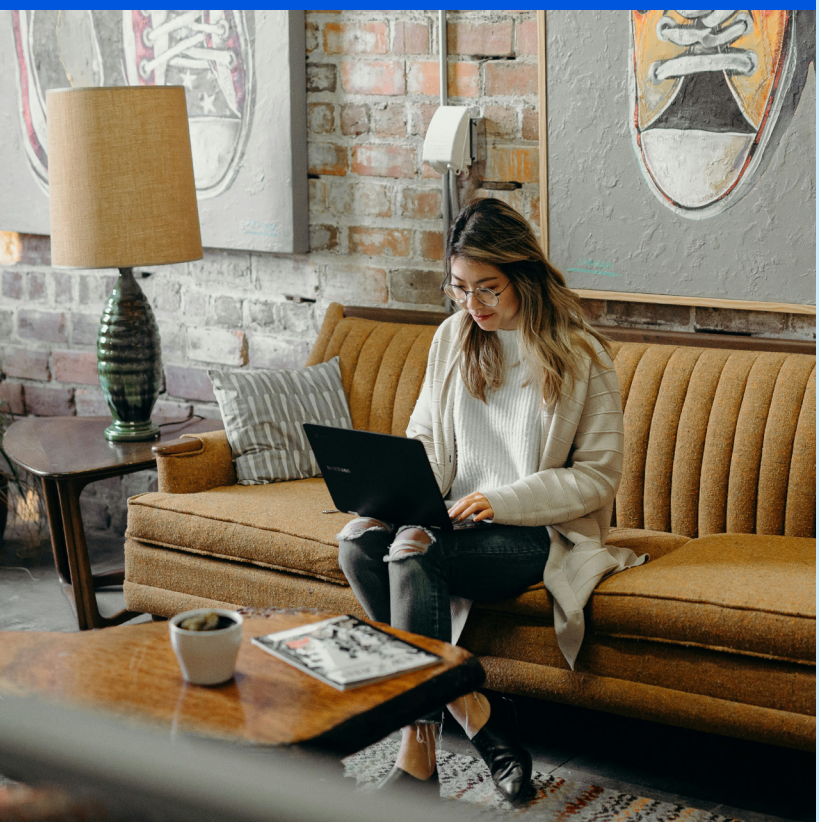
VISA

# From today to tomorrow - how tokenisation is helping future-proof revenue and resilience in digital commerce



## Over the past two decades, e-commerce has evolved from static online storefronts into dynamic data-driven ecosystems. Now, a new paradigm is emerging: agentic commerce, where autonomous digital agents, powered by AI and contextual intelligence, are transforming how consumers discover, evaluate and transact.

This shift represents not just an evolution of technology, but a fundamental redefinition of trust, choice and value in a global digital marketplace that's set to reach US$7.9 trillion by 2028.[1]

At the heart of the transformation lies a powerful yet often underappreciated innovation, namely network tokenisation. Much more than a security upgrade, network (EMV) tokens[2] have quickly become established as a foundation for new models of digital commerce – delivering frictionless customer experiences, unlocking new business models, and enabling deeper customer relationships.

## Beyond security – enabling growth and innovation

At Visa Consulting & Analytics (VCA), we see network tokenisation as a strategic enabler for the future of digital commerce. It's not just about reducing costs or mitigating risk – though those are critical considerations. It's about unlocking new possibilities, such as:

- Frictionless customer journeys that drive conversion and loyalty.
- Interoperability across borders and platforms, enabling global scale.
- Rich data insights that fuel personalised experiences and smarter decision making.
- Control and flexibility for both merchants and consumers.

And, given their inbuilt capabilities, network tokens can play an invaluable role in preparing online businesses for the emerging paradigm shift, with models like agentic commerce.

# Tokenisation – an enabler for agentic commerce

The next frontier in digital commerce is set to be agentic commerce – a model where intelligent agents (AI-powered assistants, apps, and devices) act on behalf of consumers to discover relevant products and services, make purchases, manage subscriptions, and optimise spending triggered by the consent, requests and preferences of individual consumers. But, to operate autonomously and responsibly, these agents need to access the right type of payment credentials.

Why? Because agentic commerce demands:

### Interoperability

agents must be able to operate across platforms, geographies and ecosystems seamlessly.

### Security without friction

agents must transact without exposing sensitive data.

### Programmability

payment credentials must conform to rules, limits, preferences, and permissions, respected by the merchant, defined by the consumer, and enforced on their behalf.

### Real-time control

consumers need to be able to monitor, adjust, pause, or revoke agent permissions instantly.

That's what network tokens deliver. So, merchants that make use of tokenisation today are not just solving current challenges. They are positioning themselves to thrive in a future where their consumers enjoy frictionless experiences and trust intelligent agents to drive purchasing decisions.

# About tokenisation

Imagine a payment credential that is secure, smart and adaptable. That's the network token. It's not just a replacement for the traditional 16-digit primary account number (PAN) – it's a programmable payment credential that empowers both merchants and consumers.

With network tokens, merchants can offer tailored payment experiences, and consumers get greater control over how and when they pay, while benefiting from the highest levels of security and privacy.

This is more than security. It's also more than convenience. It's a paradigm shift.

## What is tokenisation

Tokenisation is the process of replacing sensitive data with a nonsensitive substitute, known as a token, to both protect it and to open new experiences without compromising on security.

**Payment tokenisation is the process that replaces sensitive payment information – namely the 16-digit primary account number (PAN) – with a randomised set of digits called a token.**

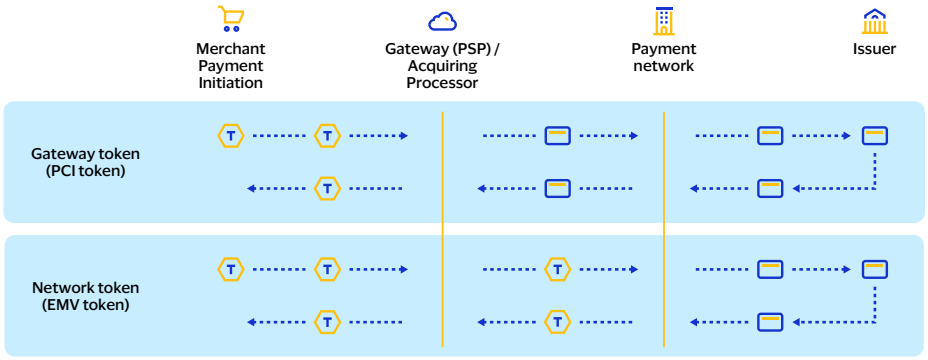
Transactions are protected by secure, dynamically generated cryptograms that encrypt the token and transactional data during the payment, together making the transaction secure. They can be remotely updated or disabled at any time. So, they are of no use to any fraudster.

# What is a network token – and why does it matter

Many merchants have already implemented some form of tokenisation – as part of their PCI DSS compliance, or to secure the flows between their systems and a payment gateway or an acquirer.

## Token type

Scenarios in order of where the token type is used in the payment chain




Network tokens are different. They replace sensitive card data, like the PAN, with a token, adding a unique cryptogram to each transaction for additional security. They also replace the PAN throughout the transaction flow, from merchant to Payment Service Provider (PSP) to card network.

Another noteworthy aspect of network tokens is that they aren't specific to a processor, so they work across the payments ecosystem. They are also both randomised and individualised to a merchant.

This gives merchants more choice and flexibility about how their transactions are routed and processed.

Additionally, network tokenisation paves the way for new and emerging commerce and payment models. And, as we discuss in this paper, multiple benefits are liberated.

**Issuers can approve the provisioning of secure payment tokens for use by authorised third-party token requestors, following explicit consumer consent. Each token reflects how each consumer prefers to interact with specific merchants – whether that's through mobile wallets, one-click checkouts, merchant apps or delegated commerce platforms.**

What makes network tokens especially useful is their flexibility. Each one can be tailored with specific rules that define how and when it can be used, based on the consumer's expectations and preferences. Equipped with features like clear permissions and strong safeguards, network tokens are designed with security in mind from the start. As commerce becomes more automated and AI-driven, this "prevention by design" approach helps ensure innovation doesn't come at the cost of safety.

In today's fast-moving market, the customer experience is everything. With expectations rising and competition heating up, offering smooth, secure and personalised payment options isn't just a nice-to-have, it's a must. Network tokenisation is already the standard across the industry. Leading merchants are investing now in tokenisation to reduce friction, build trust, and stay ahead of this digital transformation. Those who wait may find themselves playing catch-up in a new era of digital commerce.

# Choosing the right route to tokenisation – across three critical levels

Network tokenisation is not just a technical upgrade, it's a layered enabler of transformation, supporting solutions like card on file and Click to Pay. At VCA, we see tokenisation unfolding across three critical levels: operational, tactical and strategic – with each level building on the previous one and unlocking new dimensions of value for merchants.

Level #1

## Operational excellence – security, satisfaction, and profitability

At its most immediate level, tokenisation delivers operational efficiency. By defining token rules that allow credentials to be reused at the same merchant, businesses can reduce friction, improve authorisation rates and streamline the customer experience. This leads to cost savings (e.g., fewer failed transactions, and smoother repeat purchases) creating a foundation for improved loyalty and increased lifetime value.

**6%**

Average uplift in approval rates

**20%**

Indicative uplift in approval rates for higher-risk transactions

### 1. Increased approval rates

Due to the pervasive challenges with e-commerce transactions (and the fact that card issuers haven't been able to see the levels of security being deployed by a merchant), approval rates for online payments are considerably lower than for face-to-face transactions – typically around 91% for e-commerce vs. 96% for face-to-face.[3]

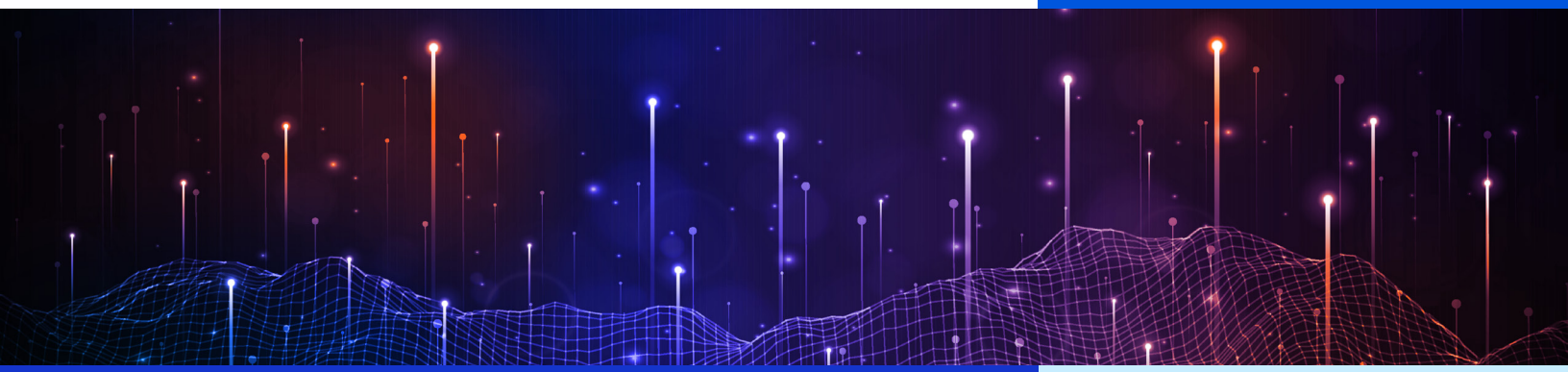
Network tokenisation changes all this. Typically, it brings a 6% uplift in authorisation rates compared to transactions where the PAN was entered manually.[4] And, for merchants with higher risk dynamics, such as some travel merchants, the increase can exceed 20%.[5]

## 2. Better, seamless lifecycle management

One of the biggest payment-related issues facing e-commerce businesses is the fact that card details can go stale – when the card expires, for example, or needs to be replaced. For subscription businesses, this is said to result in 20-40% of overall churn.[6] And, for any merchant that stores customer payment credentials, it's a source of real friction and elevated operational costs which are not matched by additional revenue.

Certain stages of lifecycle management in tokenisation, initiated by issuers, help merchants reduce customer drop-off by ensuring saved card credentials are automatically updated by the card networks. This means fewer failed payments due to expired cards, leading to smoother transactions and a better customer experience. For subscription-based businesses, this is especially valuable, but all merchants benefit from improved payment reliability.

By keeping card data current, lifecycle management prevents revenue leakage and supports uninterrupted billing cycles. It also drives higher conversion rates by reducing friction at checkout. Ultimately, it's a simple yet powerful way to protect revenue and retain consumers.



## 3. Reduced fraud losses

Where merchants have implemented network tokenisation, the impact on fraud (and the related costs of exception item handling) is immediate and significant. Typically, it brings a 28% reduction in fraud losses.[7] But, again, this depends on the risk characteristics of each merchant – and those in more challenging sectors could expect reductions in the region of 60%.[8]

It's also important to note that, compared to some fraud reduction measures, there's no equivalent increase in friction – quite the opposite in fact, with opportunities to improve the customer experience (see Dimension #4).

**28%**

Average reduction in fraud losses

**60%**

Potential fraud reduction in some higher-risk sectors

## 4. Increased conversion rates

Payment-related challenges – especially when consumers need to enter their PAN – continue to be a leading cause of cart abandonment.

Across Europe, for example, more than 50% of card-not-present Visa transactions still rely on manual card entry.[9] Yet entering card details in this way takes an average of 3.3 minutes.[10] And 88% of consumers say they will abandon a purchase if they encounter friction while paying.[11]

By removing friction from the payment experience, and avoiding the reliance on manual card entry, tokenisation can contribute to a significant boost in conversion rates. Indeed, some studies suggest that the design and flow of the checkout process is often the leading cause of abandonment – and, for large-sized e-commerce sites, improvements can liberate an increase in conversion rates of more than 35%.[12]

**+35%**

Potential uplift in conversion rates

**88%**

of consumers say they will abandon a purchase if they encounter friction while paying

## 5. Lower processing transaction fees

Payment transaction fees typically reflect the risk characteristics of different types of transaction and have always been used to incentivise ecosystem players to adopt more secure practices. Given the potential of tokenisation to flush out more fraud, a new range of so-called behavioural fees have been introduced. Depending on the pricing formula agreed with their acquirers this could become an incentive for more merchants – as well as payment service providers – to support tokenisation.

For some merchants, this could represent a potential saving of around 2.5 basis points (0.025%) per transaction.

## 6. Fewer customer support enquiries

An important dividend is a smoother transaction process, with less scope for errors along the way. From a cost-based perspective, this translates to fewer customer support enquiries and lower customer support costs.

Tokenisation allows the merchant (or Click to Pay) to display actual card designs, which is likely to further reduce customer queries. With customer support costs averaging at US$1.84 per contact for self-service and US$13.50 per contact for assisted channels[13], the sums can quickly accumulate – and that's before any associated customer churn costs are factored in.

## 7. Optionality on cost-based routing

Many merchants, especially those that handle a large proportion of cross-border payments, will typically route transactions to those processors and jurisdictions that offer the lowest cost for each transaction type. However, if so-called gateway (PCI) tokenisation has been implemented, the choice of route may be restricted.

Because network tokenisation is a globally interoperable standard, full optionality on transaction routing is retained – which, for some merchants, can enable significant cost reductions.

Level #2

# Tactical expansion – reach, revenue, and relevance

## Beyond operational efficiency, tokenisation acts as an enabler, giving merchants the ability to pursue new commercial models, establish new partnerships and extend customer relationships.

For example, moving beyond the single-merchant use case, network tokens can be configured for multi-merchant and multi-service environments. This opens the door to cross-selling opportunities, partnership ecosystems and new transactional revenue streams that were previously untapped. Merchants can now participate in broader commercial networks, increasing their customer base and enhancing their relevance in a competitive digital landscape.

# 1. A pathway to convert anonymous X-Pay consumers into fully engaged registered consumers

From a convenience standpoint, one of the big e-commerce payment innovations of recent years has been the one-click checkout experiences enabled by the so-called X-Pay solutions – i.e. smartphone-based wallets like Apple Pay and Google Pay, or browser-based wallets like PayPal and Amazon Pay.

One-click checkouts can make for a great customer experience. But, for the merchant, the wallet provider can act like a gatekeeper, restricting access to the consumer and their transaction data. Also, if the consumer uses a wallet, they have less incentive to create an account with the merchant. And, with consumers behaving like quick, anonymous purchasers, there's less brand engagement and fewer opportunities for merchants to build loyalty, cross-sell or upsell additional products or services, or nurture long-term customer relationships.

The token-for-token capability enabled by network tokenisation creates a pathway from anonymous buyers to known customers. Buyers can use the familiar X-Pay wallet experience (and the wallet's token) to make a payment. The merchant can then use that credential to obtain a network token, enabling future seamless card-on-file checkout.

This means a merchant can receive a new network token – linked to their customer's payment credential – without needing to access the PAN. In effect, this creates a bridge that allows merchants to convert anonymous X-Pay users into known, registered consumers, opening the door to deeper engagement and long-term value.

## 2. A smoother, frictionless payment experience – with an end to manual card entry

Network tokenisation paves the way for new, smoother checkout experiences, such as Click to Pay and a new generation of Identification and Verification (ID&V) solutions enabled by card issuers. And, to further enhance the experience, up-to-date card art and a recent transaction history with the merchant is available and can be shown to a consumer.

In simple terms, this means easier, more consistent and more convenient online payment processes, with less need for manual entry. And it's not just the fact that manual entry is tedious or inconvenient for consumers. It's also a source of unintended errors and the issues that come with them. According to one recent survey, these data-entry issues are a top-three cause of payment declines – similar in scale to declines caused by suspicious behaviour and insufficient funds.[14]

## 3. Potential for multi-merchant tokens and related partnerships

Gateway tokens are typically limited to use with a single merchant or provider. Network tokenisation changes that. It enables tokens to carry a broader set of permissions so they can be used across multiple merchants, while remaining secure and interoperable.

Instead of tying a token to one specific provider, network tokens can reflect a customer's preferred way of shopping – supporting a consistent experience across different platforms and merchants. This opens new possibilities for familiar tools like card on file (CoF) and digital wallets. For example, an X-Pay wallet can use a single token to make payments at a wide range of authorised merchants, not just one.

Even individual merchants can evolve their CoF systems into wallet-like services, allowing their consumers to use their stored payment credentials beyond that merchant's own storefront (a little like Amazon was able to do with its browser-based Amazon Pay wallet). This creates opportunities to participate in a broader shopping ecosystem, capturing more customer interactions and payment flows across different retail environments – thereby capturing additional revenues, entering more commercial partnerships and gleaning deeper customer insights.

Level #3

# Strategic Evolution – getting a foothold in the new world of agentic commerce

Network tokenisation is already established as an enabler of innovation. For example, it's a pre-requisite for Click to Pay. In an ever-growing number of embedded payment solutions, robust, standardised and interoperable network tokens are an essential component and, often, the mission-critical cornerstone. And, as we discuss in this paper, it provides the levels of interoperability, programmability and real-time control that are necessary for agentic commerce to flourish.

Equipped with network tokens, merchants can participate in the world of marketplaces and aggregators (e.g., online travel agencies, super apps, etc.), where tokenisation ensures secure, seamless transactions across platforms. Or they can choose to go much further – establishing themselves as a future enabler and operator in a decentralised, AI-powered commerce ecosystem, where intelligent agents bypass traditional intermediaries and interact directly with merchants. Here, programmable network tokens become essential infrastructure, allowing agents to transact autonomously, securely and in alignment with consumer-defined preferences.

With network tokens enabling manageable and controlled trust, supporting rich customer experiences, we can envisage many more scenarios that rely on tokenisation.

By investing in network tokenisation today – by updating their systems and processes to accommodate network tokens – merchants put themselves in a strong position. They can use network tokens to achieve more in their current business. They can also participate more easily in industry-wide innovations. Perhaps more important, they can help to shape future innovations, both for their own consumers and by using their token-based customer experience and payment capabilities as a way to become a true platform business – thereby delivering a service to the new, previously unreachable, consumers of other merchants.

# How Visa Consulting & Analytics can help

With deep payments expertise and proprietary analytics models, our consultants, data scientists and economists are committed to delivering insights that drive better business outcomes for our clients. And with our dedicated merchant practice, we are here to help merchants unlock growth and operational excellence by leveraging Visa's unmatched global payments expertise and transaction data. Our team delivers end-to-end support – from designing innovative acceptance strategies and loyalty programs to optimising checkout experiences and providing data insights for operational improvements and better-informed strategic planning.

Through strategic decision making, data-driven insights, and tailored solutions, we help merchants enhance customer engagement, streamline operations, and capture new opportunities in an evolving payments landscape. Ultimately, we believe that, for any merchant, payment should be a lever for value creation.

## With regards to tokenisation, there are several ways we can support merchants:

### Provide education on tokenisation

Provide a clear understanding of tokenisation, what it is, how it works and why it matters. We engage your teams and internal stakeholders to demystify the concept, outline potential implementation challenges, and highlight the strategic benefits and innovation opportunities it enables.

### Assess current token status and define token target state

Conduct a comprehensive review of your existing payment flows, ecosystem, and deployed solutions. Based on this assessment, we define the optimal tokenisation target state and architecture, identifying implementation models most suited to your business objectives.

### Model and quantify business implications

Model the financial and operational implications of tokenisation using historical payment data and business scale. This includes estimating authorisation uplift, transaction fee savings, fraud reduction potential and conversion rate improvements – providing a robust business case for decision making.

### Support implementation

Collaborate with your business and technical teams, as well as payment service providers, to ensure smooth deployment of network tokenisation. Our approach focuses on minimising disruption while accelerating time-to-value.

### Recommend and support follow-on activities

Once tokenisation is in place, help you maximise ROI through complementary initiatives such as Click to Pay adoption and strategies to migrate X-Pay users to registered consumers – unlocking further efficiency and customer experience gains.

# About Visa Consulting & Analytics

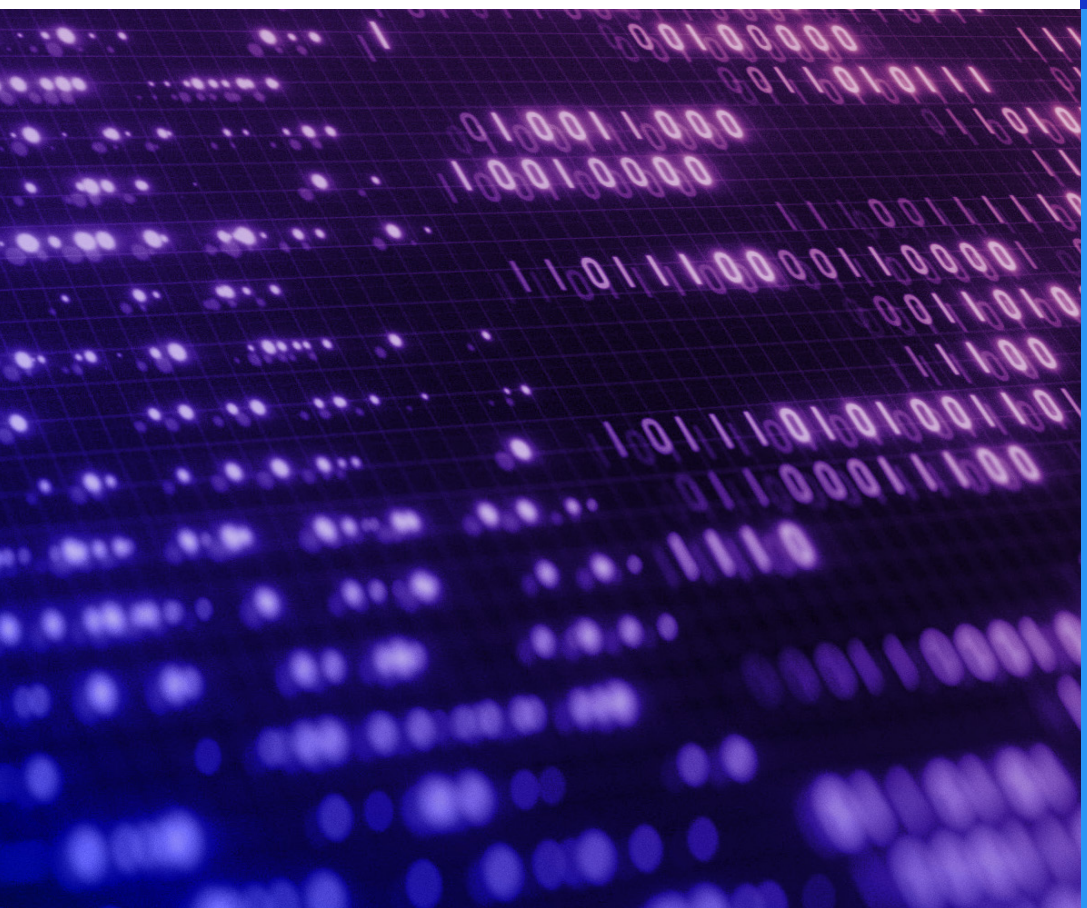
## VCA is a team of 2,000+ payments consultants, digital marketing specialists, data scientists and economists across six continents.

The combination of our deep payments consulting expertise, our economic intelligence and our breadth of data allows us to identify actionable insights and recommendations that drive better business decisions.

- Our consultants are experts in strategy, product, portfolio management, risk, digital and more with decades of experience in the payments industry.
- Our data scientists are experts in statistics, advanced analytics and machine learning, with exclusive access to insights from VisaNet, one of the largest payment networks in the world.
- Our economists understand economic conditions impacting customer spending and provide unique and timely insights into global spending trends.

For help addressing any of the ideas or imperatives above, please reach out to your Visa Account Executive to schedule time with our Visa Consulting & Analytics team or send an email to VCA@visa.com.

You can also visit us at Visa.com/VCA



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