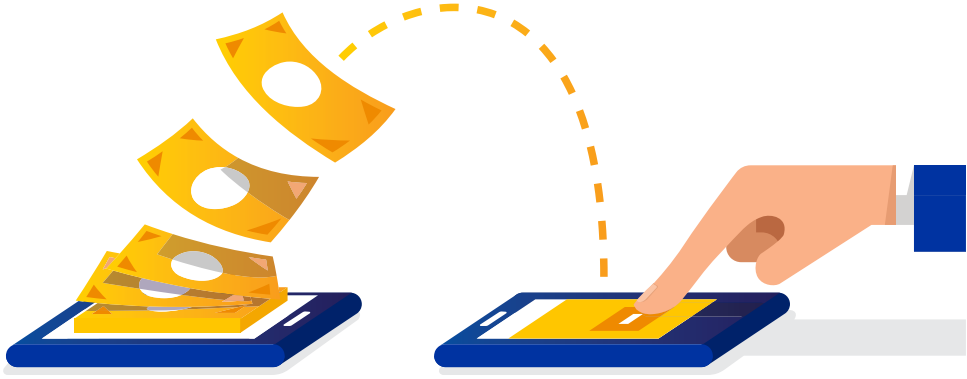
Digital Currency:

Visa's Vision for Supporting the Future of Money

VISA

Table of Contents



Introduction

"What if money became fully electronic?"

Sixty years ago, this simple yet bold question led to the founding of Visa. Today, billions of people across the world are familiar with the Visa brand—we tap to pay for meals, purchase groceries with a click, and send money seamlessly and securely across borders and time zones.

There have never been more ways to pay and be paid digitally; yet, $18 trillion USD in cash and checks still changes hands annually.[1]

Now, with the rise of digital currency—or 'digital versions of cash'—Visa has new technologies to harness in delivering our mission: enabling individuals, businesses and economies to thrive by helping to move money more securely and seamlessly.

By examining digital currency, we aim to better understand the impact it can have on the broader payments ecosystem. While the concept of digital currency was introduced more than a decade ago, recent developments have accelerated its adoption, such as the emergence of fiat-backed digital currencies known as 'stablecoins'; a growing community of developers building applications on top of blockchain-based networks; and rising interest among central banks to introduce sovereign digital currencies.

Given the potential of digital currencies to extend the value of digital payments to a greater number of people and places, we want to help shape and support the role it plays in the future of money.

In this paper we share Visa's outlook on the digital currency landscape and our approach for making digital currencies more safe, useful, and applicable for payments.

The digital currency landscape

The history of digital currency began in 1983, when David Chaum introduced the concept of a digital version of cash controlled by a private key.[2] Satoshi Nakamoto's infamous Bitcoin paper was published 25 years later, setting the stage for bitcoin transactions. In the intervening years, innovation and evolution in the space have given rise to a flourishing crypto ecosystem, with new currencies, form factors, and applications emerging rapidly.

Take fiat-backed digital currencies, commonly referred to as stablecoins. Stablecoins combine the benefits of digital currencies with the stability of existing currencies like the US dollar, and have the potential to unlock a host of meaningful use cases for consumers, merchants, and financial institutions.

Though the use of cryptocurrencies for everyday spend remains low, the mounting interest among consumers, developers, clients, and regulators is undeniable:

Consumer interest: There's a behavioral change happening, most prominently in Gen Z and Millennials. A recent survey found that 55% of 18-34 year-olds in the US intend to buy bitcoin in the next 5 years (vs. 32% in 2017).[3] Much of the appeal is cultural—with highly-engaged communities on platforms like Twitter, TikTok, and Reddit cohering around a shared mantra and vernacular.

Developer ecosystem: The crypto developer ecosystem is burgeoning with continued growth in the number of developers building new applications to deliver value to end users. Ethereum, one of the largest crypto networks, has seen 215% growth in active developers in the past 3 years.[4]

Financial institution/fintech interest: Fintech and established financial institutions are taking notice. Some of the largest and most reputable financial institutions are actively exploring digital currency use cases—for example, JP Morgan's JPM Coin. Additionally, with the proliferation of crypto-native fintechs, more and more non-crypto-native fintechs are building out and launching new crypto features/products—for example, leading fintech companies like Square, SoFi, Revolut, Robinhood, and PayPal are all providing access to cryptocurrencies.

Central bank interest: Central banks around the world are increasingly interested in central bank digital currencies

(CBDCs). 86% of central banks are now exploring the benefits and drawbacks of CBDCs. 60% of central banks are reportedly conducting pilots or proofs of concept.[5]

Growing interest and adoption among consumers, businesses, and governments have dominated headlines for the last few years, and this trend shows no sign of slowing. Whether it's fluctuations in bitcoin, a viral meme storming the internet, or the trading of multimillion-dollar crypto-assets, it is difficult to deny the indelible impact that digital currencies are having on the 'culture of money.'

What is digital currency?

Digital currency is a digital version of cash.

There are three types of digital currency:

Cryptocurrency

1980s; 2008 (Bitcoin)

Attempt at creating a currency that did not rely on central banks

High volatility, limited acceptance, and interoperability

Generally not used as a form of payment

Examples:

Bitcoin

Ether

Stablecoin

Mid 2010s

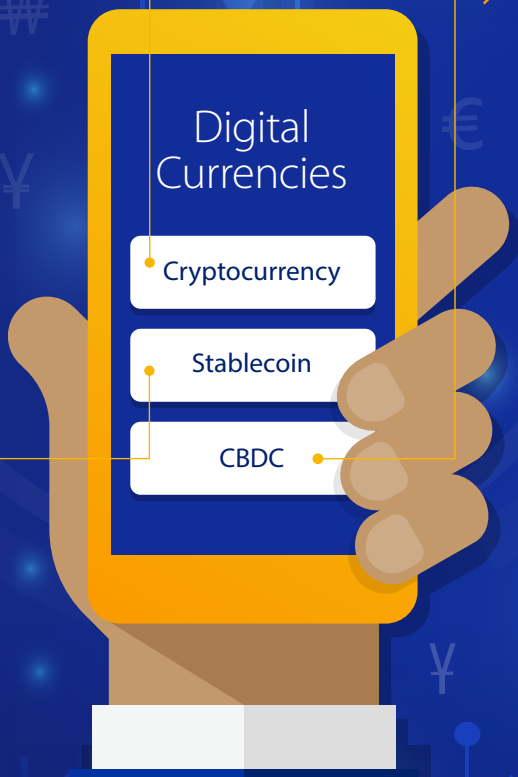
Developed to mitigate the volatility and limited use of crypto for payments

Issued by private entities and can be backed by assets, i.e. pegged to fiat currencies or gold, or non-collateralized

Examples:

USDC

Diem



Central Bank Digital Currency

Late 2010s

New form of money issued by a central bank directly to its citizens, exists exclusively in digital form

Basically cash but in a digital form, able to be received and spent directly

Examples:

eCNY (China)

e-Krona (Sweden)

Two types of CBDCs

Retail CBDC: for transactions between consumers and businesses

Wholesale CBDC: interbank transfers and settlements

What you need to know about the types of digital currencies

There are three types of digital currencies: cryptocurrency, stablecoins, and central bank digital currency (CBDC).

The most well-known cryptocurrency is bitcoin

Bitcoin's decentralized blockchain network went live in 2009 after the publication of a white paper in 2008 by an unknown person or group calling itself Satoshi Nakamoto.

Visa views this segment of digital currency as a commodity or 'digital gold.' Cryptocurrencies are typically not used as a form of payment at this time due to a number of reasons, such as their high volatility, low transaction throughput, and limited acceptance.

Stablecoins are fiat-backed

Stablecoins have the potential to be used as payments in global commerce, much like fiat currency.

Whereas cryptocurrencies are decentralized and volatile, stablecoins are designed to offer stability. The limited volatility increases the possibility of digital currencies being used for payment. And unlike fiat currencies, stablecoins can transcend borders with transactions that can be near instant.

CBDC is gaining momentum

Recently CBDC has gained significant interest among a growing number of central banks, with three in five conducting pilots or proof of concepts[6]—spurred in part by growing interest in cryptocurrencies as prices appreciate and the development of stablecoins such as USDC.

Several countries and regions have CBDC research projects underway (e.g., Riksbank Sweden).

The development of digital currencies began decades ago

- Ecash was created by David Chaum in 1983 as an anonymous cryptographic electronic money signed by banks.
- Subsequently, there were other attempts at creating other decentralized virtual currencies, such as Bit Gold and b-money in the 1990s.

Visa's key areas of focus for digital currencies

We see our work in digital currency as an extension of our corporate strategy around consumer payments, value-added services, and new flows. Our role in digital currency is focused on enhancing all forms of money movement—whether on the Visa network or beyond. Additionally, we've spent the past few years studying cryptocurrency, stablecoins, and public networks, building relationships in this space, and exploring how to add value.

Our focus spans four areas:

- Credentials everywhere (consumer payments)
- Crypto value-added services
- Facilitating new digital currency flows (new flows)
- CBDC research and stakeholder engagement

Credentials everywhere

Most consumers participating in the crypto economy are managing their funds through a crypto exchange—via a web-based platform or mobile app. We are working with 50 of the leading digital currency platforms to enable connecting their customers' accounts to Visa credentials, with the goal of making it simple and convenient to convert and spend crypto at any of the 70 million merchants worldwide that accept Visa.

Coinbase Visa Debit Card | Bitpanda Visa Debit Card | Fold Visa Debit Card | BlockFi Visa Debit Card

Digital currency settlement

To position Visa as the partner of choice with today's digital currency platforms, we have made infrastructure investments designed specifically for crypto-native companies, such as enabling settlement in USD Coin (USDC), a regulated stablecoin backed by the US dollar and transacted over the Ethereum blockchain.

Billions of dollars are cleared and settled each day with Visa's settlement service—securely, reliably, and predictably. While it operates behind the scenes, Visa's settlement system has served the traditional financial sector—and everyday consumers and business owners—for decades. But what about fintechs and neo-banks that run their business in digital currencies like bitcoin, ether, or USDC?

Take Crypto.com, the largest provider of crypto payment and trading services. Visa's standard settlement process for purchases made on Crypto.com Visa cards each day requires Crypto.com to convert their digital currencies into a traditional fiat currency that Visa accepts—adding cost, time, and complexity to their daily business processes.

To make it easier for crypto-native companies like Crypto.com to work with Visa and manage their business end-to-end in digital currency, we invested in a series of treasury infrastructure upgrades that enable us to:

- Support reconciliation and currency conversion for stablecoins such as USDC
- Integrate Visa's treasury systems with Anchorage, Visa's digital asset settlement agent
- Support a new Visa settlement report that includes settlement obligations along with public blockchain addresses for account management of crypto wallets and issuers

USDC was selected based on our due diligence efforts, which included an examination of client demand, stability, and security. USDC measured up against all these criteria, with a robust developer community, growing adoption across clients, and a track record showing clear compliance and regulatory engagement.

Figure 1: Digital Currency Settlement[7]

Crypto value-added services

Visa Crypto APIs

For banks or fintechs who are lacking a digital currency offering and are looking to develop one, they can utilize Visa Crypto APIs. Doing so helps them deliver new innovative offerings to their existing customer base without the need to use a separate crypto exchange.

Digital currency innovation hub

We have launched a global innovation hub where like-minded partners can jointly develop solutions and user experiences in the realm of digital currency and crypto. At our hub, partners can gain access to industry insights and work closely with our Product, Visa Consulting & Analytics, and Innovation Center subject matter experts to:

- **Discover:** uncover trends in digital currency and explore growth opportunities
- **Collaborate:** research, design and test solution concepts for new digital currency technologies using human-centered design
- **Build:** develop and pilot proof of concepts with payment engineering experts

Other crypto value-added services

Additionally, crypto native clients can leverage Visa's broader set of value-added services to help manage fraud. Advanced Identity Score can be used to manage identity fraud at the point of customer credit application, and Cybersource Decision Manager can be utilized to manage fraud associated with the buying/selling of crypto assets with credit cards on clients' platforms.

New digital currency flows

We are evolving Visa to be a network of networks—in order to enable the movement of money across a variety of payment flows on VisaNet and beyond. With this strategy in mind, we're focused on helping clients who want to participate in using new digital currency flows.

For example, our vision is to help make it possible for global marketplace clients to quickly identify Visa Crypto Partner Wallets that are equipped to safely receive USDC payouts—giving those marketplaces confidence to pay their sellers in another country. Once a seller in another country receives those funds, they can use the Visa credentials in their digital currency wallet to convert and spend their income at any Visa-accepting merchant.

These new digital currency payment flows can be particularly useful in instances where payers and payees are distributed globally, and in regions where payments in a US-backed currency are desirable. Additionally, they can complement the other ways Visa enables payment flows by enabling payouts over public blockchain networks that are received by digital currency wallets.

Figure 2: New Digital Currency Flow Payouts Use Case[8]

CBDC research and stakeholder engagement

As the world leader in digital payments, we recognize we have a responsibility to lead and contribute to discussions shaping the digital currency space. Our research and development team has been exploring the science of blockchain technology for several years and their work has yielded several promising innovations.

Offline capability

We published a technical paper that outlines an innovative approach for making secure point-to-point digital currency transactions using authorized hardware, when neither the buyer nor the seller has a connection to the internet. The protocol allows digital money to be directly downloaded onto a personal device, such as a smartphone or tablet. The money is stored on secure hardware embedded in that device and managed by a wallet provider (e.g. a bank). In the future, central bank digital currencies could be transacted from one device to another device directly without any intermediaries. Thus, the offline payment system creates an experience similar to physical cash. But, instead of paper money in your physical wallet, it's bits and bytes in your phone.

Privacy

With the future of payments becoming more digital and with digital tokens as bits of information, industry standards are needed to protect data privacy and to develop consumer protection. Visa has been driving cutting-edge research in privacy preserving cryptography, including the Zether protocol, and we'll continue to strive for higher consumer protection standards in the new age of digital currencies.

Visa's research is focused on developing cutting-edge standards for digital currency

Key stakeholder engagement

For any technology to gain widespread adoption, multiple key stakeholders need to come together to make it work for people in a variety of locales and contexts. CBDC is no different. The challenges that central banks face in launching CBDC are vast and complex. Implementing new technologies is an iterative process, requiring input from diverse stakeholders, and we want to contribute our expertise and thinking as crucial design decisions are being shaped.

At Visa, we've been driving cutting-edge research and product capabilities, partnering with leading digital currency providers, and engaging with policy makers and central banks around the world as their thought partner to help shape the ongoing dialogue and understanding surrounding digital currencies and CBDC.

We look forward to working with central banks at this important moment in time to create secure, convenient, and reliable CBDC that can seamlessly integrate with the existing payments ecosystem.

Summary

At Visa, we are focused on being the best way to pay and be paid, regardless of the channel or mode of purchase. To do that, we want to be able to support transactions when and where they occur, across an expanding range of channels. We are ready to support digital currency when it becomes recognized as a means of exchange, similar to the other 160 currencies we already support on our network today.

For more information, contact your Account Executive or visit **www.visa.com/crypto**

Appendix

1. Visa analysis of data from Oxford Economics, Nilson Report, Euromonitor, Haver Analytics, UK Card Association, Central Bank of the Russian Federation.
2. Bitcoin and Cryptocurrency Technologies, Arvind Narayanan, Joseph Bonneau, Edward Felten, Andrew Miller, Steven Goldfeder
3. Blockchain Capital - Bitcoin is (Still) a Demographic Mega-trend: Data Update – December 2020
4. Electric Capital – Developer Report, January – October 2020
5. Bank of International Settlements Central Bank Survey on CBDC s.
6. Ibid.
7. This figure shows how Visa s digital currency settlement process works. Issuers can settle digital currency with Visa by pushing funds to Visa s digital address through the blockchain. Visa s digital asset settlement agency receives these funds from the issuer. Afterwards, the acquirer can receive settlement in either digital currency (via the blockchain) or in fiat currency (via real-time gross settlement or RTGS).
8. This figure shows how digital currency flows can work in a marketplace payouts use case. In this scenario – a consumer purchases goods from a global commerce platform utilizing their Visa card – like a typical eCommerce transaction. Afterwards, this global commerce platform sends USDC payouts to their sellers. The sellers receive USDC in their Visa Crypto Partner Wallets which have Visa credentials associated with them. One of these sellers is in Nigeria and the other is in Argentina – and because their Visa Crypto Partner wallets have Visa credentials associated with them, they are now freely ability to utilize these funds at any merchant that accepts Visa in their country.

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