accepted. A few months later, Visa and MetrôRio worked to include debit and pre-paid transactions, which allowed more people to gain access to the solution and made contactless payments more broadly used in the city's metro.

The devices used by Rio de Janeiro residents and tourists have varied over the year. Today, in Brazil, they can use a cell phone, a card, a watch and even a band. "When the solution was first launched, most tickets were bought with a cell phone. One year later, that changed: card payments became the most used type of payment, and the option selected by 55% of users, on average", states Marcelo Souza.

User experience

Contactless payments at MetrôRio brought a new experience to riders' commute, mostly by shortening lines, saving time and facilitating the process of entering stations. The best evidence of **users' positive perception is a recurrence rate of 97%**. This means that, after the first use, **9 out of 10 people continue to use this solution on more trips**.

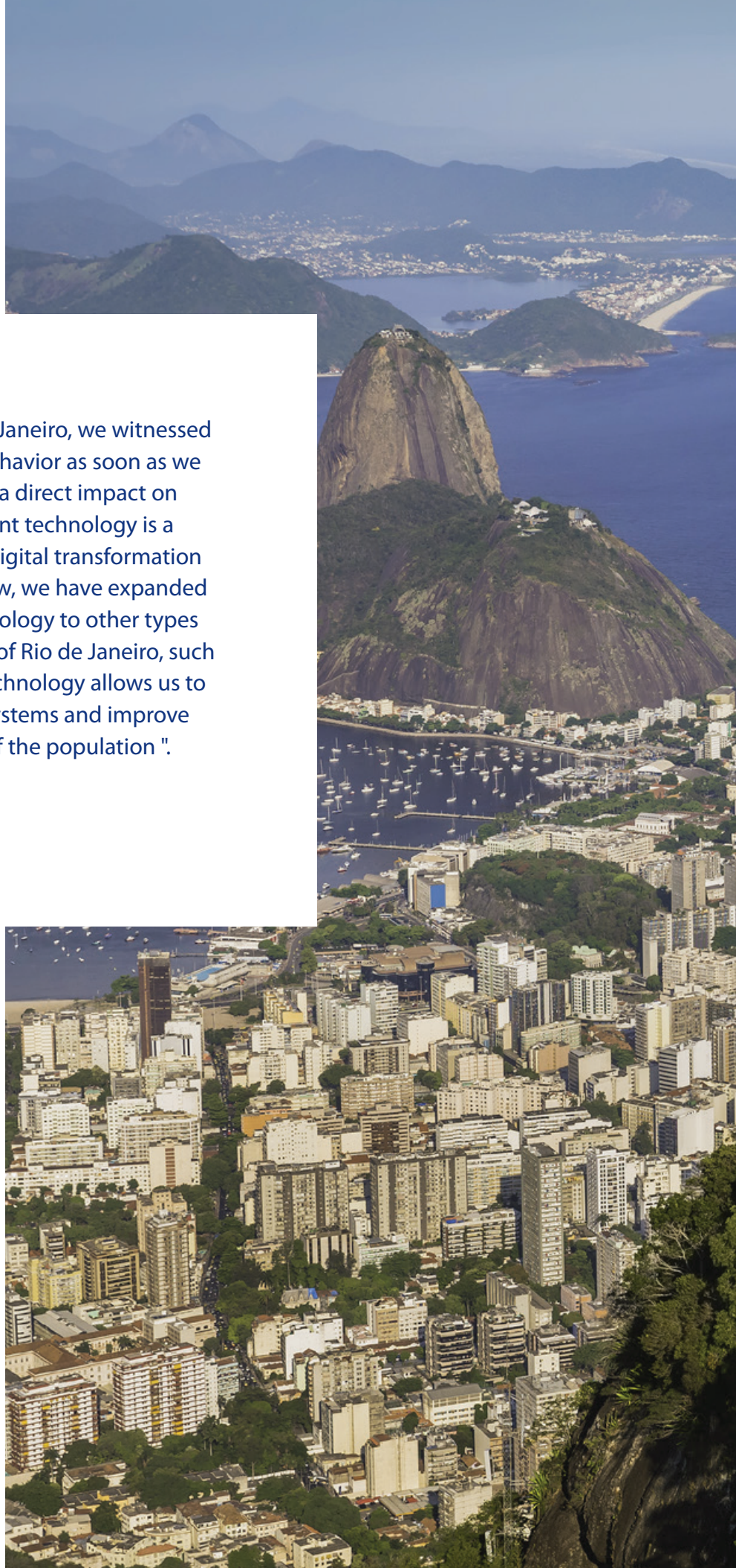
Another positive point since technology was implemented is how easily visitors understand and use contactless payments, since the technology is already very popular in some countries. At MetrôRio, British visitors are the biggest users of contactless payment-enabled Visa cards at the 41 metro stations. They are trailed by visitors coming from Argentina, France, the USA, Germany, and Spain. In total, visitors from over 20 different countries used the solution in the first year of the solution.

Security

Visa's contactless payment technology implemented at MetrôRio is based on EMV's international standard and uses the same security protocols as a contact chip transaction, the most advanced and widely adopted payment encrypted security. Cards embedded with this technology must be at as close as 4 centimeters from the payment terminal in order for a communication to take place.

In addition, Visa's contactless payment transactions are processed by VisaNet, the global processing network, like all other card transactions. Transactions are analyzed in real time and their fraud potential is scored. Visa's global payment system helps to identify fraud patterns and detect suspicious transactions. Visa and issuers rely on sophisticated fraud prevention systems and alert services to notify cardholders of every transaction conducted.

Another precaution taken by Visa when managing the solution within the transport industry is related to the transaction management system, a piece of software that helps the MetrôRio team to see the transactions, the changes in rider profile and above all, fraud attempts and authorization rates. At MetrôRio, the financial risk has stayed at approximately 0.03%.



"In our experience in Rio de Janeiro, we witnessed changes in the consumer behavior as soon as we launched this solution, with a direct impact on daily life. Contactless payment technology is a reality, another bonus that digital transformation and innovation bring us. Now, we have expanded the acceptance of this technology to other types of transportation in the city of Rio de Janeiro, such as trains, tolls and ferries. Technology allows us to work on integrating these systems and improve even more the experience of the population ".

Marcelo Sarralha

Senior Director of Products, Visa Brazil

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"MetrôRio project was a project that transformed our way to understand clients and their journey. Now we can see more opportunities to include other models."

"With this solution we can deliver a much better experience to clients."

"If we could upgrade this to a city perspective, we could achieve real results not only in transit, but in climate change / pollution, and improve citizens lives."

Marcelo Souza

Head of Information Technology, INVEPAR

Opportunities for Latin American Cities

Effective urban mobility ecosystems are essential to cities' economic success and sustainability. The ecosystems are moving forward digitally, looking for innovative solutions to solve city challenges, with new modes of transportation like ridesharing, scooters, and autonomous vehicles, integrating seamlessly with digital technology to provide door-to-door journeys with no friction.

Now more than ever citizens are urging for effective solutions and the key to success for cities is the ability to move people and goods quickly and easily, every day. Making significant improvements to public and private transportation systems will require cooperation from a wide range of entities, from think tanks and public authorities to private corporations, large and small. This is why Visa is developing technology at a global scale and forging partnerships capable of addressing these challenges and helping individuals and cities to thrive.

Visa offers a multi-modal urban mobility payments platform. The platform is interoperable and helps transit operators leverage the Visa payments ecosystem to streamline transactions and make travel easier for riders across the board.

As contactless and other seamless payment options become the norm, acquiring and issuing banks will see increases in transaction volumes, new market segments and a wider opportunity for cash conversion, further innovation and differentiation. Tech companies, start-ups and fintechs gain scale, exposure and access to new markets and investments.

Visa is working jointly with governments and public transport operators across Latin America to improve the ecosystems and consumer experience through digitization and develop technology pathways that make the process faster and safer for the passenger. Today, consumers can tap to pay to ride the metro in Rio de Janeiro and the buses in São Paulo (BRA) and Santo Domingo (DR), while commuters in Cali, Colombia are getting ready to benefit from this same experience.

We continue to explore and develop technologies like tap to pay, connected cars, enhancements to current public transit systems, working in collaboration with other technology players to create solutions that improve commuters' lives and help cities participate in larger digital economies. We are leveraging our global payments platform and expertise in Urban Mobility around the globe and in Latin America to identify the markets ready to start making this smart shift in Urban Mobility.

Visa is committed to improving the way people move around cities. That is why we are investing in driving benefits for passengers and stakeholders through a collaborative and inclusive approach towards a more connected, digital and human city.

Is your city ready?

Effective urban mobility ecosystems are essential to cities' economic success and Just because most of the world has come to a halt doesn't mean planning for urban mobility should, too. Because each city is unique, the transition to digitization in urban mobility will play out differently and produce different results from one city to the next. The pace and extent of change will be influenced by the factors explained above. Given the speed of change and technological trends, every city can move forwards digitally and leapfrog to become leaders in the future of mobility.

To learn more about Visa's Global Urban Mobility solutions and collaborate with our team, visit visa.com/urbanmobility

Contact us:
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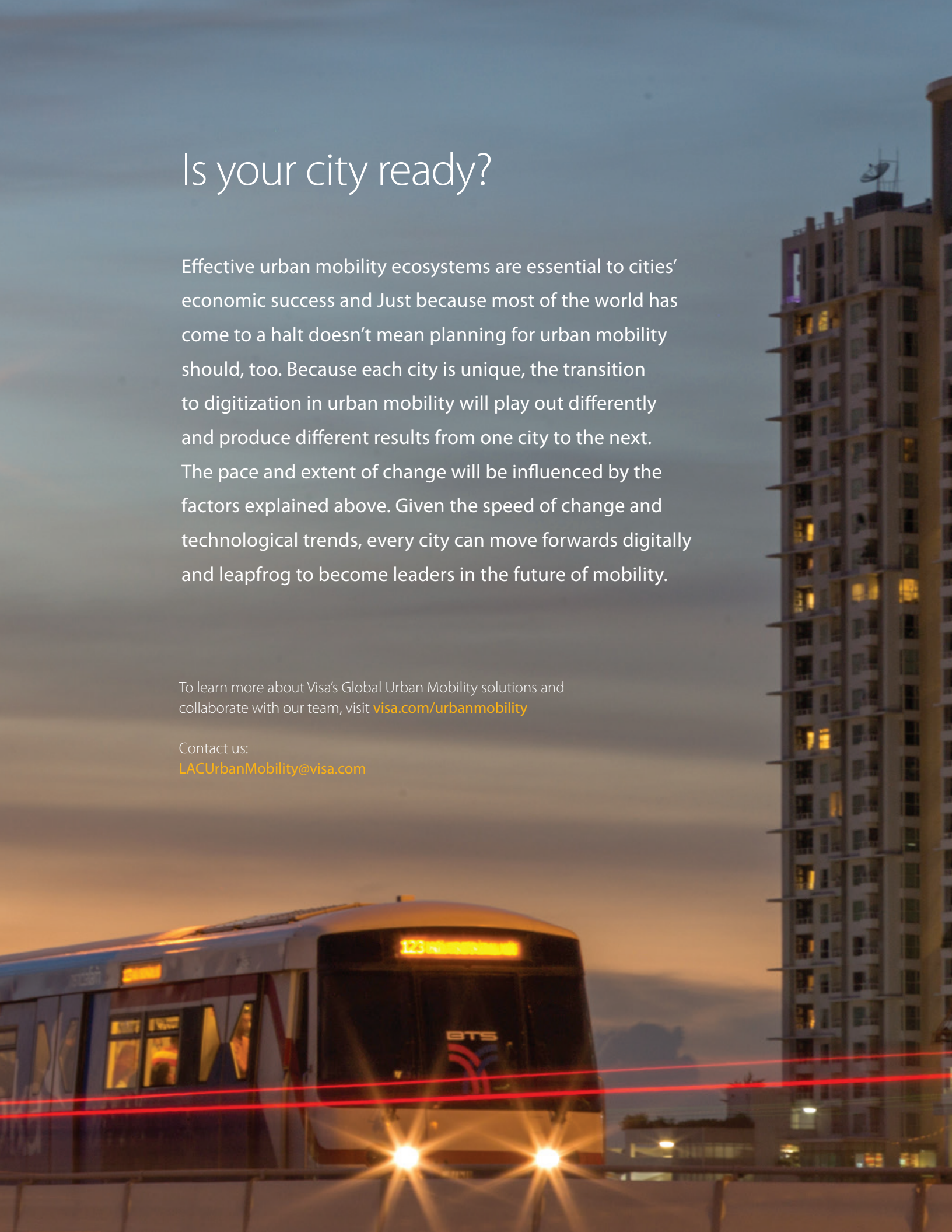

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