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Transforming Urban Mobility

Foreword

by Nick Mackie
Vice President and Global Head of Urban Mobility, Visa

It perhaps goes without saying that our cities face growing challenges. With increasing urbanization, the populations of our cities continue to rise, intensifying pressure on infrastructure and services.

Increasing urbanization is intrinsically connected to urban mobility, enabling people to get around in our cities for work, leisure, and education. As the backbone of a city, urban mobility strives to deliver all three pillars of sustainability: our people, our economy, and our environment.

We recognize cities that strive to be more inclusive, more connected, more resilient, and we actively support them in delivering these outcomes. We create value by partnering with like-minded cities around the planet to share our knowledge and expertise, facilitate ecosystem-wide standardization and deliver world-class services that help achieve shared goals and outcomes—including improving life in our cities.

Visa has spent the last 15 years working to help simplify and streamline the process of modernizing fare collection systems across all forms of urban mobility, from traditional publicly-owned road and rail mass transportation, to privately-run micro-mobility options such as bike and scooter sharing.

Our efforts are having an impact on global urban mobility:

- We are actively involved in more than 500 urban mobility projects around the globe

- We have helped public and private transportation operators (PTOs) lower their ticketing overhead, while boosting ridership and improving passenger experiences

- We are continually utilizing our global network and capabilities to transform the way people get from A to B, improving connections between people enterprises, and governments

And when it comes to payments innovation, over a third of all Visa transactions globally are contactless. We have issued over 1 billion tokens to enable secure mobile payments with contactless or in-app. These new ways to pay have fundamentally changed the way we pay for goods and services, and their synergy with urban mobility could not be clearer.

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Visa's value proposition in urban mobility stems from three core pillars:

Products & services

At the heart of our capabilities is VisaNet, the world's leader in digital payments which is helping to digitize economies everywhere, creating value beyond the transaction.

Ecosystem leadership

Interfacing with VisaNet, we have defined a set of highly flexible frameworks optimized for urban mobility operators in alignment with their needs and vision. These frameworks set out our stringent standards and requirements and are supported by a Visa Ready for Transit program that has primed 150+ technology partners to fully meet them.

Global expertise

Our teams around the world have accumulated vast knowledge and experience in urban mobility and have become instrumental in facilitating the delivery of many game-changing projects. Our custom-designed, globally standardized and scaleable Global Delivery Framework helps ensure all projects are setup and run in a way that delivers consistent outcomes and value. At the point of launch of new services, we can take advantage of the Visa brand—named as the fifth most valuable brand in the world—and network, to encourage uptake and accelerate usage.[1]

Products & Services	Ecosystem Leadership	Global Expertise
Payments Processing	EMV Contactless Travel	Specialized Advisory
Loyalty, Analytics and Innovation	App-based Ticketing	Trusted Brand
Pay-In-Advance Solutions	Visa Ready for Transit	Global Delivery Framework

If you are involved in an urban mobility project or wish to start one, this document provides an overview of the key role Visa plays in this field and how and why we have developed world-class capabilities to help you succeed.

To learn more about Visa's Global Urban Mobility solutions and how we can help, visit: **visa.com/urbanmobility**

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Explosive growth

In countries around the world there has been an unprecedented movement of people to urban environments. Today, nearly 54% of people worldwide live in cities, up from 30% in 1950.[2] With an estimated three million people moving to cities every week,[3] the global urban population is expected to reach 68% by 2050.[4] While COVID-19 may impact these projections, cities will remain vital centers of commerce and population.

With tremendous growth comes opportunities to mitigate the effects of pollution, congestion, financial barriers for underbanked and unbanked, and the pressure on aging infrastructure.

Energy use and pollution

Studies show that cities presently consume 78% of the world's energy and produce between 60-75% of the world's greenhouse gas emissions.[5] Not surprisingly, the major contributor is transportation—with passenger vehicles accounting for 70% of emissions and 50% of urban air pollution. On the current trajectory, greenhouse gas emissions from transportation are on track to double by 2050.[6]

Congestion

Congestion presents a related issue, as many of the world's cities were simply not designed to handle the present volume of vehicular traffic. In fact, research shows that 46% of commuters to urban centers have seen their commute times increase over the past five years.[7]

Congestion results in loss of time and money. In 2019:

- U.K. drivers lost a total of £5.2B and an average of 115 hours per commuter[8]
- U.S. drivers lost a total of $88B and an average of 99 hours per commuter[9]

Financial barriers

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. This lack of access can contribute to further disenfranchisement and can restrict overall city health and growth.

Ensuring transit services meet the needs of residents and visitors alike is a goal for all cities seeking to optimize their networks and improve overall urban health.

Cities by the Numbers

68%
City dwellers likely to make up 68% of world's population by 2050

78%
Consume 78% of world's energy

60-75%
Produce 60 75% of world's greenhouse gas emissions

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Aging infrastructure

As metropolitan populations grow, it's important for both prosperity and quality of life that cities improve the efficiency and efficacy of their infrastructure, and that they ensure solutions implemented to access their services are frictionless and future proof. Particularly in light of the recent pandemic, where restrictions imposed to safeguard the well-being of our residents, significantly reduced the use of public transportation and severely impacted the financial position of transport operators around the world. An investment in infrastructure is crucial to drive efficiencies in the short - as well as the long-term.

One of the most powerful means of reducing these harmful consequences and increasing quality of living is providing greater access to and hence increasing use of public transportation systems.
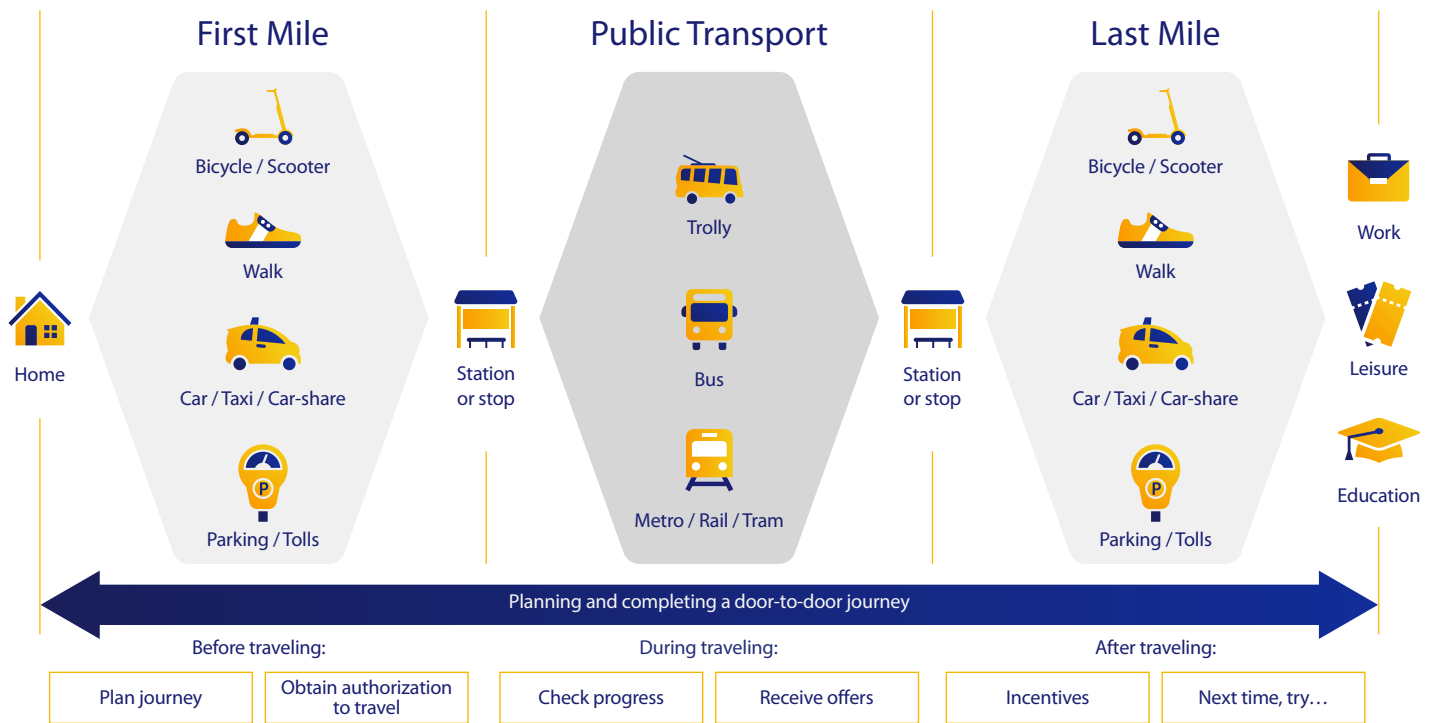
Moving forward

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 thrive.

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Visa Urban Mobility

Visa is the world's largest payment network, with over 3.6 billion cards and more than 11.6 trillion dollars in annual volume 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.

In urban mobility, Visa is committed to helping cities create efficient, inclusive, and sustainable door-to-door commuting experiences enabled by simple, convenient, and secure digital payment solutions: Visa Urban Mobility.

A better way: Connected, door-to-door journeys

First Mile

Bicycle / Scooter

Walk

Home

Car / Taxi / Car-share

Parking / Tolls

Station or stop

Public Transport

Trolly

Bus

Metro / Rail / Tram

Station or stop

Last Mile

Bicycle / Scooter

Walk

Car / Taxi / Car-share

Parking / Tolls

Work

Leisure

Education

Planning and completing a door-to-door journey

Before traveling:		During traveling:		After traveling:	
Plan journey	Obtain authorization to travel	Check progress	Receive offers	Incentives	Next time, try…

Visa is actively working with cities, urban planners, transportation authorities, operators, and solution providers to reimagine the urban travel experience with a focus on inclusive, sustainable, interconnected, multi-modal transportation.

By combining traditional and emerging mobility modalities that are delivered by both public and private operators, these visionaries are creating transportation networks that are efficient, accessible and resilient. These networks also deliver a more open and seamless customer experience that is largely enabled by secure, frictionless fare payment and collection systems—the kind provided by Visa's Urban Mobility solutions.

More connected and convenient payment options encourage ridership, making cities more livable and sustainable and paving the way for enjoyable and efficient door-to-door journeys where people get to be where they need to be in a minimum amount of time.
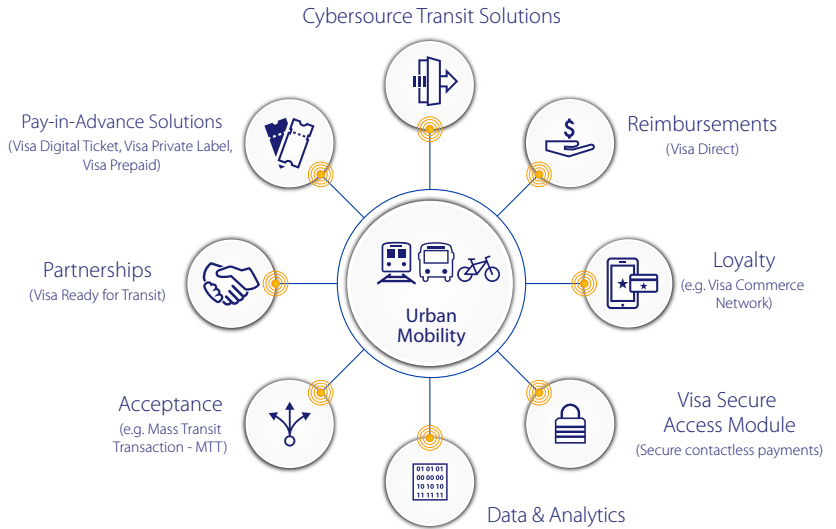
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Visa's urban mobility value proposition

Visa offers a wide range of urban mobility products, services, and frameworks that were developed with deep technical know-how and years of experience. Our global expertise provides reliability as a trusted partner in the urban mobility arena and the creation of inclusive, secure, seamless, and ultra-efficient travel experiences.

Visa's products and services

Visa offers developers access to a range of Visa services for building and deploying new experiences, including gateway, data and insights, tokenization, risk management, fare processing and calculation, debt recovery, and other capabilities.

Visa has multiple solutions to support a fast, easy and secure commuter experience:

Cybersource Transit Solutions

Pay-in-Advance Solutions
(Visa Digital Ticket, Visa Private Label, Visa Prepaid)

Reimbursements
(Visa Direct)

Partnerships
(Visa Ready for Transit)

Loyalty
(e.g. Visa Commerce Network)

Acceptance
(e.g. Mass Transit Transaction - MTT)

Visa Secure Access Module
(Secure contactless payments)

Urban Mobility

Data & Analytics

Cybersource for Transit

Visa's Cybersource is a global payment management platform that enables urban mobility operators, acquirers, and solution providers to rapidly deploy a reliable, scalable, and secure digital and contactless offering. Unlike many processors, Cybersource supports the Mobility & Transport Transaction framework (more on MTT on the next page), thereby providing flexibility and avoiding unnecessary issuer declines. One connection to Cybersource provides access to 130+ acquirers worldwide, including VPC (Visa Platform Connect), a compelling offering to facilitate fast deployment, plus a suite of risk management and value-added services across the various sales channels.

Data and Analytics

Actionable business insights, the latest economic trends, and proven data driven solutions that can help you grow your business are available through Visa Analytics Platform. Visa Analytics Platform offers fast and secure access to anonymized data and produces real results in the areas of core business and emerging topics by helping you reduce fraud, improve efficiencies, and much more.

Loyalty

Card-linked offers, rewards, redemption and loyalty program opportunities can be offered via Visa Commerce Network, Visa Loyalty, and related solutions that can increase customer engagement and perceived value of the overall travel experience.

Pay-in-Advance Solutions

Visa offers a suite of Pay-in-Advance travel solutions that seamlessly complement contactless pay-as-you-go (PAYG) travel. These solutions help address customers who do not have or prefer not to use EMV Contactless cards and support the complexities of passes or season tickets. Pay-in-Advance solutions include the following:

Visa Digital Ticket: Contactless technology applied to tickets or Store Valued Account (SVA) travel-cards that are purchased and loaded online and provisioned into the mobile wallet of a smartphone.

Visa Prepaid: A suite of digital and physical SVA products that can be pre-funded from a variety of sources and available to everyone.

Visa Private Label: Issuance and processing services for non-Visa branded cards that are available to everyone but are accepted in specific locations.

Reimbursements

Offer fast, convenient and secure ticket refunds enabled by Visa Direct. Visa Direct is a capability that allows real-time funds delivery directly to financial accounts using card credentials. With Visa Direct, you can reach 200 countries and territories and facilitate domestic and cross-border payments in over 160 currencies, with billions of connected endpoints across cards and accounts, including 3+ billion Visa cards and 2 billion bank accounts.

Visa Secure Access Module (VSAM)

Visa SAM makes it easy for transportation organizations and operators to offer riders the ability to tap to pay with a contactless card, phone or wearable device, without the expense and technical requirements of replacing current turnstiles or terminal hardware. Rather than installing brand new turnstiles or hardware, transportation operators can install the Visa SAM software plug-in, built on secure EMV Contactless technology, directly into existing systems. This can significantly decrease cost and implementation timing.

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Ecosystem leadership

As a global leader in payments, Visa is well-suited to help navigate the complex ecosystem of technology suppliers and partners. Providing expertise for implementation at a global scale, Visa can help accelerate time to market, thereby maximizing outcomes for all parties. The frameworks below have been designed to create inclusive, seamless and ultra-efficient experiences, for the customer and the operator:

EMV Contactless travel: Pay-as-you-go (PAYG) based on EMV Contactless and Visa's MTT model are gaining significant traction and merit strong consideration by transport operators seeking to bring a preferred payment technology to their networks.

EMV Contactless technology has transformed the way people shop and the way merchants operate worldwide, creating a streamlined process for everyone. Now, contactless is revolutionizing the way people travel, providing customers with a fast, secure, and frictionless travel experience.

Based on EMV Contactless, PAYG is already available in over 250 locations with hundreds more coming worldwide—due to the wide range of benefits it offers to consumers, operators, and cities alike. With contactless PAYG, boarding a bus is as easy as buying a coffee…but even faster…less than 500 milliseconds, to be precise.

In pursuit of its commitment to transforming urban mobility, Visa has developed two flexible urban mobility models that enable the acceptance of EMV Contactless payment cards. Both models are designed for fast passenger throughput and efficient and secure automatic fare collection.

- **Known Fare Transaction (KFT):** KFT is a simple solution ideal for operators who wish to implement EMV Contactless in a single mode of transportation with a flat or distance-based fare. In this model, the rider taps their Visa EMV Contactless card, device or wearable that is linked to the card in order to access a transport service where the fare charged is always known by the reader. Payment authorization happens in real-time, although deferred authorization is also possible.

- **Mobility & Transport Transaction (MTT):** MTT is a fully-flexible solution suitable for both single mode and multi-modal mass transportation environments. Visa's MTT framework is a global standard, enabling operators to offer a range of flexible fares, including: fixed fares; distance- and time-based fares; multi-modal fares; and features like fare capping, concessions, and delay refunds. All while ensuring efficient fare collection and limiting the operator's risk through shared liability and debt recovery mechanisms.

"Visa's MTT framework provides an elegant solution for the implementation of EMV Contactless in transit with added security."

Silvester Prakasam, Senior Advisor
Fare System Land Transport Authority of Singapore

Mobility & Transport Transaction: Interoperable payment solution in an open acceptance model

Features

Contactless-only acceptance

Deferred authorizations

No financial transaction at point of tap

Shared merchant/issuer liability

Deny list & back office management

Benefits

High passenger throughput

Versatile, adaptable solution

Suited to complex multi-modal transit systems

No purchase required

Drives down PTO operating costs

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In this model, the rider taps their Visa EMV Contactless card, device or wearable that is linked to the card to access or board a transport service. The final fare charged is not always known at the time of travel as the tap data is accumulated and the total fare amount is calculated and charged by the transport merchant at the end of the travel period.

The MTT model goes beyond providing a fast and convenient experience for the rider, as it also provides efficient fare collection for the operator. Intended for multi-modal transportation, MTT is paving the way to Mobility as a Service (MaaS).

MaaS is a growing sector of apps and services that combine planning and paying for travel within singular digital experiences.

When combined with contactless payments, providers can offer riders greater flexibility and convenience while removing the need to plan ahead, pre-purchase, or carry and keep track of a variety of standalone passes and tickets.

Contactless can be seamlessly integrated into existing and future MaaS solutions with nearly unlimited possibilities for rich digital solutions for consumers.

- **App Based ticketing (also known as Stored Credentials Transaction Framework):** App-based payments offer a common and convenient way to pay. A customer simply provides their Visa payment credentials to pay for a ticket and consents to storing their credentials for future use. This framework is called Stored Credentials Transaction and can be deployed to existing and developing mobile apps and websites.

  Recognizing stored credential transactions allows for greater visibility into transaction risk, enables robust processing and may result in differential treatment from e-commerce transactions, with a higher likelihood of issuer approval. Visa has defined authorization data values to help identify initial storage and use of stored payment credentials to facilitate differentiated processing.

Visa Ready for Transit (VRfT) : The proliferation of technology solution providers can make it challenging to select a partner. Visa's global Urban Mobility partner program is designed to help. With over 150 partners worldwide, Visa Ready for Transit gives transportation agencies access to an expanded network of technology solutions and expertise to support upgrades to next generation fare systems, including ticketing and fare collection, back office management and consulting.

Visa Ready for Transit helps maximize investments and expedite overall time-to-market by simplifying the process of identifying the right partner for a project and streamlining testing and implementation. The certification process means that Visa Ready-certified solutions meet Visa's high standards for security and PCI compliance on a global basis and are ready to be deployed to accelerate go-to-market.

Global expertise

Visa demonstrates global expertise by bringing our products, services, and ecosystem leadership together in order to enable cities and transport agencies to transform their transportation networks.

With a recognized and trusted brand as a foundation, we have applied the expertise that comes from a multidisciplinary team of experts and the learning from working with transport operators in over 500 locations to the Visa Urban Mobility Global Delivery Framework.

The Visa Urban Mobility Global Delivery Framework is designed to make it easier for transit operators to quickly deploy EMV Contactless based ticketing. Clearly delineating the phases of a typical project, from vision to post-implementation, the framework facilitates outlining recommended actions, defining success metrics, and identifying task owners. The framework and associated delivery process have proven to reduce time to market and increase the efficacy of the payment solution.

At Visa, we take a human-centered approach to the design and implementation of payment flows to deliver the best possible passenger experience. By working with partners and clients in hundreds of locations around the world we have accumulated expertise that we invest into new, forward-looking payments frameworks and service capabilities. Together, these empower our ecosystem to move quickly and efficiently.

To further magnify and accelerate collaboration and the arrival of improved transport experiences, we foster thought leadership globally by bringing experts together, in the form of research papers and specialized forums. By organizing and participating in conferences, workshops, webinars, and papers—with participants across governments, technology partners, financial organizations, urban mobility operators and authorities—we share the objectives of understanding pain points, identifying solutions, developing knowledge, and contributing to building the future of urban mobility.

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Benefits of urban mobility transformation

Reliable, secure, open, multi-modal transportation offers advantages to all parties within the urban mobility ecosystem. Benefits to cities, transport operators, and customers include:

City benefits

- **Digitization transparency:** Transparency and accountability are harder to achieve with cash payments because they are anonymous and difficult to trace. Digital payments increase accountability and tracking, lessening the risk of corruption and theft

- **Improved security:** Shifting from physical tickets and cash enhances security. Digital payments and ticketing can reduce fraud and secondary sales. Visa contactless cards are built on secure EMV Contactless technology, which is proven to reduce counterfeit fraud.[10] In addition, Visa's advanced global processing network provides secure and reliable payments around the world and can handle more than 65,000 transaction messages a second

- **Data-driven insights and value-added services:** Digital payments allow operators to capture all journeys and associate them to the same 'account,' revealing previously hidden insights into ridership trends that can be used to optimize existing service and introduce targeted new services to better meet demand, replace costly customer behavior surveys, and improve the accuracy of revenue apportionment calculations

- **More liveable cities:** Carbon emissions and other forms of pollution can be reduced as cities and transportation operators increase ridership on public and shared transportation. Additionally, traditional ticketing systems contribute to greater carbon emissions

  - Studies have found that when using a contactless payment method versus cash, diesel buses cut emissions by 20%—largely due to shorter dwell times[11]

  - Similarly, buses with the most passengers emit the most emissions because of longer dwell times while picking up passengers[12]

  - Embracing innovation in payment systems is a powerful means for cities to contribute toward the achievement of their climate change and liveability ambitions

- **Inclusivity:** Shifting to digital payments for riders presents numerous ways for cities and transportation operators to increase access for those riders in greater financial need. In many cities, such as Sao Paulo or Rio de Janeiro, the bottom 20% of earners cannot afford public transportation[13]

  - Offering prepaid Visa cards introduces riders who do not possess a card to prepaid, debit, or credit. This is an opportunity for unbanked and underbanked individuals to begin participating in the broader financial system. Widespread adoption of digital finance could increase the annual GDP of all emerging economies by 6% over business-as-usual and could provide 1.6B people—more than half of them women—access to life-changing financial services[14]

- Operators may more easily adopt more flexible, configurable, best fare ticketing options to reward travel frequency and eliminate upfront discounts on weekly or monthly passes
- Targeted programs may be deployed via partnerships between public transport operators and governments that subsidize fares for certain riders, providing them with greater access to transportation networks and leaving them with more disposable income

Transport operator benefits

- **Cost savings:** Digital payments offer the opportunity to shift sales from higher priced retail channels, such as ticket vending machines or kiosks. For example, agencies that institute contactless payments are able to reduce fare collection expenditures by more than 30%.[15] A recent survey found that transport agencies spend an average of 14.5 cents for every physical dollar collected, compared to 4.2 cents for every digital dollar.[16] Operators may also expand choice for customers beyond ticket vending machines and ticket desks

- **Operational efficiency:** Digital payments can also improve customer throughput and increase efficiency. Removing the friction of payment has significant benefits for the operator, including reducing or removing queues at travel locations such as rail stations, reducing bus dwell times, and increasing efficiency of bus services. Studies show that 84% of travelers in major U.S. cities were frustrated by customers ahead of them taking a long time to purchase a ticket and 67% report missing a train due to long ticket lines[17]

- **Improved cash flow:** Account based ticketing (ABT) systems allow operators to manage customers' right to travel by holding their account information directly—rather than on a card—as is the case with card-centric, closed-loop systems. ABT systems can settle revenues with operators the same day. This includes those from multi-operator or multi-modal caps or ticketing products, should the operator apportionment process be automated

- **Increased ridership:** Improving the customer experience and making it easier for the customer to use public transport has been shown to boost ridership and revenues. Research shows that ridership on public transport globally would increase by 27% if transportation was easier to pay for[18]

- **Integration:** Using proven standards-based technologies, such as EMV Contactless and open loop payments, can provide for robust interoperability across the region. It facilitates the integration of different operators in the same area, giving customers a frictionless, safe, and cost-efficient way to get around

- **Risk management:** Visa's MTT framework was designed to minimize potential lost revenues, with enhancements such as liability sharing and sophisticated debt recovery methods

"We came to the very simple realization that nobody wants to buy a ticket and actually, we don't want to sell them one, either. If you could find a means of making that very simple business process work more efficiently that would be the right thing."

Shashi Verma
Chief Technology Officer,
Transport for London

"One Metro New York (OMNY) contactless payments are designed to save New Yorkers their most precious commodity: their time."

Patrick J. Foye
Chairman & CEO, MTA

Customer benefits

- **Increased satisfaction:** Providing a seamless, digital way to pay across multiple modes of transportation is a benefit to riders who have traditionally been forced to queue to buy a ticket, top up their travel card, or follow a number of steps to pre-purchase a ticket online as they navigate their door-to-door journeys

    - With open loop contactless, customers have the choice of loading their card onto their phone, smartwatch, or wearable, and use it to travel where and when they want. There is no need to queue up to buy a ticket, obtain a travel card, or learn complex fares

        - A study found that nearly half of commuters surveyed in 19 countries find it inconvenient to use different tickets for different modes of travel

        - In the same study, 44% of commuters say they struggle to know how much they should pay, and over 40% say they are annoyed by cash-only requirements on transportation[19]

- **Privacy:** The customer's 'account' travel data is stored in the operator's system only and is anonymized and tokenized to provide operators and customers with peace of mind when it comes to data sharing and privacy

- **Loyalty:** Digital payments enable card-linked offers with targeted discounts, promotions, and loyalty program rewards to enhance the value of the transportation experience

- **Targeted notifications:** Enrolled customers can benefit from targeted notifications, such as changes to their account status, potential disruptions, etc.

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Visa: The preferred way to pay

As the world becomes more digital and experiences more seamless, consumers expect payments to keep pace. Consumers want paying to be fast and convenient and they want the assurance that their data is secured. These expectations are changing the way people purchase consumer goods and services every day around the globe.

Over the past five years, a massive shift has taken place in the payment industry. In 2016, contactless accounted for a fraction of the total Visa processed transactions globally. Today, that figure is 38% globally, 76% in Europe, and 81% in Central Europe, Middle East and Africa.

Looking at the exponential growth of the past year in North America, Asia and Latin America, it's very easy to see how this curve will continue to grow. With EMV Contactless, consumers simply tap to pay, with an experience that is not only faster and easier, but more secure and cost effective. It's also a gateway to delivering potential cardholder benefits and added-value to passengers.

No wonder contactless payments are taking off across the globe.

- The global contactless payment market is expected to grow from $10.3 billion in 2020 to $18 billion in 2025, at a CAGR of 11.7% during the forecast period[20]
- Visa estimates there will be approximately 300 million contactless cards issued in the U.S. by the end of 2020, more than 3x the number in 2019
- Contactless payment in Singapore is widely accepted, accounting for 88% of all face-to-face domestic transactions (as of December 2019)[21]

Urban mobility is experiencing a similar phenomenon. EMV Contactless payments have seen skyrocketing growth over the past three years, followed by in-app payments. During this time there has also been a decline in more traditional payment methods, such as chip and pin.

Allowing customers to pay for transportation the way they pay elsewhere in their daily lives can reduce barriers to using transportation services and help provide more seamless, door-to-door travel.

The impact of introducing open loop contactless in transportation is impressive:

- In a recent survey of UK commuters, 49% cited the introduction of open loop contactless payments as the single most significant improvement to their overall public urban mobility experience[22]
- 60% of customers surveyed not "tapping" now would consider replacing their transportation cards with tap to pay technology[23]

Contactless payments are the preferred way to pay

As cities and transit operators work to rebuild ridership during the COVID 19 pandemic, keeping transportation systems clean and passengers safe is amongst the highest of priorities. Contactless payments that require no physical tickets, cash, or touching of hardware while reducing queuing and dwell times is essential for helping residents get back to work, home, and school safely.

Visa urban mobility in action

Visa is involved in over 500 urban mobility projects worldwide and has helped launch over 280 contactless PAYG transit projects—62 in 2019 alone—including in Edinburgh, Manchester, Miami, New York, Rio de Janeiro, and Singapore. Following, are real-world examples of Visa helping to transform urban mobility around the world.

New York

After launching the OMNY contactless payment system in May 2019:

- First 5 million taps were recorded over 31 weeks, while the second 5 million were recorded in only eight weeks, showing a dramatic acceleration in the growth and popularity of the system
- Roughly 3 million taps were recorded in the month of February 2020 alone
- Customers from 130 countries outside the U.S. and every single continent other than Antarctica have used the system
- In the last week of February 2020, the system recorded its first set of weekdays with over 150,000 taps per day[24]
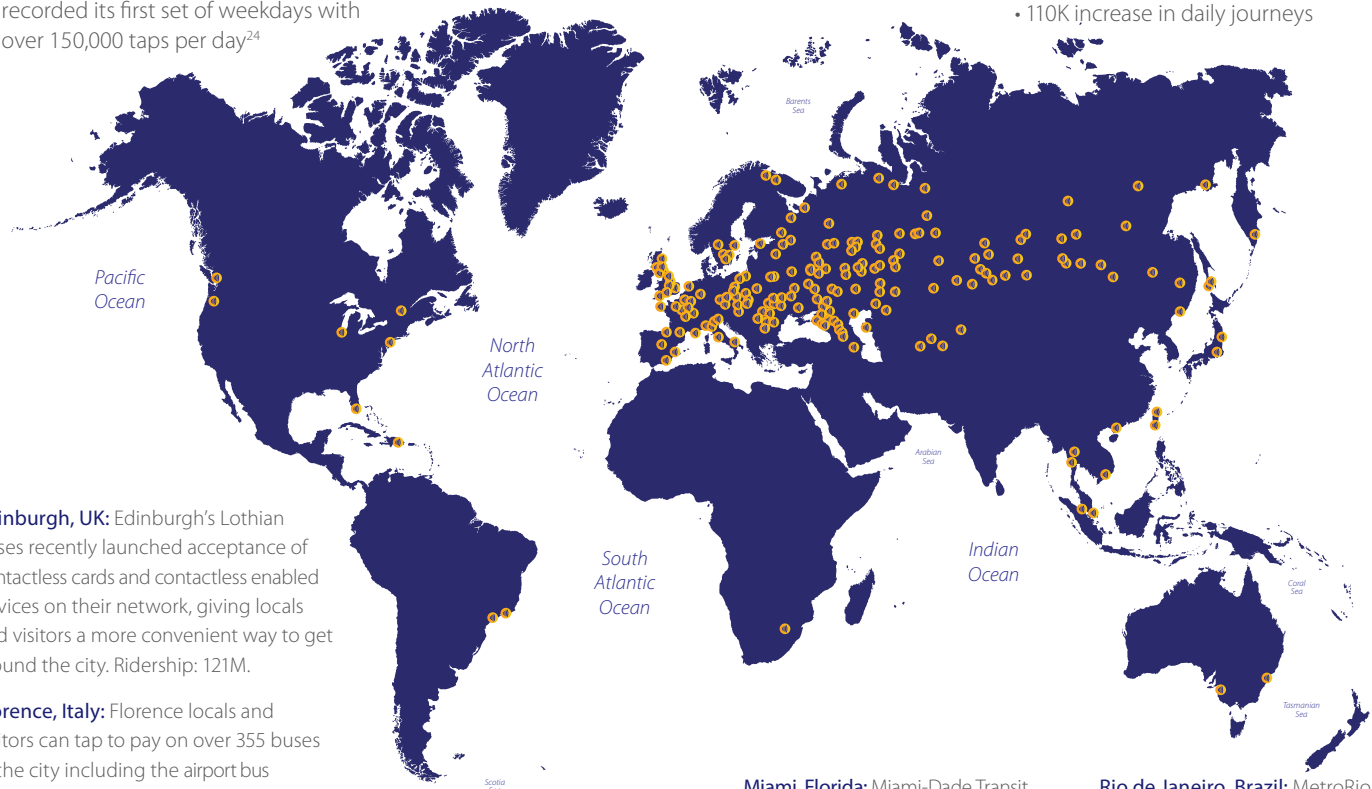
Singapore

Singapore is one of the largest open-loop transit implementations using Visa technology.

- 30,000+ touchpoints
- $1.39B in total annual ticket revenue
- In 2019, this system helped:
  - 5.6M residents
  - 18.5M visitors
- These travelers efficiently made use of:
  - 5,400 buses
  - 183 transit stations

London

In London, Visa has supported over 3 billion rides.[25] Since the implementation in 2014, Visa's transit performance metrics include:

- Over 1 million cards used on a typical day
- 40,000 cards seen for the first time on a typical day
- 26 million cards seen since launch
- Cards seen from over 100 countries
- 1 million cards registered
- Public data shows:
  - 40% reduction in cost of ticketing
  - 110K increase in daily journeys

Pacific Ocean

North Atlantic Ocean

South Atlantic Ocean

Barents Sea

Arabian Sea

Indian Ocean

Coral Sea

Tasmanian Sea

Scotia Sea

Edinburgh, UK: Edinburgh's Lothian Buses recently launched acceptance of contactless cards and contactless enabled devices on their network, giving locals and visitors a more convenient way to get around the city. Ridership: 121M.

Florence, Italy: Florence locals and visitors can tap to pay on over 355 buses in the city including the airport bus service and The Mall shopping outlet route.[26] Ridership: 78M.

Ho Chi Minh City, Vietnam: Visa acceptance was launched in selected Ho Chi Minh City buses in December 2019. As part of this project, Vietbank, the acquirer, also issued the first Visa Prepaid contactless cards in the world, primarily intended for transit payments.

Madrid, Spain: EMT launched MTT open loop contactless across their 213 lines and a fleet of 2,075 buses. Ridership: 660M.

Manchester, UK: Transport for Greater Manchester launched contactless technology on their Metrolink tram network, eliminating the need to pre-purchase a ticket before traveling. Ridership: 45.5M.

Miami, Florida: Miami-Dade Transit enabled contactless payments on buses, marking completion of system-wide acceptanceafter initially deploying on the rail system. Ridership: 106M.

Minsk, Belarus: As one of the first capital cities to accept contactless at all underground transit stations, Minsk, Belarus will expand acceptance to all city trains and ground transport. Ridership: 305M.

Rio de Janeiro, Brazil: MetroRio rolled out contactless payments across all of its 41 stations in April 2019. Just two months after launching, they saw 50,000 contactless transactions.[27] Ridership: 228M.

Sydney, Australia: This solution was successfully implemented October 2019. PTO (TfNSW) is now working to migrate to MTT. Ridership: 633M.

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The Way Forward

Visa is committed to helping cities, transportation authorities and operators, private travel entities, and solution providers create efficient and sustainable, door-to-door travel experiences through connected, secure digital payment solutions.

Whether it's for high volume single or multi-modal projects, short or long distance travel, through next-generation payment solutions, Visa is helping to improve the customer experience, grow ridership, reduce operational costs, and enrich the caliber of data that is needed to further enhance the service that transport operators deliver.

Transforming urban mobility through the next generation of payment solutions offers attractive benefits for operators, commuters and cities alike, while delivering the practical needs of supporting residents in a liveable city.

To learn more about Visa's Global Urban Mobility solutions, visit **visa.com/urbanmobility**

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